July 1, 2026

FCC FACT SHEET*
Space Modernization for the 21st Century
Report and Order and Further Notice of Proposed Rulemaking – SB Docket No. 25-306

Background: Achieving space superiority is critical to our national future. As explained in Executive Order 14369, "[s]uperiority in space is a measure of national vision and willpower, and the technologies Americans develop to achieve it contribute substantially to the Nation's strength, security, and prosperity."[1] Accordingly, in this Report and Order (Order) and Further Notice of Proposed Rulemaking (FNPRM), the Federal Communications Commission (Commission) would overhaul and modernize the Commission's space and earth station licensing process in furtherance of this mission. In particular, the Order would establish a "licensing assembly line" to process space stations and earth stations with greater speed and predictability.

What the Order Would Do:

- Replace part 25 of the Commission's rules with part 100 to delete unnecessary and outdated rules and organize the new rules in a manner that is easier to understand.
- Create an application processing framework based on bright-line criteria that are presumed to be in the public interest.
- Reform application handling by simplifying requirements, updating and establishing timelines, and allowing for conditional grants.
- Creating a Variable Trajectory Space Station (VTSS) license category.
- Modify processing round procedures for non-geostationary orbit (NGSO) satellite systems.
- Remove the surety bond requirements for geostationary orbit space stations and for NGSO space stations not in a processing round while also simplifying milestones.
- Extend the license terms for most space stations and earth stations to 20 years.
- Make significant changes to the earth station licensing regime.
- Require space station operators to share space situational awareness data.

What the FNPRM Would Propose and/or Seek Comment On:

- Further reforms which build upon part 100, including experimental applications under part 100, call sign merging, hosted space stations, ephemeris data sharing, intersatellite links, and transfers of control and assignments.

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[1] Ensuring American Space Superiority, Exec. Order No. 14369, 90 Fed. Reg. 60537 (Dec. 18, 2025).

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

In the Matter of	)	
	)	
Space Modernization for the 21st Century	)	SB Docket No. 25-306

REPORT AND ORDER AND FURTHER NOTICE OF PROPOSED RULEMAKING*

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* This document has been circulated for tentative consideration by the Commission at its July 22, 2026 open meeting. The issues referenced in this document and the Commission's ultimate resolution of those issues remain under consideration and subject to change. This document does not constitute any official action by the Commission. However, the Chairman has determined that, in the interest of promoting the public's ability to understand the nature and scope of issues under consideration, the public interest would be served by making this document publicly available. The FCC's *ex parte* rules apply and presentations are subject to "permit-but-disclose" *ex parte* rules. *See, e.g.*, 47 CFR §§ 1.1206, 1.1200(a). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules, including the general prohibition on presentations (written and oral) on matters listed on the Sunshine Agenda, which is typically released a week prior to the Commission's meeting. *See* 47 CFR §§ 1.1200(a), 1.1203.

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I. INTRODUCTION

1. Achieving American space superiority is critical to our nation's future. As explained by Executive Order 14369 in December 2025, "[s]uperiority in space is a measure of national vision and willpower, and the technologies Americans develop to achieve it contribute substantially to the Nation's strength, security, and prosperity."[1] While the United States is already the world leader in commercial space, the industry is rapidly moving to build the space infrastructure of the future. Therefore, as part of our Build America Agenda, the Commission is aggressively moving to support commercial deployment of space infrastructure which promises enormous downstream benefits to American prosperity and security.

2. In pursuit of this goal, the Commission must ensure the United States is the best place for

[1] Ensuring American Space Superiority, Exec. Order No. 14369, 90 Fed. Reg. 60537 (Dec. 18, 2025).

the space industry to build, operate, and license. Today's commercial space industry is rapidly innovating, requiring a regulatory framework which provides speed, predictability, and flexibility. Therefore, in this Report and Order (Order), the Commission moves forward with modernizing our rules to build a space "licensing assembly line" and adopting a new part 100. Like a physical assembly line, our new processes will move licensing requests in standard and predictable ways and result in increased efficiency and a higher quality of Commission review. By reforming our licensing and operating rules, the Commission complements its other ongoing activities to boost the space economy.[2]

II. BACKGROUND AND OVERVIEW

3. *Background.* In October 2025, the Commission adopted a Notice of Proposed Rulemaking (NPRM) proposing reforms to the Commission's space and earth station licensing and operational rules.[3] The Commission expressed a desire to "align our rules with the pace, growth, and innovation in the space economy while upholding our statutory duties."[4] Specifically, the *NPRM* articulated four main goals: (1) to increase application processing speed; (2) to provide more predictability to applicants and licensees; (3) to provide more flexibility for innovation and for licensees' operations; and (4) to faithfully meet our responsibilities.[5] The *NPRM* further explained that these goals flow directly from the mandates in the Communications Act of 1934, as amended (Act), directing the Commission "to make available, so far as possible, to all people of the United States….world-wide wire and radio communications service" and to "encourage the provision of new technologies and services to the public."[6] Additionally, the *NPRM* explained that the Act provides for the regulation and licensing of radio communications, including satellite communications, for the purpose of national defense and in service of the "public convenience, interest, or necessity."[7]

4. In the *NPRM*, the Commission sought comment on a detailed set of proposed rules constituting a new part 100 that would replace existing part 25. The proposed rules constituted a significant overhaul of the Commission's operations to match the needs of the growing space economy. The *NPRM* highlighted several key pivots in the proposed rules designed to reach the Commission's overall goals. First, the Commission proposed a "presumed acceptable framework" that would set bright-line measures and characteristics of a system that it presumes to be in the public interest.[8] Applications that meet those bright-line criteria can be reviewed more quickly and the Commission can focus its review on parts of applications that are not presumed to be in the public interest. This will increase the Commission's efficiency in reviewing applications and make the review process more predictable for applicants. Second, the Commission proposed enhanced application designs using standardization, certifications, and modularity to support more efficient application processing. Third, the Commission proposed to allow operators more flexibility under their licenses so that they may innovate without facing

[2] *See, e.g.*, *Modernizing Spectrum Sharing for Satellite Broadband*, Report and Order, FCC-26-26 (Apr. 30, 2026) (*Spectrum Sharing Report and Order*); *Expediting Initial Processing of Satellite and Earth Station Applications*, Second Report and Order, FCC 25-48 (2025) (*2025 Streamlining Report and Order*); *Satellite Spectrum Abundance*, Further Notice of Proposed Rulemaking, FCC 25-29 (May 27, 2025) (*Spectrum Abundance FNRPM*); *Spectrum Abundance for Weird Space Stuff*, FCC 26-54 (Mar. 27, 2026) (*WSS NPRM); Facilitating More Intensive Use of Upper Microwave Spectrum Notice of Proposed Rulemaking*, FCC 25-70 (Oct. 29, 2025) (*UMFUS NPRM*).

[3] *Spectrum Modernization for the 21st Century Notice of Proposed Rulemaking*, SB Docket No. 25-306, Notice of Proposed Rulemaking, 40 FCC Rcd 8191 (2025) (*NPRM*).

[4] *NPRM*, 40 FCC Rcd at 8193, para. 6.

[5] *NPRM*, 40 FCC Rcd at 8193-94, para. 7.

[6] *NPRM*, 40 FCC Rcd at 8193-94. 47 U.S.C. §§ 151, 157(a); *see also* 47 U.S.C. § 303(g) (directing the Commission to "encourage the larger and more effective use of radio in the public interest.").

[7] 47 U.S.C. §§ 151, 307(a).

[8] *NPRM*, 40 FCC Rcd at 8196, para. 14.

unnecessary red tape. The *NPRM* explained at length the logic behind each of these pivots as well as how the major proposals supported the overarching goals of the modernization reform. The Commission received robust public comment from approximately 86 interested parties.[9]

5. *Overview.* In this *Order*, the Commission generally adopts the framework proposed in the *NPRM*, albeit with some changes. As provided in Appendix A, the Commission adopts a new part 100. Within part 100, we clearly distinguish the rules for the application and review process (Subpart B), for operations under an authorization (Subpart C), and for enforcing compliance (Subpart D). Subpart A generally applies across part 100. Whereas part 25 is a confusing tangle of application and operational rules, with the new part 100 organization, we enable operators to easily understand the application process and the standards under which they must operate. Such organization will also allow the Commission to make orderly changes to part 100 over time as necessary.

6. Part 100 reinforces the first principles which guide our reforms. The rules in part 100 describe what the Commission *a priori* finds to generally be in the public interest in terms of a request or permissible operations. Therefore, in evaluating application reviews or operations, we should primarily look to our rules. Such will support efficient decision making by the Commission as it allows for review to focus attention and resources on any areas of an application or operations which deviate from the rules (e.g., waiver requests) rather than conducting a bespoke review of each application element. In short, if a request complies with the rules, it should be presumed acceptable. By removing an enormous amount of decisional friction from the process, part 100 frees up resources to target review where most needed. For applicants and operators, this framework will provide greater regulatory certainty upon which investments can be made to design and build space systems.

7. *Licensing Assembly Line.* The part 100 licensing assembly line aims to deliver greater speed, predictability, and flexibility for space companies. The licensing assembly line has three broad components which function together to identify where the Commission needs to target review in order to carry out its statutory duties. First, application materials collect only necessary information relevant to the review and in a format which enables quick identification of areas needing targeted review. Second, to prepare the request for a decision, the application handling stage gathers additional information through completeness review, information requests, and public notice. Third, with the application and record in hand, the Commission makes a decision by applying rules for review to determine if grant is in the public interest.

8. *Application Materials.* The part 100 application requirements are designed to be modular. Modularity will support efficiency and flexibility in how operators file applications and how the Commission processes applications. The core components of the application materials required by part 100 are Form 312 – Main Form for all applicants, Schedule O and Schedule F for space station applicants, and Schedule B for earth station applicants. These forms will collect most of the technical information requirements of a request. Applicants also will provide a comprehensive statement describing the system, a brief public interest showing, and additional information in certain circumstances, though we significantly reduce the requirements for technical narratives. Under part 25, many application materials are supplied as technical narratives which require extraordinary staff time to parse and review, particularly because such narratives are not standardized. Shifting to more uniform requirements that still collect necessary technical information will reduce regulatory burden on applicants and support efficient Commission review.

9. One example of such modularity is that we allow applicants to associate a current Form 312 – Main Form across multiple applications. Form 312 – Main Form is required and collects basic applicant information, including ownership information, which may not be specific to a license request. While Form 312 is critical to the Commission's review of foreign ownership, it is unnecessary for the same information to be submitted with each request. Therefore, we allow the current Form 312, which

[9] In addition, the Commission received 47 *ex parte* filings in this proceeding.

has already been approved by the Commission, to be associated with other requests. In addition, we also will allow entities to seek pre-clearance of Form 312 without an associated license request. This can allow an entity planning to file a request to begin the review process before it is ready to file for a specific system.

10. Under part 100, Schedule O and Schedule F (for space stations) and Schedule B (for earth stations) rely on a certification-based approach. The certifications circumscribe an envelope in which a request can be presumed acceptable. The most fundamental part of the envelope is whether the request falls within the four corners of the Commission's rules. If the applicant cannot certify affirmatively as much, then a waiver request must be provided, and the request will be reviewed to determine if grant is in the public interest. Other certifications, if not made affirmatively, do not necessitate a waiver but require additional information for the review. Our aim is that this certification-based approach will allow operators to have a clear and predictable path within the envelope to propose systems which can be quickly reviewed and granted by the Commission under the notion of presumed acceptability. At the same time, innovators will need flexibility which may go outside the bounds of what the Commission currently presumes acceptable. In such cases, if an applicant is not able to certify to a particular portion of the envelope, we expect the framework will still serve to focus review for an efficient and timely decision.

11. Several other components of the part 100 application materials will provide flexibility and help ensure our rules accommodate ongoing innovation in the space industry. Part 100 allows an applicant to apply for a geostationary-orbit (GSO) system, a non-geostationary orbit (NGSO) system, a Variable Trajectory Space Station (VTSS) system, or a Multi-orbit Satellite System (MOSS). The GSO system application will now allow for multiple satellites operating together at a single orbital location in line with innovative new designs that industry is pursuing. The VTSS category will allow for requests that may not cleanly fit into the other categories, but represent a growing area of the space economy. VTSS systems are likely to encompass radiofrequency systems on such wide-ranging systems as orbital transfer vehicles, certain in-space servicing, and commercial lunar spacecraft. By adding VTSS to our rules, we enable part 100 to accept requests for the entire range of orbital profiles for which companies may desire. The VTSS category also enables the Commission to apply different operational rules to systems which have completely different orbital characteristics than GSO or NGSO systems.

12. Other dimensions of flexibility afforded by part 100 include the ability to choose a shorter license term than the default term of 20 years, which we adopt for most systems, allowing opt-in for processing round participation, and explicitly allowing for hosted space station arrangements. Regarding hosted space stations, we seek to support innovative spacecraft-as-a-service arrangements with straightforward licensing.

13. For earth station applications, part 100 adopts certification-based application materials and creates a new Nationwide, Non-site license option. The Nationwide, Non-site license can be used by operators wishing to site multiple earth stations with the same characteristics. Under this license, operators can register individual sites over time. Part 100 establishes default registration rules under the Nationwide, Non-site license, but we expect that the Commission eventually will adopt frequency-specific registration rules which will replace the default registration rules. In such frequency-specific registration rules the Commission would determine how coordination and other issues will be handled. Thus, the Nationwide, Non-site license sets a pathway for efficiently authorizing a large number of earth stations while leaving the particulars of registration to future rulemakings. Lastly, we make another improvement in part 100 to allow for swift commencement of earth stations operations. For entities with a current, approved Form 312 that are requesting a license without any waivers, earth station operators may begin operating on a non-interference, unprotected basis once the application is placed on public notice.

14. For entities seeking U.S. market access, we make limited changes to the Commission's longstanding posture in the rules. However, given concerns about U.S.-licensees facing barriers to market access from other administrations, we note that there is a record from the *NPRM* as well as the public

notice from the Space Bureau and Office of International Affairs on the issue of market access reciprocity which the Commission shall consider at a later time.[10] Also, to further ensure American companies face a level playing field internationally, we make clear we will allow submission of ITU filings without an underlying space station application. This is a common practice by foreign governments, and we seek to make sure those licensing with the United States are also able to do so.

15. *Application Handling.* Once an application is filed, the licensing assembly line will prepare the file for a decision by gathering necessary information. The first step is for the Commission to determine if the application is complete. Under the rules, within 30 days of filing, the Commission will either place the application on public notice or notify the applicant of what elements need to be supplied to achieve completeness. Typical license requests will be placed on public notice for 15 days, except as otherwise required by statute. We do *not* adopt an "expedited processing" approach, as considered in the *NPRM*. We also adopt rules for information requests and amendments which are intended to make the application handling phase predictable and efficient.

16. *Review of Application for a Decision.* Once all information, including public comment, has been gathered, it is time for review so a decision can be made on whether the request is in the public interest. To guide this review under a "default to yes" regime, we adopt rules for review in section 100.136. The rule states that review will take place under a presumption of being in the public interest if the applicant demonstrates compliance with the Commission's rules, regulations, and policies. We then identify several "targeted review categories" which the Commission will use to focus on situations where the presumption does not exist. These targeted review categories are Failure to Certify, Waiver Requests, Market Access, Foreign Ownership, Processing Round, Spectral Constraints, and Federal Coordination. Each is discussed in the Order. The intention is that straightforward requests which do not trigger any of these categories can easily be handled under the presumption, and that the Commission can efficiently focus on areas of applications which do implicate targeted review categories. To improve transparency for applicants, we also adopt a rule that if action has not been taken within 60 days following the end of public comment then the Commission must inform the applicant as to the specific reasons action has not been taken.

17. As part of the licensing assembly line, we also adopt several other tools to improve the efficiency of the process and give operators more flexibility. One innovation is allowing conditional grants by rule in certain situations. Conditional grants can be useful in decoupling parts of the process by allowing the Commission to resolve its review even while other activities or reviews need to take place before deployment or operations may commence. For instance, a conditional grant can allow federal coordination to occur on its own track. Therefore we allow for conditional grants in three main situations: federal coordination, commercial coordination, and orbital debris deferral. Additionally, we adopt a general framework that could be used to allow other expert agencies in the federal government to handle a portion of review of applications if that would promote efficiency.

18. We also make changes to how we conduct processing rounds in order to make the licensing process more efficient and predictable. As NGSO systems have become core to global communications, and as many large and complex systems are proposed to the Commission, it is necessary to create certainty as to how systems will share spectrum with each other. The Commission in 2024 adopted a robust NGSO-NSGO sharing framework and we complement that approach by regularizing how systems which rely on that framework will have their status established.[11] This regularized process, rather than the highly discretionary process under the part 25 processing round rules, will provide both transparency and predictability going forward. Applicants will be able to plan for a processing round to

[10] *Space Bureau and Office of International Affairs Seek Comment on Satellite Market Access Reciprocity*, Public Notice, DA 26-208 (rel. Mar. 2, 2026) (*Reciprocity Public Notice*).

[11] *Revising Spectrum Sharing Rules for Non-Geostationary Orbit, Fixed Satellite Service Systems*, IB Docket No.21-456, Second Report and Order, FCC 24-117 (adopted Nov. 5, 2024) (*NGSO Sharing Order*).

open and prepare a system application accordingly. This will also relieve the Commission of having to decide whether to open a processing round or, given the many systems which may be interested in a processing round, having to manage multiple, overlapping *ad hoc* rounds.

19. Under part 100, applicants will opt-in to inclusion in a processing round.[12] Annual, frequency-specific processing rounds will automatically open an application filing window on January 1 and close October 31 of each year. These processing rounds will open by default each year, regardless of whether applications are filed. The initial set of bands for these processing rounds are Ka-, Ku-, Q-, and V-bands. The Space Bureau is delegated authority to add bands annually, if appropriate, and must announce eligible bands ahead of the opening of the annual processing round window so that there is transparent notice for those wishing to make a request.

20. Inclusion in a processing round is determined based on when the application is filed. For example, if an application is filed for Ka-band during the 2027 processing round window but is granted in 2028, the system will be in the "2027 Ka-band Processing Round." In this way, there will be a clear description of system status across each processing round-eligible band over time.

21. Under part 100, processing rounds are deeply connected with bonds and milestones. This is because the status afforded by processing rounds also can create incentives for speculative systems. In part 100, applicants who opt in to a processing round to obtain status will be required to post a $10 million surety bond which will decline based on how much of the system is deployed, reaching $0 at 90% deployment. We believe this simple approach will dis-incent speculative systems due to a large bond which must be posted within 30 days of grant while incenting non-speculative systems to deploy more quickly to build out of the bond. For all applicants who do not opt-in to a processing round, we do not require a bond.

22. We also continue to require milestones to be met and we treat systems in processing rounds differently than those not in processing rounds. Systems authorized in a processing round will be held to the same six-year (50%) and nine-year (100%) milestones in part 25. Systems in processing rounds must coordinate with others and it is important that those who must be coordinated will know in a relatively short period of time which systems are actually deploying. In the event that a system in a processing round fails to meet its six-year 50% milestone, unlike in part 25 where the result is capping the authorization at the deployed number of satellites, the system as a whole will be placed in the processing round year corresponding to the year of the missed 50% milestone date. That is, the system will lose processing round status down to where it would be if the operator was capped for failure to meet the milestone and then immediately submitted a new application. We believe this is a considerably more reasonable approach as it will allow systems to continue deploying rather than face the prospect of being capped with a partially complete system. For non-processing round systems, we apply the less stringent ITU milestones since the same factors in play with processing rounds do not exist.

23. The part 100 framework is designed so that the Commission can continuously reap efficiency gains to improve processing of applications. The modular application materials and clear routing of applications will be ripe for technology-enabled review, such as building verification checks into the application system and carrying out preliminary reviews. To enable such improvements, we delegate to the Space Bureau the ability to adjust the form and format of the applications.

24. *Operational and Technical Rules.* Subpart C carries over many of the technical rules from part 25 while in some cases organizing them better. The operational rules are intended to be an accessible place where licensees can easily understand the rules which they must follow. Of note, in subpart C we adopt rules to more permissively allow Telemetry, Tracking, and Command (TT&C) while orbit raising, we affirm the GSO two-degree spacing rule, and we set common sense space safety rules to ensure availability of radio communications service. The space safety rules in part 25 are set as

[12] Licensees who do not seek status in a processing round must operate compatibly with existing and future systems, consistent with the Commission' rules.

application requirements, and we incorporate them as operational requirements for clarity. We also include in operational requirements space safety reporting and an obligation to provide ephemeris to a Space Situational Awareness (SSA) provider. We delegate to the Space Bureau to identify which SSA providers can be used to satisfy this obligation so that over time as the SSA ecosystem evolves the Commission can adjust appropriately.

25. *Compliance.* As part 100 improves the licensing process, it also gives the Commission additional tools other than traditional enforcement to handle non-compliance. In part 100, the Commission has temporary measures, administrative sanctions, and automatic termination to address non-compliance situations.

26. *Transition.* Moving from part 25 to part 100 requires care to appropriately maintain existing equities and to avoid unnecessary confusion. We delegate to the Space Bureau to manage the transition but give clear direction as to how particular areas of the transition should be handled. We direct a process to ensure licenses issued under or referencing part 25 remain intelligible and enforceable and to allow for identification of any conflicts the transition creates which make compliance impossible. We also allow for licensees to opt-in to the part 100 bonds and milestones if so desired (while immediately relieving all non-processing round licensees of the bond requirement). We also direct the Space Bureau to prepare educational materials on the new part 100, potentially to include Frequently Asked Questions, flowcharts, or informational sessions.

27. *Further Notice of Proposed Rulemaking.* With part 100 establishing the comprehensive framework, we seek further comment on several areas the Commission may consider to further refine these rules in the Further Notice of Proposed Rulemaking (*FNPRM*).

III. DISCUSSION

28. *Part 100.* The *NPRM* proposed to adopt a new part 100 of the Commission's rules as a reformed, reorganized, and improved version of the existing part 25 rules.[13] We adopt part 100, reserved under 47 CFR Subchapter D – Safety and Special Radio Services, titled as "Space and Earth Station Services." We also adopt the proposed organization and subparts of part 100 as follows:

Subpart A – General.

Subpart B – Applications and Licenses.

Subpart C – Operational Rules.

Subpart D – Compliance.

We believe that this overhaul of the space and earth station rules will improve the organization and clarity of the rules and simplify the application process for both current operators and new entrants to the market. As a general matter, the record is overall in favor of adopting part 100 in place of part 25 as a more organized, efficient, and modern regulatory framework that will better support today's next-generation systems and enable innovation.[14] Some commenters raise questions or concerns in moving to an entirely new rule part.[15] We recognize these concerns and address topic-specific transitions in section III.G. However, we counter the concern that moving to part 100 would make any references to part 25

[13] *NPRM*at 40 FCC Rcd at 8200-01, para. 28.

[14] *See* Leaf Comments at 5 ("The Part 100 NPRM has been perceived as necessary and welcomed by the sector."); Plan-S Comments at 1; Lockheed Martin Comments at 2; Telesat Comments at 1; Kongsberg Comments at 2; Blue Origin Comments at 1; Globalstar Comments at 1; The Consortium for Execution of Rendezvous and Servicing Operations (CONFERS) Comments at 1; Amazon LEO Comments at 1; Sateliot Comments at 1; Kepler Comments at 1; Intuitive Machines Comments at 3-4; SpaceX Comments at 1.

[15] *See* SiriusXM Comments at 2-3.

rules in existing authorizations obsolete.[16] Substantively, the majority, if not all, of the specific operational and technical requirements for space and earth station applications and operators remain the same, and any part 25 rules cited in current authorizations will still be subject to those corresponding rules in part 100, unless addressed otherwise. Part 100 primarily focuses on reforms to the licensing process, which includes making the relevant rules easier to follow, both for incumbents and new entrants alike. Unlike part 25, the organization of part 100 clearly distinguishes between rules that apply to applications and those that apply to operations under an authorization. We also expect that the new organization within part 100 will facilitate future revisions to the rules by allowing the Commission to cleanly adjust application elements, operational rules, and compliance measures. Accordingly, we adopt Part 100 – Space and Earth Station Services.[17] The Commission will sunset part 25 once part 100 becomes effective. We address issues related to the transition from part 25 to part 100 below.

A. Definitions

29. We adopt definitions in section 100.3 relevant to earth and space station licensing.[18] We discuss new and modified definitions so that readers are familiar with them before discussion on the more substantive changes the Commission adopts in this Order. Many of these definitions are drawn directly from part 25, some with minor updates or edits for clarification. Other definitions are based on proposals in the *NPRM* to clarify new licensing types. We first discuss new definitions that we adopt and then briefly discuss the definitions that we modify or delete.

- *Blanket License*. We define blanket license as a license for: "Multiple earth stations, that do not meet the definition of an Immovable earth station, in the FSS or MSS, or for SDARS terrestrial repeaters, that may be operated anywhere within a geographic area authorized in the license; multiple space stations in non-geostationary-orbit; or multiple space stations in geostationary-orbit at a single orbital location."[19] We modify the original definition as proposed in the *NPRM* to clarify that it does not include Immovable earth stations.[20]
- *CONUS Arc*. We adopt the following definition: "Orbital locations in the GSO orbit from 53° W.L. to 141° W.L. from which geostationary satellites can provide service to CONUS with a minimum elevation angle of 5°."[21] This codifies the definition that the Commission has been using for years.
- *GSO satellite system*. We adopt the following definition: "A system of one or more geostationary-orbit satellites operating together at a single orbital location and under a single space station call sign."[22] This definition reflects the updated GSO licensing that the Commission adopts in this *Order* allowing multiple GSO satellites to be licensed under a single license and call sign.[23]
- *Immovable earth station*. We adopt the following definition: "An earth station, other than ESIM, VSAT, SCS, MES, or user terminal, registered pursuant to a Nationwide, Non-Site license or licensed as an individual location authorization that is located at a

[16] *Id.*

[17] The full regulatory text is available in Appendix A.

[18] *See* Appendix A at § 100.3 for the full list of definitions.

[19] Appendix A at § 100.3.

[20] *See infra* section III.D.6.n.

[21] Appendix A at § 100.3.

[22] *Id*. *See NPRM,* 40 FCC Rcd at 8211, para 57.

[23] *See infra* section III.B.1.c, para. 29.

fixed location."[24] Upon further review and consideration of commenters' response to the proposal,[25] we adopt the definition as modified.[26] As discussed below, this definition provides a specific term for a type of earth station for which we adopt new licensing rules that we believe will be beneficial.[27]

- *Multi-orbit satellite system (MOSS)*. We adopt the following definition: "A system of two or more types of satellite system(s) operating together under one space station call sign."[28] In the *NPRM*, although we did not propose to add MOSS to the definitions section, we described the term in the text.[29] We add this definition to section 100.3 consistent with the process outlined below for authorizing multi-orbit satellite systems.[30]
- *NGSO satellite system*. We adopt the following definition: "A system of one or more non-geostationary orbit satellites operating together under one space station call sign and that is not a Variable Trajectory Spacecraft System."[31] We believe adding this definition will provide clarity to Commission staff and applicants when referring to applications and discrete satellite systems.[32]
- *Nationwide, Non-Site license.* We adopt the following definition: "A single license for one or more Immovable Earth Stations which may operate anywhere within the United States and its territories, subject to completion of any site-based registration and coordination procedures."[33] Although we did not propose a definition of Nationwide, Non-Site License in section 100.3 in the *NPRM*, we add this definition because we use the term numerous times throughout part 100. We describe the Nationwide, Non-Site Licensing process that we adopt in detail below.[34]
- *Replacement space station.* We adopt the following definition: "A space station that is authorized to operate in the same frequency bands, and with the same coverage area and operating parameters as the space station to be replaced, at an orbital location within 0.15° of the assigned location of a GSO space station to be replaced or in the authorized orbit of an existing NGSO space station to be replaced, and that is scheduled to be launched so that it will be brought into use at approximately the same time as, but no later than, the existing space station is retired."[35] We believe that modifying the existing definition in this way will provide greater clarity to applicants.[36]
- *Variable Trajectory Space Station (VTSS) system.* We adopt the following definition: "A

[24] Appendix A at § 100.3.

[25] *See infra* section III.D.6; n305. *See also* CSSMA Comments at 8; Impulse Comments at 16.

[26] *NPRM*, 40 FCC Rcd at 8224.

[27] *See infra* section III.D.6.

[28] Appendix A at § 100.3. *See NPRM*, 40 FCC Rcd at 8211, n. 87.

[29] *See* NPRM, 40 FCC Rcd at 8211, at n. 87.

[30] *See infra*, section III.B.1.f.

[31] *NPRM* 40 FCC Rcd at 8212, para 59; Appendix A at § 100.3.

[32] *See NPRM*, 40 FCC Rcd at 8212, para. 59.

[33] Appendix A at § 100.3.

[34] *See infra*, section III.B.1.o.

[35] Appendix A at § 100.3.

[36] 47 CFR § 25.165(e).

system of one or more space stations either operating beyond the geosynchronous orbit or operating without fixed or predictable orbital patterns over the course of its lifetime and operating under one space station call sign. Variable Trajectory Space Station systems may include, but are not limited to, space stations on orbital transfer vehicles, rendezvous and proximity operations platforms, in-space servicing systems, and missions involving transit to, orbiting of, or operations on the moon or other celestial bodies."[37] This definition differs slightly from the definition proposed in the *NPRM*.[38] We adopt a definition of "Variable Trajectory *Space Station*" system rather than "spacecraft system" to make clear that our focus is on the station used for radiofrequency communications, rather than the spacecraft as a whole. By using "space station," we connect this definition of VTSS to the Commission's definition of "station" which is concerned with transmitters and receivers for radiocommunications.[39] We adopt this modified definition that includes several examples of VTSS operations to further clarify for applicants the types of operations that would qualify as VTSS. We explain the VTSS license category in this Order.[40]

- *Two-degree spacing*. We add the following definition: "Refers to the angular separation in the GSO orbit, measured from the center of the earth, between adjacent co-frequency space stations. Under the Commission's two-degree spacing requirements, an earth station communicating with a space station in the GSO orbit is presumed to be compatible with an adjacent space station that is two degrees away operating on the same frequencies."[41] Because we retain the current two-degree spacing requirements for GSO satellite operators, we also add a definition for two-degree spacing that reflects those requirements. We discuss the requirements below.[42]

30. *Other Definitions*. We modify several part 25 definitions to update them or align with the rules adopted in this Order. We make minor or non-substantive edits to the following definitions: "Coordination distance," "Equivalent Power Flux Density (EPFD)," "Protection areas," and "Two-degree-compliant space station."[43]

31. We also decline to adopt certain definitions proposed in the NPRM. We proposed to adopt a definition of "Expedited Processing" as associated with the proposed expedited processing framework."[44] As explained in section III.B, we do not adopt the expedited processing framework and therefore a definition of "expedited processing" is no longer necessary.[45] We do not adopt the definition of "licensable system" proposed in the NPRM since the rules clearly describe the satellite and earth station systems that the Commission licenses and therefore a definition of a "licensable system" is not

[37] Appendix A at § 100.3.

[38] *See NPRM*, 40 FCC Rcd at Appendix A at § 100.3.

[39] 47 CFR § 2.1 (defining "station" as, "One or more transmitters or receivers or a combination of transmitters and receivers including the accessory equipment, necessary at one location for carrying on a radiocommunication service, or the radio astronomy service.")

[40] *See infra*, section III.B.1.e.

[41] Appendix A at § 100.3.

[42] *See infra*, section III.B.1.h.

[43] *See* Appendix, A at § 100.3. NRAO takes issue with the proposed definitions of EFPD, power spectral density, and terrestrial stations.

[44] *See NPRM*, 40 FCC Rcd at 8284, para. 64.

[45] *See infra*, section III.B.2.b, paras. 88-90.

necessary. [46]

32. Finally, we incorporate the definitions of "space station," "satellite," and "spacecraft" from parts 2 and 25 into section 100.3.[47] As explained in the NPRM, we intend to use each term particularly to promote clarity in our rules and in matters of statutory authority.[48] In this *Order* and in part 100, we use "space station" to refer to "a station located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the Earth's atmosphere."[49] In other words, "space station" generally refers to the equipment used for communications with radiofrequencies on a satellite or spacecraft.[50] The rules primarily refer to "space stations" as the relevant focus of the Commission's licensing regulations.[51] We use "satellite" and "spacecraft" to refer to the physical object on which space stations are located.[52] We find that clarifying the use of these terms will provide greater certainty for operators and ensure that the Commission continues to focus on its statutory responsibilities.

33. *Definitions Removed From Part 100*. In the *NPRM*, we identified certain definitions in part 25 as redundant and proposed to exclude these definitions from section 100.3 of part 100. [53] We largely adopt our proposal and remove other definitions that we have similarly identified as redundant.[54] Since these definitions are found in part 2 of the Commission's rules or within the ITU Radio Regulations, which we incorporate by reference, it is unnecessary to have the definitions in part 100 as well. We believe that having definitions in both places has the potential to cause confusion or create the opportunity for accidental definition divergence in the future. Instead, we believe that having the definitions in a single place, in this case part 2 or in the ITU Radio Regulations, and incorporated by reference in part 100 is a better approach. These removed definitions remain in section 2.1 of the Commission's rules.[55] We also delete the section 25.103 definition of "Ku band."

B. Licensing Assembly Line

34. The space and earth station licensing assembly line has several key elements that work

[46] *See NPRM*, at Appendix A at § 100.3.

[47] *See NPRM*, 40 FCC Rcd at 8202, para. 32; *See also* 47 CFR § 2.1 (defining "satellite"); 47 CFR § 25.103 (defining "space station" and "spacecraft"). We note that the definition of "satellite" was not previously included in part 25 but we include it in part 100 for the sake of clarity.

[48] *NPRM,* 40 FCC Rcd at 8202, para 32.

[49] Appendix A at § 100.3.

[50] *See NPRM,* 40 FCC Rcd at 8202, para. 32; *see also* 47 CFR § 2.1 (defining "station" as "[o]ne or more transmitters or receivers or a combination of transmitters and receivers, including the accessory equipment, necessary at one location for carrying on a radiocommunication service, or the radio astronomy service.")

[51] *See* Lockheed Martin Comments at 5; NRAO Comments at 2.

[52] *See* Appendix A at § 100.3 (defining "satellite" as "A body which revolves around another body of preponderant mass and which has motion primarily and permanently determined by the force of attraction of that other body" and defining "spacecraft" as "A man-made vehicle which is intended to go beyond the major portion of the Earth's atmosphere.").

[53] *See NPRM*, 40 FCC Rcd at 8284, paras. 262-63. ("Specifically, we propose to delete the following definitions: Coordination distance, Earth station, Feeder link, Inter-Satellite Service, Ku-band, Land earth station, Land Mobile Earth Station, mobile earth station, Radiodetermination Satellite Service, Satellite system, Selected assignment, Space radiocommunication, Terrestrial radiocommunication, and Terrestrial station").

[54] Specifically, we delete the following definitions: Coordination distance, Earth station, Feeder link, Fixed-Satellite Service (FSS), Inter-Satellite Service, Ku band, Land earth station, Land Mobile Earth Station, Mobile Earth Station, Mobile-Satellite Service (MSS), Radiodetermination-Satellite Service, Routine processing or licensing, Small satellite, Small spacecraft, Space radiocommunication, Terrestrial radiocommunication, and Terrestrial station.

[55] *See* 47 CFR § 2.1.

together to route applications through a predictable and efficient review process. First, we adopt a modularized, certification-based application. The application requirements are designed to only collect necessary information, clearly identify where a request will require targeted review, and allow applicants flexibility in how requests are made to best align with business needs. Second, we adopt rules around how applications will be handled once submitted in order to be prepared for a decision. Third, we direct how decisions will be made to determine if a request is in the public interest. Fourth, we allow for several conditional grants by rule to increase licensing efficiency. Fifth, we update the framework for how operators can obtain priority and protection with a high degree of predictability, such as through processing rounds.

1. Application Modularity; Required Forms

35. The *NPRM* set forth the Commission's proposed plan for a modularized approach to the space and earth station application and licensing process under the new part 100 rules.[56] This modular design intends to give applicants greater flexibility throughout the licensing process by segmenting the required components of a space or earth station application. Commenters overall support this reformed approach.[57] Industry and operators are aligned on the need for a reformed licensing process and strongly encourage adoption of the modularized framework to more effectively support the modern space industry.[58] We accordingly adopt this modular framework and discuss the required application submissions below.

36. Under part 100, all applicants for space and earth station authorizations must file the FCC Form 312.[59] This is the same as it was under part 25, although we adopt certain changes to the FCC Form 312.[60] As described in the *NPRM*, the modular filing system will also allow applicants to submit an FCC Form 312 independently from any associated schedules. Applicants will then file the required schedule(s), discussed more fully below, when they submit their application for a space or earth station license. This will reduce the paperwork burden on applicants who will only need to provide information relevant to a specific request for authority and will not have to submit repetitive information. Given these changes, we remove system-specific information from the current Form 312 – Main Form and relocate certain required information and certifications to Schedule F and Schedule O, as appropriate.

37. As part of the modularized framework, we proposed not to require applicants to request a waiver of any rule to file exhibits or supplements to an application if technical limitations prevent compliance with the application filing rules, as long as any exhibits or supplements are filed contemporaneously with the associated application.[61] We adopt this rule, recognizing that applicants may need to submit information in a manner beyond what the Commission's forms may accept to submit a complete application. We find that granting flexibility to proceed without a waiver to submit the relevant information will reduce the burden on applicants and the Commission.

38. The *NPRM* proposed to continue to require electronic submission of applications via

[56] *See NPRM*, 40 FCC Rcd at 8202-03, paras. 33-35.

[57] *See, e.g.*, Reflect Orbital Comments at 2-3; Lockheed Comments at 5; Blue Origin Comments at 2; Muon Comments at 11; Viasat Comments at 1; Iridium Comments at 4-5.

[58] *See* Logos Comments at 1; Tomorrow.io Comments at 2 ("The NPRM's intent to route applications in direct paths from one stage of the review process to the next and to segment applications into modules is a meaningful improvement over the current Part 25 framework."); Viasat Comments at 1 (stating that the proposed more "modular" design should have the potential to help to advance the *NPRM's* four main goals in the proceeding); Globalstar Comments at 4 (supporting the "assembly line" approach for space and earth station applications).

[59] *See* Appendix A at § 100.100.

[60] *See* Appendix A at § 100.101.

[61] *See NPRM*, Appendix A at § 100.100(j).

ICFS or another successor system, with delegated authority to the Space Bureau to designate the specific application filing system.[62] We adopt this proposal. Some commenters offered suggestions to improve the application filing process, like allowing the submission of data in certain specified or universal data formats, developing additional tools for application monitoring, and further digitizing the FCC Form 312, but support the Bureau's authority to make these changes as needed.[63] As both the industry and the Commission's goals evolve over time, we expect that the form and format of the required application materials will continue to require tailoring and revision to support those goals.[64] To ensure that the Commission can most effectively implement any changes or improvements to the application process, the Commission proposed to delegate authority to the Space Bureau to determine and revise the form, format, and filing of application materials, as well as the intake system for those materials.[65] We accordingly delegate such authority to the Space Bureau, with any such changes to be announced through public notice at the discretion of the Space Bureau.[66] We further delegate authority to the Space Bureau to conduct notice-and-comment rulemaking proceedings as it may deem necessary or advisable to effectuate any changes to the application filing forms and format.[67]

39. Considering the process reforms adopted as part of the modular framework, particularly in reference to filing of the FCC Form 312 – Main Form and associated schedules, we clarify that application fees are due at the time of filing in ICFS or a successor system.[68] For clarity, if an applicant is filing an application for a new system authorization but already has a Form 312 – Main Form on file with the Commission, application fees for the new system authorization are due at the time of filing of an application for authority or petition for declaratory ruling for U.S. market access.[69] Additionally, we proposed to codify that applicants will not be entitled to a refund of application filing fees once an application filed under part 100 is under review.[70] Commission precedent and practice has been that once a part 25 application is placed on public notice, it is no longer subject to a refund. Section 1.1115(d) of the Commission's rules specifies that applicants for space stations under the first-come, first-served procedures are entitled to a refund if the applicant notifies the Commission that it no longer wants to keep its application in the queue and specifically requests a refund and dismissal of the application.[71] No comments addressed this point. We confirm in section 100.100 that applicants for space and earth station licenses filed under part 100 will be entitled to a refund if, before the Commission has placed the application on public notice, the applicant notifies the Commission that it no longer wishes to keep its application on file and specifically requests a refund of the fee.[72]

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[62] *NPRM*, 40 FCC Rcd at 8204, para. 39.

[63] *See, e.g.*, Capella Comments at 16; Lockheed Martin Comments at 5 (recommending that the Commission develop an application monitoring module to track the status of applications and "support[ing] delegation of these changes to the SB"); Impulse Comments at 3 (suggesting integrating components of required NTIA and ITU forms into the FCC application process).

[64] *NPRM*, 40 FCC Rcd at 8205, para. 40.

[65] *Id.*

[66] Appendix A at § 100.100(c).

[67] *Id.*

[68] *Id. See* 47 CFR § 1.1107, Table 9. Applicants must submit the required application fees within 14 days from the date of filing. If an application fee is not timely paid, the Commission will dismiss the application.

[69] *See* 47 CFR § 1.1107, Table 9.

[70] Appendix A at § 100.100(k). *See NPRM* 40 FCC Rcd at 8204, n. 48.

[71] 47 CFR § 1.1115(d).

[72] Appendix A at § 100.100(k).

a. FCC Form 312 – Main Form

40. The Commission sought comment on ways to streamline the FCC Form 312 application filing process and minimize duplicative or redundant filings for licensees and authorized operators.[73] We proposed to reorganize the part 25 application filing rules to create a new rule section with the specific FCC Form 312 requirements for space and earth station applicants.[74] This rule aggregates certain information requirements from section 25.114 with the information required on the FCC Form 312 – Main Form for space and earth station applications, including the contact information, ownership information, and certifications.[75] We adopt this rule at section 100.101.[76]

41. As part of the modular approach, we proposed to bifurcate the FCC Form 312 – Main Form and allow entities to submit this component of the application independently from the required schedules.[77] This proposal is two-fold – it would allow licensees or authorized operators to use an existing FCC Form 312 – Main Form for new application filings and would permit new entities to submit the initial FCC Form 312 – Main Form component of the overall Form 312 application in advance of the required schedules.[78] Commenters endorse this approach as aligned with the Commission's objectives as an effective way to streamline application timelines and reduce filing of duplicative information.[79] We adopt the proposed rule at section 100.101(b).[80]

42. Section 100.101(b) permits licensees and authorized operators who have an existing FCC Form 312 – Main Form on file in connection with an authorized system to incorporate that form in a new space or earth station authorization application, or in an amendment or modification to an application.[81] This will allow the Form 312 – Main Form to essentially attach to the applicant as the authorized licensee or operator of the system, rather than the system itself, and serve as that licensee's already-filed Form 312 for subsequent applications. We adopt this proposal and establish that applicants who have previously submitted the FCC Form 312 – Main Form in connection with an active license or authorization for U.S. market access may certify that the FCC Form 312 – Main Form on file with the Commission remains accurate and in compliance with the Commission's rules such that it may be used in connection with a new or subsequent application.[82] As the record noted, the current FCC Form 312 – Main Form includes information that is specific to a proposed system.[83] A bifurcated FCC Form 312 – Main Form would require removal of certain system-specific certifications from the current form to align with the modular

[73] *NPRM*, 40 FCC Rcd at 8205, para. 41.

[74] *Id.*

[75] *Id.*; Appendix A at § 100.101.

[76] Appendix A at § 100.101.

[77] *NPRM*, 40 FCC Rcd at 8206, para. 44.

[78] *Id.*

[79] SpaceX Comments at 18; Muon Comments at 13; Leaf Comments at 9-10 (supporting pre-approval of individual modules and certification for continuing accuracy of previous submissions as a positive change to avoid Commission review of duplicative information); Capella Comments at 16; Lockheed Martin Comments at 4, 6; Blue Origin Comments at 2; Sateliot Comments at 2; Viasat Comments at 1; Myriota Comments at 11.

[80] Appendix A at § 100.101(b).

[81] *Id.*

[82] *Id.* This requirement is subject to the ownership disclosure requirements in section 100.101(a)(2). Appendix A at § 100.101(a)(2); 47 CFR § 1.0009(e)(14).

[83] *See supra* section III.B.1.i. *See* Muon Comments at 11 ("If the Commission decides to bifurcate or otherwise allow a Form 312 to be reused across applications for multiple systems, it should either remove any system-specific information from the form and require it elsewhere ….").

application approach.[84] Certain system-specific information that is currently required by the FCC Form 312 (like the type of station or service, for example) will be incorporated into the appropriate schedules to reflect this change and modular filing structure, pursuant to the Bureau's delegated authority under section 100.100(c).

43. We retain the requirement that the applicant include with the Form 312 – Main Form an attestation, under penalty of perjury, that the information submitted on the Form 312 and associated forms has been verified for accuracy and is believed to be complete and accurate at the time of submission.[85] All entities must ensure that the information included in a filed Form 312 – Main Form remains accurate and up to date.[86]

44. We additionally proposed to allow entities without a Main Form on file to submit the FCC Form 312 – Main Form, independent of the required schedules or application showings, as a preliminary step in filing an application for a new system authorization.[87] We adopt this proposal. Applicants may elect to file the FCC Form 312 – Main Form in advance of a forthcoming space station or earth station application if the information included in the FCC Form 312 – Main Form may require or warrant specific review. For example, an applicant may find it beneficial to submit the FCC Form 312 – Main Form if the applicant has or will have reportable foreign ownership under section 100.101(a)(2) of the Commission's rules in anticipation of a transfer of control or assignment of a station authorization.[88] We clarify that while an applicant may choose to file the Main Form independently, an application is not complete without the required schedules.

45. DarkSky requests that the FCC Form 312 – Main Form include a required disclosure of the potential adverse environmental and astronomical impacts of an application, along with additional information on any actual or potential adverse impacts and mitigation measures.[89] The FCC Form 312 requires applicants to certify whether grant of a proposed application would have a significant environmental impact under 47 CFR 1.1307, and if so, directs applicant to submit the required statement under sections 1.1308 and 1.1311.[90] However, we decline to address this proposal considering that the relevant rules are subject to an ongoing Commission rulemaking and are outside the scope of this proceeding.[91] We reject the proposal of Impulse Space to replace the FCC Form 312 schedules with a single, consolidated technical parameter filing for the Shared Space Science Bands as outside the scope of

[84] *See* Muon Comments at 11 (noting that the current Form 312 includes information that is specific to each satellite system rather than to the licensee as a whole, and if the Commission decides to bifurcate the Form 312, this information should be removed and required elsewhere to allow licensees to incorporate an existing Form 312 – Main Form); Capella Comments at 16.

[85] Appendix A at § 100.101(a)(3). *See NPRM*, 40 FCC Rcd at 8205-06, para. 42. *See* TechFreedom Comments at 15-16 (supporting the proposal to require that the Form 312 be signed under penalty of perjury by an officer of the applicant, noting that "the tradeoff for [the Form 312] approach must be transparency and accountability.").

[86] *See* Appendix A at § 100.101; *see infra* section III. B.1.b. for discussion on ownership disclosure reporting.

[87] *NPRM*, 40 FCC Rcd at 8206, para. 43.

[88] Appendix A at § 100.145; 47 CFR § 25.119. 47 CFR § 25.119(b) refers to transactions that change the party controlling the affairs of the license or effect any change in a controlling interest in the ownership of the licensee, including changes in legal or equitable ownership.

[89] *See* DarkSky Comments at 13.

[90] *See* FCC Form 312 at Question 28.

[91] *See* Modernizing the Commission's National Environmental Policy Act Rules, Notice of Proposed Rulemaking, WT Docket No. 25-217, FCC 25-47 (Aug. 14, 2025).

this *Order*.[92]

b. Ownership Information

46. The *NPRM* proposed to codify the long-standing FCC Form 312 application information requirements and existing certifications relating to the disclosure of ownership information.[93] We incorporate these ownership disclosure requirements in part 100, applicable to both space and earth station applicants.

47. Applicants for space station authorizations include certain management and ownership information as part of the required Form 312 – Main Form responses, specifically information relating to individuals or entities holding 10% or greater direct or indirect equity and/or voting interests, or a controlling interest, in the applicant, along with the names, citizenship, and address of each officer and director in the applicant.[94] This information has been required of all space station applicants since the Form 312 was implemented as the mandated application form to ensure that applicants meet the basic qualifications to hold satellite licenses and market access authorizations.[95] We proposed to extend this requirement to earth station applications, making the ownership disclosures consistent across operators authorized under the part 100 rules, and we adopt this proposal as well.[96] Consistent with the current Form 312 directives, applicants must disclose the names, citizenship or place of organization, principal place of business, and mailing address of any individual or entity holding 10% or greater direct or indirect equity and/or voting interest in the applicant, or a controlling interest, and must disclose the percentages of equity and/or voting interests owned by each named individual or entity.[97] This information informs the Commission of any domestic and foreign persons, governments, or entities that hold 10% or more interest in a space or earth station applicant. Applicants must provide the names, addresses, and citizenship of each individual officer and/or director of the entity with interest in the applicant.[98]

48. We also proposed to codify the current Commission requirement that applicants submit an ownership diagram illustrating the applicant's vertical ownership structure, including all of the listed individuals or entities with 10% or greater direct or indirect equity and/or voting interest, or controlling interest, in the applicant.[99] We adopt this requirement as well. If the application involves an assignment or transfer of control of the existing licensee, the submission must also provide a pre-transaction and post-transaction ownership diagram illustrating the applicant's vertical ownership structure, including the named individuals or entities with 10% or greater direct or indirect equity and/or voting interests, or a controlling interest, in the applicant; the percentages of equity and/or voting interest held by each individual or entity; and the citizenship of each individual or country of organization for each entity.[100]

49. We adopt this proposal and accordingly codify the ownership disclosure requirements in

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[92] *See* Impulse Space Comments at 2. Impulse refers to the "Shared Space Science Bands" as the Earth exploration-satellite service, space research service, space operation service, and inter-satellite service bands co-shared on an equal basis with federal and non-federal users.

[93] *NPRM*, 40 FCC Rcd at 8207, para. 45.

[94] *Id.*

[95] *See* FCC Space Station Licensing Process, Transparency Initiative, Space Bureau, FCC at https://www.fcc.gov/space/space-stations (last visited [date], 2026) (providing instructions, templates, and examples for ownership responses specific to FCC Form 312 – Main Form, Question 40).

[96] *NPRM* at para. 45; Appendix A at § 100.101(a)(2)(vi).

[97] Appendix A at § 100.101(2)(a)(ii).

[98] Appendix A at § 100.101(a)(2)(iii).

[99] *NPRM*, 40 FCC Rcd at 8208, para. 47. No comments were filed in response to this proposal.

[100] Appendix A at § 100.101(a)(2)(iv).

part 100 applicable to both space and earth station applications.[101] This information first allows the Commission to assess whether grant of an application will serve the public interest. Further, it allows the Commission to consider critical determinations of whether an application presents any national security concerns or whether referral to the Executive Branch for review is warranted to assess any national security or law enforcement concerns. The record strongly supports adopting these requirements in part 100, noting that the Commission already requires operators to submit disclosures of ownership information and that codifying these requirements will increase transparency on the licensing requirements while ensuring a standardized approach.[102] Some commenters ask that the Commission adopt rules that allow parties to submit ownership confidentially.[103] The Commission's rules clearly delineate the process and procedures for requesting confidential treatment under section 0.459, which applies to all entities submitting information or materials to the Commission.[104] We refer applicants to the relevant Commission rule sections regarding confidentiality and decline to adopt any overlapping rules in part 100.[105]

50. Consistent with Commission rules and practice, we require applicants and licensees to ensure that the reported ownership information associated with an existing FCC Form 312 – Main Form filings remains updated and accurate. We confirm that licensees with current space station authorizations may use an existing FCC Form 312 – Main Form to satisfy the ownership disclosure requirement for a subsequently filed Schedule O or Schedule F, if, at the time of filing, the ownership percentages as reported remain accurate and in compliance with the ownership information provisions adopted in section 100.101(a)(2).[106] Commenters strongly support allowing applicants whose reported ownership disclosures have been previously reviewed under an FCC Form 312 – Main Form application for license or authorization to incorporate this information in future applications.[107] Commenters also ask for clarity on what changes to the reported information would necessitate an updated ownership disclosures, especially regarding fluctuating or immaterial increases to previously reported percentages.[108] We adopt in section 100.101 that applicants must submit updated ownership disclosures to reflect: (1) a new or previously unreported, disclosable foreign entity or individual in excess of the 10% threshold; (2) a material increase in a reported percentage held by a foreign entity or individual; or (3) a change that the applicant or licensee or Commission may deem as significant to the public interest, convenience, and necessity.[109] Applicants must file updated ownership disclosures in ICFS within 30 days of the applicant or licensee's knowledge of or effective date of the change, whichever is later.[110] We note that, under the

[101] Appendix A at § 100.101(a)(2).

[102] *See* Muon Comments at 14; TechFreedom Comments at 23-24; Lockheed Martin Comments at 6; SES Comments at 6.

[103] *See* Muon Comments at 13-14.

[104] 47 CFR § 0.459.

[105] *Id.*

[106] Appendix A at § 100.101(a)(2).

[107] *See* SpaceX Comments at 18; CCSMA Comments at 5; SES Comments at 6; Blue Origin Comments at 2-3.

[108] *See* Muon Reply Comments at 9; SpaceX Comments at 18-19 (noting that ownership percentages may be subject to frequent, small fluctuations over time and these fluctuations should not undermine the flexibility of the rule); Spire Comments at 6-7; SES Comments at 7 (proposing an exception to the ownership requirement for publicly traded companies whose reportable foreign interests may fluctuate without creating a material change, and only requiring these applicants to report an increase in foreign ownership when a change is material). While we decline to carve out an exception for publicly traded companies, as proposed by SES, we adopt that applicants must report material increases of previously reported foreign ownership percentages.

[109] Appendix A at § 100.101.

[110] *See* Spire Comments at 6 (suggesting that the Commission allow revisions to the ownership disclosures to be made electronically).

section 100.136 targeted review categories adopted in the application processing framework, "foreign ownership" is identified generally as an area that may require further Commission review.[111] Thus, updates to a licensee or authorized operator's ownership information that are incorporated in a new application from a pre-existing Form 312 – Main Form may require Commission review with regard to foreign entities or individuals or other significant changes.

51. The NPRM incorporated the Commission's proceeding on Foreign Adversary Control,[112] which, as adopted on January 30, 2026 in the *Foreign Adversary Control Report and Order*, created a reporting framework of attestation and disclosure requirements based on risk to national security of Foreign Adversary Control.[113] The Commission placed space and earth station authorizations within the scope of the attestation and disclosure requirements of Schedule A.[114] Entities that submit an affirmative attestation are also required to disclose certain information.[115] Further, the *Report and Order* adopted several ongoing attestation requirements.[116] For example, space and earth station operators subject to Schedule A must submit a new Foreign Adversary Control attestation, and if affirmative, additional disclosures, in connection with a new application; an application for assignment, renewal, or modification; within 30 days of any changes to the 5% or greater direct or indirect equity and/or voting interests, or controlling interests, held in the Regulatee; or within 30 days of becoming subject to Foreign Adversary Control.[117] While the rules adopted in this *Order* are specific to space and earth station authorizations, the obligations with respect to ownership reporting are aligned with the Commission's broader requirements applicable to space and earth station operators and further align with the Commission's priorities and responsibilities in ensuring we meet our national security obligations.[118]

52. In the *Foreign Adversary Control Report and Order*, the Commission delegated authority to the Enforcement Bureau the Licensing Bureaus and Offices authority to take enforcement actions against late or nonresponsive filers and investigate incomplete or inaccurate responses, including potential false attestations.[119] Enforcement actions may include issuing citations, imposing monetary penalties, or revoking licenses or authorizations.[120] The Commission also delegated to relevant licensing bureaus and

[111] Appendix A at § 100.136.

[112] *NPRM*, 40 FCC at 8207-08, paras. 46-47. The term "Foreign Adversary Control" refers to the term "owned by, controlled by, or subject to the jurisdiction or direction of a foreign adversary," as defined by the Commission in 47 CFR § 1.70001(g).

[113] *Protecting Our Communications Networks by Promoting Transparency Regarding Foreign Adversary Control*, GN Docket No. 25-166, Report and Order, FCC 26-2, at 2, paras. 1-2 (Jan. 30, 2026) (*Foreign Adversary Control Report and Order*) (categorizing all licenses, authorizations, permits, grants, and other approvals into one of three groups, each subject to different compliance requirements).

[114] *Id.* at 23-24, para. 38 ("To avoid duplicative disclosure requirements, [the Commission] decline[d] to incorporate the Foreign Adversary Control attestation into the current FCC Form 312 in favor of a unified reporting approach for all Regulatees. . . . [Accordingly,] all Regulatees submitting, or who have submitted, FCC Form 312 or otherwise seeking or holding an authorization under Part 25 of the Commission's rules must also submit a Foreign Adversary Control attestation.") *See* 47 CFR § 25.102(a) (stating that "no person shall use or operate apparatus for the transmission of energy or communications or signals by space or earth stations under, and in accordance with, an appropriate authorization granted by the Federal Communications Commission").

[115] *See Foreign Adversary Control Report and Order* at 44-45, para. 68.

[116] *Id.* at 46-48, para. 72 (listing six different scenarios where ongoing attestation requirements apply).

[117] *Id.*; *see also* 47 CFR § 1.80003(1).

[118] *See Foreign Adversary Control Report and Order* at 23-24, para. 38 (determining "that any burdens or overlaps in reporting posed by these attestation and disclosure requirements are minimal and outweighed by the necessity and benefit of disclosure and transparency in protecting U.S. satellite networks from foreign adversaries").

[119] *Id.* at 52-56, paras. 85-96.

[120] *Id.*

offices, including the Space Bureau, authority to make future modifications to which types of entities must submit Foreign Adversary Control attestations and disclosures, and to determine aspects of how the information will be collected.[121] We note that the Commission has reserved its ability to adopt additional information disclosures and enforcement mechanisms that may be necessary in furtherance of national security, and we similarly may incorporate any additional rules or outcomes of those future proceedings into the part 100 rules.[122]

c. GSO Satellite Systems

53. We adopt our proposal to allow multiple geostationary satellites at the same location to be licensed under a single call sign as a "GSO satellite system."[123] Specifically, applicants may apply for a license for a GSO satellite system that is comprised of one satellite or multiple satellites operating at the same orbital location. Commenters largely support this proposal.[124] The part 25 rules typically license a single GSO satellite to operate at a single location on the GSO arc.[125] But companies continue to innovate and technologies change and now we see the value in allowing multiple GSO satellites to operate at a single location on the arc under a single space station call sign. This change in the Commission's licensing regulations will avoid penalizing innovative companies because it will not require separate licenses, application fees, or regulatory fees to operate a single GSO satellite system comprised of multiple GSO satellites when operating at the same orbital location.

54. We do not allow GSO satellites operating at different orbital locations to be combined under a single space station call sign, as some commenters suggest.[126] Some operators have dozens of GSO satellites operating at different locations on the GSO arc. Allowing operators to combine these different satellites under a single call sign would create confusion for the industry and result in increased administrative inefficiency. Further, it would require partial STAs or modifications when the operator wants to change the operating parameters of a single GSO satellite. The adopted definition of "GSO satellite system" maintains the longstanding practice of having a single call sign for a single GSO orbital location, while allowing companies to innovate by operating multiple GSO satellites at that orbital location. We find that this approach better balances the Commission's desire to promote innovation while providing regulatory certainty and clarity.

55. Similarly, we clarify that because the adopted definition of a GSO satellite system includes the restriction that all satellites in that system must operate at the same orbital location, satellite operators cannot simply move satellites within a single GSO satellite system to separate locations on the GSO arc.[127] In the same way that, under the current rules, a single GSO satellite cannot occupy multiple locations on the arc, a single GSO satellite system cannot be spread across multiple orbital locations under part 100. We give operators flexibility to design satellite systems to meet their business needs by expanding the definition of a GSO satellite system, but we do not intend to allow operators to receive a license for a single GSO satellite system of multiple individual satellites and subsequently move those

[121] *See id.* at 19-21, paras. 28-30; (delegating to the relevant Licensing Bureau or Office authority to make future adjustments to the Schedules); *id.* at 48-52, paras. 73-78 (delegating to the relevant Licensing Bureau or Office authority to implement certain aspects of the rules).

[122] *Id.*

[123] *NPRM*, 40 FCC Rcd at 8211, para. 57.

[124] *See e.g.*, CSF Comments at 10; SIA Comments at 3; Astranis Comments a 2-3, 4; LM Comments at 7.

[125] See 47 CFR § 25.103 (defining "Geostationary-orbit (GSO) satellite" as "a geosynchronous satellite whose circular and direct orbit lies in the plane of the Earth's equator and which thus remains fixed relative to the Earth; by extension, a geosynchronous satellite which remains approximately fixed relative to the Earth"). *See also*

[126] *See* SXM Comments at 8-9; SIA Comments at 3.

[127] Letter from Kimberly M. Baum, Head of Regulatory, Astranis Space Technologies Corp., to Marlene H. Dortch, Secretary, FCC, SB Docket No. 25-306, at 2-3 (filed Apr. 30, 2026) (Astranis Apr. 30 *Ex Parte*).

satellites to separate orbital locations. Operators of a GSO satellite system consisting of multiple satellites may take advantage of the same fleet management rules that single GSO satellites use, but those rules apply to the system as a whole. Therefore, any operator of a GSO satellite system consisting of multiple satellites that wishes to move the individual satellites to separate locations on the GSO arc must request authorization to do so from the Commission. We will review such a request at the time given the relevant facts and circumstances, but we expect that it would require a modification of the existing GSO satellite system license to reflect the number of satellites at the orbital location. It may also require a new application for any new orbital slots that the applicant wishes to occupy with one of its GSO satellites.

d. NGSO Satellite Systems

56. We adopt our proposal to define an NGSO satellite system as "a system of one or more non-geostationary orbit satellites operating together as a unit and under the same network control under one call sign and that is not a Variable Trajectory Spacecraft System."[128] Commenters broadly support this definition.[129] Adopting this definition of an NGSO satellite system will also give applicants more freedom in managing their licenses before the Commission. It will allow applicants to apply for multiple NGSO satellite systems under separate call signs or to apply for a single NGSO satellite system under a single call sign. Applicants can also receive a license for an NGSO satellite system and later choose to modify that license by adding or removing satellites or frequencies. This will help fulfill the Commission's goal of creating a more modularized application process.

57. We believe that limiting an NGSO satellite system to satellites "operating together as a unit and under the same network control" is sufficient to prevent gamesmanship.[130] We anticipate that a system of NGSO satellites operating together as a unit could include, but is not necessarily limited to, the following scenarios: all satellites under the call sign operating with the same user terminals or ground station network; satellites communicating with other satellites in the system via intersatellite links; or satellites operating in the same frequencies and in similar altitudes. We believe that these factors will help guide applicants as they manage their satellite constellations and determine whether an application should be filed for a single NGSO satellite system or multiple system applications.[131] We also do not intend for this definition to *require* operators to seek authority as one system for space stations which might meet the definition. We afford operators flexibility to decide how to organize licensing requests, such as separating their space stations into multiple NGSO satellite systems (and, for example, having rules related to milestones, surety bonds, and processing rounds attach to each separately).

58. Lastly, we do not limit an NGSO satellite system to how it might be defined by an applicant's ITU filing.[132] Applicants and licensees often have more than one ITU filing. The ITU filing process and FCC licensing process are distinct and we do not need to define an NGSO satellite system under the FCC's rules based on an ITU filing. Keeping these processes distinct provides further flexibility to satellite operators to define their systems how they choose.

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[128] *NPRM*, 40 FCC Rcd at 8212, para. 59.

[129] *See* Tomorrow Comments at 4; Lockheed Martin Comments at 8; Sateliot Comments at 2 (but also suggests that we limit an NGSO satellite system to be defined in accordance with original ITU filing).

[130] We do not in this proceeding address the issue of regulatory fees. Space station regulatory fees are handled in a separate proceeding and we do not here address how the Commission might assess regulatory fees on an NGSO satellite system under the definition.

[131] We note that milestones, bonds, and processing rounds generally are applied to a call sign. Therefore, while we seek to provide flexibility in how operators organize applications and licenses, operators must consider various tradeoffs created by such decisions.

[132] *See* Sateliot Comments at 2.

e. Variable Trajectory Spacecraft Systems

59. We adopt our proposal to create a pathway for licensing space stations that do not fit neatly into NGSO or GSO satellite systems.[133] Specifically, we adopt a licensing pathway for Variable Trajectory Space Stations, or VTSS, that we define slightly differently than as proposed in the NPRM.[134] Specifically, we define VTSS as, "A system of one or more space stations either operating beyond the geosynchronous orbit or operating without fixed or predictable patterns over the course of its lifetime and operating under one space station call sign. Variable Trajectory Space Station systems may include, but are not limited to, space stations on orbital transfer vehicles, rendezvous and proximity operations platforms, in-space servicing systems, and missions involving transit to, orbiting of, or operations on the moon or other celestial bodies." By creating a VTSS category, we ensure that the types of space stations which can be applied for are mutually exclusive and collectively exhaustive. This will help to avoid uncertainty as to how a proposed system will be categorized or which rules will govern application review and operations. This proposal was largely supported by commenters who recognize the need for the Commission to have a licensing process for current and future radiofrequency technologies that do not fit neatly into part 25.[135]

60. Following the suggestion of commenters, we adopt a definition of VTSS that includes specific examples of types of missions that would fall under the VTSS license category.[136] Based on applications the Commission has already received and authorized, we anticipate license applications for space stations on OTVs, RPO spacecraft, ISAM spacecraft, and lunar spacecraft falling within the VTSS category. We intentionally do not limit the VTSS category because we find it premature to do so. The space industry continues to evolve, and we want part 100 to be adaptable and provide the light-touch regulations necessary for the American space economy to thrive. We therefore want to provide clear guidance to applicants as to whether their space stations fit within the VTSS license category while not artificially limiting the VTSS category, which is why the definition focuses on the variable orbital parameters of a particular satellite system and provides non-exhaustive examples of types of VTSS systems. We also note that novel or emergent space activities are not necessarily VTSS. VTSS operations are defined by variable orbital parameters and, therefore while certain systems may be novel or emergent they may not qualify as VTSS under our rules if their orbital characteristics meet the definition of a GSO or NGSO satellite system.

61. Along with the definition, we adopt specific application requirements for VTSS applications to provide clarity to applicants.[137] We also describe in other parts of this *Order* how other aspects of the Commission's rules that apply to VTSS, including license terms, bonds, and milestones. The action we take today in adopting the VTSS license category will capture applications for space stations that do not fit within the traditional NGSO or GSO satellite systems and provide regulatory certainty and flexibility for applicants.

f. Multi-Orbit Satellite Systems

62. We adopt a definition of Multi-Orbit Satellite System (MOSS) as, "A system of two or more types of satellite systems operating together under one call sign."[138] This allows applicants to

[133] *See NPRM,* 40 FCC Rcd at 8214-8215, para, 65.

[134] *Id. See also* Impulse Space Comments at B-1.

[135] *See e.g.*, Manifest Space Comments at 3; ITIF Comments at 3; NASA Comments at 3; SWF Comments at 1; CSF Comments at 6; AIA Comments at 2; CONFERS Comments at 1; Blue Origin Comments at 9-10; Intuitive Machines Comments at 4; Lockheed Martin Comments at 8-9; TechFreedom Comments at 17; Impulse Space Comments at 10; Karmanplus Comments at 5; AnySignal Reply at 5; iSpace Reply at 1; SpaceX Reply at 4-5.

[136] *See* Impulse Space Comments at 12.

[137] *See supra*, section III.B.1.e discussion of VTSS application requirements.

[138] *See* Appendix A at § 100.4.

submit applications for satellite systems in which there are two or more portions of the system which independently would be a GSO, NGSO, or VTSS. For example, an applicant seeking to operate a satellite system consisting of several hundred satellites operating in LEO and an additional satellite in GEO could apply for a MOSS license. We will only apply this definition prospectively. Therefore, we will only allow new applications for MOSS licenses and will not allow for currently licensed operators to merge existing authorizations (e.g., GSO and NGSO) into a MOSS license. Also, we clarify that any and all rules which apply to the separate satellite systems that comprise a multi-orbit system will apply to those systems within a MOSS license. For instance, if a MOSS included a GSO satellite system and an NGSO satellite system, then each system may have any applicable milestones and surety bonds applied separately. The NGSO system would have to comply with relevant NGSO milestones and bonds and the GSO system would have to comply with the relevant GSO milestones. Likewise, priority for the GSO would be determined by the GSO rules and priority for the NGSO system would be determined by the NGSO rules. The MOSS license is meant to aid applicants in deciding how they want to manage their licenses before the Commission and does not create a means for applicants to avoid Commission rules that would otherwise apply to their NGSO or GSO or VTSS license. Instead, it allows applicants for multi-orbit systems to seek and obtain a single license for that system, if they so wish.

g. General Space Station Application Requirements

63. The NPRM proposed to replace the Schedule S to the FCC Form 312 with two new forms – the Schedule F, for frequency information, and Schedule O, for orbital information.[139] We adopt this proposal. Commenters support implementing these schedules as part of the modularized application structure and agree that the application schedule revisions will create a more straightforward process while reducing administrative burdens.[140] We clarify that each schedule may be amended or modified independently of the other, pursuant to the Commission's rules and to the extent that any changes can be made exclusively to one form. We discuss Schedules O and F and the associated information requirements and certifications in each below.

64. The *NPRM* also proposed to consolidate certain application requirements throughout part 25 and aggregate general application filing provisions into one rule section.[141] As part of this reorganization, we proposed to shift applications to a certification-based approach and to limit reliance on narrative descriptions. By moving from subjective narrative descriptions to certifications with bright-line standards supported by the appropriate technical demonstrations, applicants and Commission staff can more quickly assess whether a proposed system falls within the required operational and technical parameters.[142] We adopt this certification-based approach and require applicants to certify as to whether the proposed system or requested authorization will meet the requirements of the relevant rules. In making this shift, the Commission limits the volume of required narratives by only requiring a comprehensive statement describing the system, a public interest statement, additional information in the case of a negative certification, and justification for waivers. By limiting narratives, we are limiting the administrative burden on applicants. Equally as important, the Commission can efficiently review application materials structured in similar formats rather than parsing lengthy narratives to locate key details of a request.

65. Section 100.110 requires applicants to submit a comprehensive statement describing the satellite systems, including orbits, any service(s) to be provided (including the service areas), and planned operations.[143] We envision the "comprehensive statement" as the portion of the application explaining

[139] *See NPRM*, 40 FCC Rcd at 8210, 8217, paras. 53,72.

[140] *See e.g.*, SpaceX Reply Comments at 12; Capella Comments at 15; Sateliot Comments at 2.

[141] *NPRM*, 40 FCC Rcd at 8208, para. 48.

[142] *See* CTIA Comments at 6.

[143] Appendix A at § 100.110.

the overall system and proposed operations in a clear, digestible format while still providing the information necessary for public review and comment.[144] The comprehensive statement should *not* be redundant of the details provided in Schedules O and F but should make the details on those schedules intelligible to the interested public by describing the system. Thus, we expect the comprehensive statement will complement the other application materials and will be relatively brief compared to lengthy statements currently submitted under part 25. This will be an improvement on the existing space station application rules in section 25.114.[145] The part 25 rules require space station applicants to submit narrative statements that include, in part, an overall description of the satellite system, explaining the system facilities, operations, and services and explaining the uplink and downlink frequency band connections, as well as public interest considerations in support of a grant.[146] The *NPRM* proposed to reduce the amount and scope of information required in narrative format and sought comment on whether the comprehensive statement is a sufficient standard for review, consistent with the modular approach of part 100.[147] We sought comment on these proposals and asked for input on whether, or how, to require or modify requirements for descriptive narrative showings and public interest statements.[148]

66. Additionally, we require applicants to include a brief public interest statement, along with additional information in narrative form if an applicant is unable to certify to any required certifications and any justifications needed to support waiver requests. Applicants still may include additional narrative descriptions to provide sufficient explanations of specific elements of the application as needed. Central to the certification-based approach is the notion that certain portions of an application will need to be more closely reviewed to determine whether they are in the public interest. Instances of a failure to certify or a waiver request are prime examples. In those instances the applicant will be expected to provide additional information to support the request in order for the application to be deemed complete.[149] A number of commenters requested that the Commission permit voluntary narrative submissions or allow narrative descriptions where the standard form certification may not fully convey novel systems or mission profiles.[150] Commenters note that narratives and demonstrations enable interested parties, including commercial and federal spectrum users, to better understand and evaluate proposed applications and identify any associated technical, operational, and policy implications.[151] Commenters request to retain narrative statements but support limitations in favor of more tailored, concise descriptions that still provide the public with a general understanding of the system and the location, service, and planned operations involved.[152] Further, operators argue that certifications should not be permitted in lieu of more detailed showings to resolve questions that require more complex analyses or involve the potential for material or adverse impacts to other operators or to the public.[153] We believe the adopted rules address these concerns while also achieving efficiency gains from certifications. The comprehensive proposal in conjunction with the technical information in Schedules O and F will

[144] *NPRM,* 40 FCC Rcd at 8208-09, para. 49.

[145] 47 CFR § 25.114.

[146] 47 CFR §§ 25.114(d), (d)(1), with the exception of space station applicants filed under the section 25.122 or 25.123 process.

[147] *NPRM*, 40 FCC Rcd at 8208-09, paras. 49-50.

[148] *Id.* at paras. 38, 49-50

[149] *See* Appendix A at § 100.131(b) ("Applicants that are unable to certify to all relevant application certifications must provide the appropriate waiver request(s) and/or additional information and justification in order for the application to be deemed complete…")

[150] Blue Origin Comments at 3.

[151] *See* AST SpaceMobile Comments at 3; AST SpaceMobile March 2026 *Ex Parte*; Viasat Comments at 7.

[152] *See e.g.,* Myriota Comments at 10-11.

[153] Viasat Comments at 6.

provide the Commission and the public with sufficient information about the system. And the certifications must be supported by the requisite supporting technical information. Furthermore, the additional information required in the case of a failure to certify and the requirement to justify waivers further will inform the Commission and the public in situations where a request falls outside the bounds of the rules and certifications.

67. Commenters generally encourage retaining the public interest statement.[154] We continue to require in part 100 that applicants submit a public interest statement in narrative format, however we encourage applicants to keep these statements concise.[155] The modular application process is designed to identify parts of an application where either a public interest presumption cannot be made *ex ante* or where a more focused review of the application is needed.[156] Therefore, in many situations we anticipate the public interest statement can briefly address compliance with the rules which in turn sets a presumption of being in the public interest.[157]

68. Commenters generally support using certifications to identify the bright-line rules that carry a public interest presumption and shifting to a certification-based application process.[158] Some commenters ask for clarification on the intended review process of certifications and verification. CTIA suggests taking a "trust but verify" approach to applications, where Commission staff has the discretion to trust certifications and all stakeholders have sufficient technical information to verify and assess both the demonstrations and corresponding impacts.[159] Verizon cautions that moving toward certifications risks the transparency needed for operators to review and assess a proposed system's parameters and may lead to a rise in unchecked errors in applications.[160] We find that the benefits of a certification-based approach outweigh these concerns. In addition to requiring orbital and technical information on Schedules O and F, which can assist in identifying errors in applications, applicants will certify under threat of compliance and enforcement action which could place authorizations at risk if the certifications are not truthful. Additionally, much of the technical information required under part 25 is still required under part 100.[161] Therefore, certifications will allow the Commission and the public to more quickly identify applications or certain parts of applications that do not fit within the rules or the bright-line public interest criteria and need closer review.

69. As part of the modularization framework, we proposed to not require applicants to submit a waiver request to file exhibits or supplements to an application if technical limitations prevent compliance with the application filing rules, as long as any exhibits or supplements are filed contemporaneously with the associated application.[162] We adopt this rule in recognizing that applicants may need to submit technical information in a manner that the Commission's forms may not be able to accommodate to submit a complete application. Granting flexibility to proceed without a waiver to

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[154] *See e.g.*, Lockheed Comments at 7; Sateliot Comments at 2 (encouraging the FCC to welcome voluntary submission of narrative elements).

[155] Appendix A at § 100.110(a)(5), requiring "a brief description of how the proposed operations would serve the public interest."

[156] *NPRM,* 40 FCC Rcd at 8209, para. 50.

[157] *See* discussion of section 100.136(a) at section III.B.3.a.

[158] *See* Lockheed Comments at 4, 23; Muon Comments at 10;

[159] CTIA Comments at 7-8.

[160] *See* Verizon Comments at 8-9.

[161] For example, the technical information regarding antenna gain contours, EIRP, and power flux density that was required under section 25.114(c) is still required in section 100.112(b). We also note that most of the technical and operational rules from part 25 are not changing substantively but are simply moving to new sections in part 100.

[162] *NPRM* 40 FCC Rcd at 8204, para. 39; Appendix A at § 100.100(f).

submit the relevant information will reduce the burden on applicants and the Commission.

h. Space Station Orbital Requirements; Schedule O

70. The NPRM proposed to create two new schedules to the FCC Form 312. One new schedule, Schedule O, is the designated application form for submitting a system's required orbital information.[163] Commenters broadly support this new schedule under the modular framework.[164] We adopt the proposed Schedule O for submission of orbital information in place of Schedule S for all satellite system applications.[165] Operators must submit required orbital information and certify compliance with the rules and certain bright-line criteria applicable to the specific proposed system.

71. The NPRM proposed shifting a majority of the current space station application requirements under section 25.114 from description-based showings of compliance to affirmative certifications to bright-line criteria accompanied by an orbital debris mitigation plan that supports those certifications, allowing applicants to more easily demonstrate whether a proposed system is in conformance with the applicable requirements.[166] We adopt this approach. In particular, all applicants must certify whether they will operate according to a range of space safety criteria and are required to certify whether the proposed system will comply with the orbital debris mitigation and end of life disposal rules under sections 100.111, 100.260 and 100.261.[167] Additionally, applicants must submit an orbital debris mitigation plan and an end of life disposal plan to support these certifications and information requirements.[168]

72. Specifically, we adopt section 100.111 that contains all of the required space station orbital information that applicants must submit.[169] This is similar to the regulatory text that we proposed in the *NPRM*.[170] We have reorganized the regulatory text from the proposed rule section to clarify that all space station applicants must submit orbital debris mitigation plans and have revised some of the specific requirements for clarity. We discuss these changes and the rules that we adopt in more detail below.

73. *GSO Satellite System Orbital Information*. We adopt the proposed Schedule O for GSO satellite systems on the Schedule O with slight modifications.[171] GSO satellite system applicants must provide the orbital location of the satellite(s), the east-west and north-south station-keeping range, and the accuracy with which the antenna axis attitude will be maintained.[172] We also retain the requirement that GSO satellite system applicants assess whether there are any other satellites located at the requested orbital location and identify measures needed to prevent collisions.[173] They must also certify whether their operations will comply with the two-degree spacing requirements in sections 100.278 and

[163] *NPRM*, 40 FCC Rcd at 8210, para. 53.

[164] *See e.g.*, Lockheed Comments at 7; Capella Comments at 15; DarkSky Comments at 14.

[165] Appendix A at § 100.111.

[166] *NPRM*, 40 FCC Rcd at 8210 -8211, paras. 53-56.

[167] These rules are largely similar to sections 25.114 and 25.283. *See* 47 CFR §§ 25.114, 25.283. We clarify that GSO satellite systems are still required to comply with the orbital debris mitigation rules and disclosures, and any apparent elimination of these requirements was inadvertent. *See* NASA Comments at 3-4.

[168] *See* Appendix A at § 100.111.

[169] *See id.*

[170] *See NPRM*, Appendix A at § 100.111.

[171] *See NPRM*, 40 FCC Rcd at 8211, para. 58.

[172] Appendix A at § 100.111(c)(1).

[173] *See* Appendix A at § 100.111(c)(1); 47 CFR § 25.114(d)(14)(iv)(B). NASA pointed out in their comments that this requirement was inadvertently omitted. NASA Comments at 3-4. We include this requirement in part 100.

100.279.[174] Finally, GSO satellite system applicants must certify that the small object collision risk probability is 0.01 or less, that stored energy will be removed at the end of life for each satellite, and that the satellites will be 1 meter or larger in the smallest dimension.[175] We find that these information and certification requirements will facilitate quick review of GSO satellite system applications. Applicants that affirmatively certify to the requirements will benefit from the presumption of being in the public interest for the parts of the application covered by the certifications. Applicants who fail to certify to the requirements will not benefit from the public interest presumption, but may provide additional information justifying why their systems are in the public interest.

74. *NGSO Satellite System Orbital Information*. We also adopt, with minor modifications, the proposed information requirements for NGSO satellite systems on the Schedule O.[176] NGSO satellite system applicants must provide the following information on the Schedule O: the number of satellites in the proposed constellation; the number of in-orbit spares, if any; the number of orbital planes and inclination and number of satellites per plane; the inclination of the orbital plane(s); the orbital period; apogee; perigee and argument(s) of perigee; the active service arc(s); right ascension of the ascending node(s); and the initial phase angle at the reference time for each satellite in each orbital plane.[177] Applicants must also include the tolerances with which the orbital parameters will be maintained, along with the estimate operational lifetime of each satellite in the constellation.[178]

75. Additionally, NGSO satellite system applicants must respond to certifications regarding various space safety information, including trackability, satellite size, collision risk, casualty risk, and post-mission disposal.[179] These requirements are pulled from part 25, with certain modifications to align with the certification-based approach in part 100.[180] We retain the same required probability metrics for small object collision risk, large object collision risk, and human casualty risk.[181] As the Commission has previously found when it adopted these probabilities, satellite systems meeting these probabilities will enhance space safety, and therefore are presumed to be in the public interest.[182]

76. We adopt section 100.111 with several changes from the regulatory text proposed in the NPRM.[183] We make one small change to the rule that NGSO satellites be de-orbited no later than five years after the end of mission.[184] Specifically, in order to create a rule that applicants are able to certify conformance with, we adopt the requirement that all space stations "will be designed and operated to de-orbit no later than five years after the end of the mission,"[185] rather than a requirement that all space

[174] We note that we no longer require only operations on the U.S. arc to comply with the two-degree spacing rules because we do not adopt our proposal to modify those rules. *See* III.D.2.c.

[175] Appendix A at § 100.111(c)(2)(iii)-(v). These requirements were inadvertently omitted in the *NPRM*. *See* NASA Comments at 3-4.

[176] *See NPRM*, 40 FCC Rcd at 8212-8214, paras. 59-64.

[177] This information is largely the same as the information required in section 25.114(c)(6).

[178] Appendix A at § 100.111(d)(1).

[179] *See* Appendix A at § 100.111(d)(2) for the full list of certifications.

[180] *See* 47 CFR § 25.114(d)(14).

[181] *See* Appendix A at § 100.111(d)(2)(v)-(vii).

[182] *See Mitigation of Orbital Debris in the New Space Age*, IB Docket No. 18-313, Report and Order, 37 FCC Rcd 11818 (adopted Sept. 29, 2022) (*Orbital Debris Report and Order*).

[183] *See NPRM* at Appendix A at § 100.111.

[184] *See* 47 CFR § 25.114(d)(14)(vii)(D)(1).

[185] Appendix A at § 100.111(d)(2)(x).

stations will de-orbit no later than five years after the end of the mission.[186] Commenters noted that it would not be possible to make guarantees about future events that are not entirely in the applicants' control, and we agree.[187] We therefore require applicants to certify that they will design and operate their satellites to comply with the five-year de-orbit rule. We believe this strikes the appropriate balance between encouraging safe and appropriate space operations while not unnecessarily hindering applicant certifications. We also add a bright-line rule for trackability of spacecraft that are operating beyond 2000 km by allowing operators to certify that spacecraft operating beyond 2000 km are one meter or larger in the smallest dimension.[188] This is based on NASA's recommendation that the presumed trackable threshold varies based on altitude.[189] We note that this bright-line criteria for spacecraft operating beyond 2000 km is only a required certification at the application stage and not one of the orbital debris rules. In this case, applicants unable to certify that the spacecraft will be one meter or larger in the smallest dimension will not need to request a waiver of a Commission rule but will need to provide additional information regarding the trackability of the spacecraft.

77. While several commenters recommend that we adopt additional orbital debris certifications, we do not do so at this time.[190] This proceeding is focused on updating the application processing rules rather than adding substantive regulations beyond what was proposed in the *NPRM*. Therefore, these issues are outside the scope of this proceeding.[191] To consider additional orbital debris bright-line criteria, we believe the record should be developed. We also do not adopt requirements related to assessment of optical brightness and visual impact of satellites as requested by certain commenters.[192] However, we encourage applicants to contact the U.S. National Science Foundation (NSF) Electromagnetic Spectrum Management Unit (ESMU) for information regarding optical astronomy.[193] We seek comment on issues related to this in the *FNPRM*.[194] Additionally, we do not adopt a requirement that space station applicants specify the minimum elevation angle and maximum number of

[186] *NPRM*, Appendix A at § 100.111(c)(2)(x).

[187] *See* Amazon Comments at 26-27; Telesat Comments at 2-3. We do not adopt Telesat's suggestion that we modify other certifications related to stored energy and atmospheric disposal. *See* Telesat Comments at 3.

[188] *See* Appendix A at § 100.111(d)(2)(iii).

[189] *See* NASA Comments at 2.

[190] *See, e.g.*, NRAO Comments at 6; AAS Comments at 1; SpaceX Comments at 2-5. NASA recommends including certain presumed acceptable certifications that would apply to all space station applicants, regardless of system type, and offered a comprehensive list of proposed orbital operation certifications. NASA Comments at 2. The Commission appreciates NASA's feedback and the information and criteria adopted herein incorporates a number of NASA's suggestions. For example, pursuant to NASA's recommendation, we adopt a one meter minimum size threshold for a presumption of trackability for spacecraft operating beyond 2000 km. NASA specifically suggests that the Commission consider adopting a presumed acceptable criteria that large constellations should propulsively deorbit while retaining collision risk reduction capabilities until demise or a very low altitude (e.g., 250 km). NASA Comments at 2. Given that neither NASA nor the Commission has established a clear threshold for what qualifies a system as a "large constellation," it would be premature to adopt specific large constellation requirements without having determined the required parameters. *Id.* at 2-3.

[191] *See* NASA Comments at 1-2 (proposing a list of presumed acceptable criteria that the Commission should consider); *see also* Capella Comments at 18 (recommending that the Commission "facilitate guidance from NASA and/or other inhabitable spacecraft operators regarding preferred operational practices").

[192] *See* NRAO Comments at 6; AAS Comments at 1.

[193] The NSF ESMU may be contacted at esm@nsf.gov.

[194] *See infra*, section IV.I.

co-frequency beams serving a point on Earth.[195]

78. We also adopt additional information requirements that NGSO satellite system applicants must provide if applicable to the proposed system.[196] Specifically, we require applicants to submit information regarding collision risk if operating in orbits used by inhabitable spacecraft, regarding the maneuverability of spacecraft and fuel reserved for disposal, and regarding end-of-life disposal for spacecraft terminating operations above 2000 km.[197] These requirements are drawn directly from part 25 and are consolidated in a separate section for NGSO satellite system information requirements so applicants know that they only need to provide the information if it is applicable to their proposed system.[198]

79. *VTSS Orbital Information*. Finally, we adopt, with minor modifications, the proposed rule text in section 100.111(e) related to orbital information for VTSS applicants.[199] Many of the changes to the adopted rule text from the text proposed in the *NPRM* are in response to commenters and seek to give VTSS applicants more flexibility.[200] Specifically, we adopt requirements for VTSS applicants to submit technical information that allows for greater operational flexibility. In the *NPRM*, we proposed to require applicants to submit information on the number of spacecraft for which they seek authority, the range of operational altitudes, and the amount of time the space stations are expected to operate in any particular mission phase.[201] We adopt these technical information requirements, with small changes. We require applicants to provide the total number of spacecraft for which authority is sought and the maximum number of spacecraft operating at any one time, if the number will vary.[202] We also require applicants to provide the "operational envelope," or range of altitudes and inclinations, in which their spacecraft will operate.[203] We specifically include "operational envelope" so that applicants may request authority in the initial application for a broad range of altitudes, inclinations, or orbital regimes. This will reduce the need for applicants to file modifications because the Commission and the interested public will be able to review a broad range of orbital parameters for interference concerns during review of the initial application. Similarly, we require applicants to submit the initial deployment orbital parameters to the extent known at the time of filing and to provide the amount of time expected to be spent in any particular phase of operations expressed as estimated ranges or mission phases.[204] This will allow applicants more flexibility when submitting VTSS applications.

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[195] Verizon Reply Comments at 6. With regard to the minimum elevation angle, we note that section 100.272 sets forth the minimum elevation angle at which earth stations may transmit. *See* Appendix A at § 100.272. Earth station operators, by default, are assumed to be operating at this minimum elevation angle. Therefore, for interference assessment to terrestrial operations, this minimum elevation should also be assumed. Requiring this information in Schedule O is therefore redundant. Regarding the maximum number of co-frequency beams serving a point on Earth, we note that both section 100.212 and Article 21 of the ITU Radio Regulations, which is incorporated by reference into our rules, set forth the power flux density limits at the surface of the earth from space station transmissions in bands shared with terrestrial operations. These limits are adequate to fully protect terrestrial operations from space station transmissions. We find that, since the rules already contain these requirements, there is no need to include this information in Schedule O as well.

[196] Appendix A at § 100.111(d)(3); *NPRM* at para. 64.

[197] Appendix A at § 100.111(d)(3).

[198] *See* 47 CFR § 25.114(d)(14).

[199] *See NPRM*, 40 FCC Rcd at 8214 - 17, paras. 65-72.

[200] *See e.g.*, Impulse Space Comments.

[201] *See NPRM*, 40 FCC Rcd at 8215, para. 67.

[202] Appendix A at § 100.111(e)(1)(i).

[203] Appendix A at § 100.111(e)(1)(ii).

[204] Appendix A at § 100.111(e)(1)(iii)-(iv).

80. We also adopt the proposed certifications for VTSS applications with slight changes.[205] Specifically, we adopt certifications related to the identifiability of each spacecraft, the minimum size of each spacecraft for trackability purposes, collision avoidance steps, rendezvous and proximity operations, and other space safety factors that applicants must provide in instances where this information has not already been certified by another U.S. government agency pursuant to section III.C.8 of this Order.[206] Similar to the trackability bright-line rule for NGSO satellite systems, we also clarify that VTSS spacecraft must be one meter or larger in the smallest dimension if operating above 2000 km to fit within the bright-line safe harbor rule.[207] NASA also suggests that the Commission should require VTSS to certify to the same human casualty risk and passivation requirements as NGSO and GSO operations, if a system is designed to terminate in low earth orbit and/or is planned for disposal via atmospheric reentry.[208] We agree, and therefore adopt certifications related to casualty risk and removal of stored energy at a spacecraft's end of life.[209] We intend to give VTSS applicants certain flexibility to account for unique VTSS mission parameters but we also intend to treat spacecraft operating in the same orbits in the same manner. Therefore, we adopt the same certifications regarding human casualty risk and end-of-life passivation for VTSS as NGSO satellite systems. We also adopt a certification for VTSS applicants that the operator will register with an approved SSA provider at least 30 days prior to launch and maintain current points of contact for collision avoidance coordination.[210] Several commenters recommend we add this certification in addition to the ephemeris data sharing requirements in section 100.201.[211] Due to the variable nature of these satellite systems' orbits, we believe it is of the utmost importance that operators proactively register with an approved SSA provider to begin sharing ephemeris data as soon as possible after launch and commissioning of each satellite, and therefore we add this certification.

81. Finally, we require additional information for VTSS applications, depending on the proposed operations.[212] Similar to the additional information for NGSO satellite systems, we require VTSS applicants whose space stations will transit through orbits used by inhabitable spacecraft to provide a description of strategies used to minimize collision risk, unless such information has already been certified by another U.S. government agency pursuant to section III.C.8 of this Order.[213] We also require applicants whose spacecraft are intended to travel beyond geosynchronous orbit to provide certain information at the time of filing, or if the information is not known at the time of filing, to certify that the information will be provided to the Commission no later than 30 days before the relevant phase of operations, or as soon as practicable.[214] Specifically, unless applicants have already provided this information to another government agency pursuant to section III.C.8 of this Order, applicants must

[205] *See NPRM*, 40 FCC Rcd at 8216, para. 68.

[206] *See* Appendix A at § 100.111(e)(2). We do not adopt section 100.112(d)(3) that we proposed in the NPRM regarding situations where a VTSS applicant might avoid an "exception" to expedited processing in the case of a negative certification. *See* NPRM at para. 71, Appendix A at § 100.111(e)(2). This rule is no longer necessary as we do not adopt the expedited processing framework proposed in the *NPRM*. Under the adopted rules, VTSS applicants who are unable to certify to the bright-line standards adopted by the Commission will not be removed from any "expedited processing" and will be able to provide the appropriate waiver requests or justifications. *See also*, section III.C.8.

[207] Appendix A at § 100.111(e)(2)(ii). *See* NASA Comments at 5.

[208] *See* NASA Comments at 3.

[209] Appendix A at § 100.111(e)(2)(v), (ix).

[210] Appendix A at § 100.111(e)(2)(xii).

[211] Appendix A at § 100.201(c). *See* Impulse Space Comments at B-2; NASA Comments at 2, 8.

[212] Appendix A, § 100.111(e)(4).

[213] Appendix A at § 100.111(e)(4)(i); *see also* section III.C.8.

[214] Appendix A at § 100.111(e)(4)(ii).

provide a description of any instruments or rovers onboard the spacecraft that will communicate with the spacecraft while in transit or on the surface of the moon or other celestial body and must provide a description of coordination with relevant government entities regarding radio astronomy or space research considerations of planned operations.[215] These additional information requirements will largely apply to radiofrequency use during lunar missions and are drawn from the Commission's experience in processing these applications under part 25. We believe that by clearly specifying the information requirements in the rules, we will limit the amount of back-and-forth between Commission staff and applicants.

82. We also adopt our proposal to require all applicants planning to engage in servicing, Rendezvous and Proximity Operations (RPO), or otherwise interact with another spacecraft on-orbit to submit certain additional information. This information includes: a list of FCC file numbers or call signs for applications or grants related to the operations, including for client spacecraft; a list of ITU filings or United Nations registration information, or the expected State of Registry with the U.N. for any related or client spacecraft not licensed by the FCC or without market access; and a statement disclosing the planned proximity operations and addressing any debris generation.[216] In the *NPRM*, we proposed this requirement in the VTSS orbital information section, but we adopt it as part of a broader "Rendezvous and Proximity Operations" rule section that applies to all space station applicants.[217] Because applicants are free to apply for the type of space station authorization that best suits their needs, as long as the proposed operations fit within the definition, we believe it is necessary to apply this information requirement to all space station applicants in the case where an NGSO satellite system or GSO satellite system will engage in RPO.

i. Space Station Frequency Requirements; Schedule F

83. The NPRM proposed to add a new "Schedule F" to the FCC Form 312 – Main Form, as the application component for submitting required frequency information for a space station application.[218] Schedule F will effectively replace the current Schedule S for frequency information, incorporating much of the same required information while further modularizing the application process. Similar to the adopted Schedule O, Schedule F will include certifications of compliance relevant to a space station's proposed service, frequency use, and technical operations. We adopt this proposal, with slight modifications, with broad support from the record.[219]

84. Schedule F will require applicants to identify the requested frequency bands for operation and the services in which the proposed space station(s) will operate.[220] It will also require applicants to submit associated technical information for each space station as well as respond to several certifications. This information is contained in section 100.112.[221] We first describe the required technical information.

85. Applicants for a space station license under section 100.112 are required to submit much

[215] Appendix A at § 100.111(e)(4)(ii)(A)-(B).

[216] *NPRM*, 40 FCC Rcd at 8217, para. 72; Appendix A at § 100.111(f).

[217] Appendix A at § 100.111(f).

[218] *NPRM,* 40 FCC Rcd at 8217, para. 73.

[219] *See e.g.*, NRAO Comments at 10; Lockheed Comments at 9; SES Comments at 12.

[220] Appendix A at § 100.112(a). The *NPRM* originally proposed to only require applicants to identify all services included in the proposed system. *See NPRM*, Appendix A at § 100.112(a). We expand that requirement to clarify that applicants must identify the service in which they intend to operate for each requested frequency band. For example, an applicant requesting authority to communicate in the 19.7-20.2 GHz band must identify either FSS, MSS, or both (or another service if a waiver of the U.S. Table is requested).

[221] Appendix A at § 100.112.

of the same information that is required under part 25.[222] Specifically, applicants must submit information regarding the frequencies in which the space stations will transmit and receive, including a table listing the corresponding uplink and downlink frequencies, any requested bands for which there are federal allocations, maximum EIRP/EIRP density, and antenna gain.[223] Applicants must also provide antenna gain contours, area maps, transmitter and receiver characteristics, and power flux-density.[224] Applicants who do not seek to be processed as part of a processing round must also provide a description of how the requested spectrum can be shared with current and future operators.[225] We also retain section 25.114(c)(4)(vii), with slight modification, as some commenters request.[226] This rule allows GSO satellite system applicants to provide the predicted antenna gain contours for one transmit and receive antenna beam when a geostationary satellite has large numbers of identical fixed spot beams.[227] We agree with commenters that allowing GSO satellite system applicants with large numbers of identical fixed spot beams to provide antenna gain contours for a single transmit and receive antenna beam together with an area map showing all of the transmit and receive beams depicted on the surface of the earth will reduce the application burden on applicants.[228]

86. Additionally, applicants must certify that the requested space station(s) will comply with all applicable Commission technical and operational rules, as well as the ITU's coordination procedures and agreements, and that the space station(s) can be commanded to immediately cease transmissions.[229] As stated in the *NPRM*, we find that converting these obligations into affirmative certifications will help the Commission and interested public to more quickly identify applications that are in compliance with the rules and therefore presumptively in the public interest. [230] Applicants unable to certify to one of the

[222] *See* 47 CFR § 25.114(c)(4).

[223] Appendix A at § 100.112(b)(1)-(4). We note that SpaceX suggests that we remove the requirement for applicants to provide an explanation of how uplink frequency bands would be connected to downlink frequency bands. *See* SpaceX Reply Comments at 12 (noting that the requirement for "applicants to explain how uplink frequency bands connect to downlink frequency bands fails to account for next-generation satellite systems that may bond or pair frequencies differently based on consumer demand, regulatory requirements, or coordination agreements.") *See also NPRM*, Appendix A at § 100.113(b)(2); 47 CFR § 25.114(d)(1). We decline to do so, but modify the rule to require applicants to submit the information in table form which will make it easier for applicants to provide and for staff to review. We also decline to remove the requirement that applicants provide minimum and maximum saturation flux densities or identify bands with federal allocations. *See* SpaceX Reply Comments at 4. SpaceX notes that retaining requirements that "do not reflect next-generation satellite systems" could lead to applicants needing to seek waivers of the Commission's rules. *Id.* This may be the case, and as satellite systems evolve, the Commission will continue to actively review its rules to ensure they reflect the latest satellite technology, as we do in this *Order*. But we also note that applicants need not request a waiver of a rule that does not apply to their proposed system.

[224] Appendix A at § 100.112(b)(5)-(11). We note that in sections 100.112(b)(5) and (6), we clarify that applicants may provide predicted antenna gain contours in a Graphical Interference Management System (GIMS)-readable format or in a pdf file format.

[225] Appendix A at § 100.112(b)(12). *See infra*, section III.B.5.

[226] *See* SES Comments at 12-13; Astranis Comments at 8. Appendix A at § 100.112(b)(6).

[227] 47 CFR § 25.114(c)(4)(vii).

[228] *See* SES Comments at 12-13.

[229] Appendix A at § 100.112(c). We note that CTIA requests that we add a certification that all space stations will comply with and operate in conformance with the U.S. Table. *See* CTIA Comments at 4. We decline to adopt this certification, as it is included in the certification that all space stations will comply with all applicable Commission technical and operational rules. An applicant requesting a waiver of the U.S. Table will not be operating in conformance with all "applicable service and frequency requirements and technical and operational parameters outlined in the Commission's rules." Appendix A at § 100.112(c)(1).

[230] *NPRM,* 40 FCC Rcd at 8218, para. 74.

required statements will need to submit the appropriate waiver request and/or justification for the Commission to review. We also retain certain frequency specific rules and cross-references to other rule parts that contain frequency-specific rules in section 100.112.[231] This way applicants for specific services have one rule section that points them clearly to the other relevant rule sections.

j. Hosted Space Stations

87. We seek to support the spacecraft-as-a-service model by adopting straightforward rules allowing for licensing hosted space stations separately from host space stations.[232] These arrangements can reduce the number of spacecraft that must be launched and lower barriers to entry for space-based services. In the *NPRM*, we asked broadly how the Commission can better accommodate hosted space stations.[233] Few commenters addressed the issue, but those that did generally support improving the process and allowing for separate hosted space station licenses.[234] In section 100.l10(e), we specify the information that hosted space station applicants must provide when seeking a Commission authorization.[235] Under this framework, a U.S.-licensed space station that will be hosted on a U.S.-licensed satellite system may submit an application by filing the Form 312 and Schedule F.[236] They must then incorporate the host's Schedule O by reference. This will allow for a clear licensing path for arrangements where a space station licensed by one entity is physically hosted by another licensed system.[237]

88. The hosted space station applicant must still submit all frequency information required for the type of host space station system, i.e., a GSO satellite system or an NGSO satellite system or VTSS. They must also provide the license or file number, if a license has not yet been issued, for the host space station and the Schedule O that incorporates the information about the hosted space station. This will allow the Commission to confirm that the host's Schedule O includes the information about the hosted space station while not requiring the hosted space station applicant to submit a separate Schedule O. The hosted space station applicant must also provide the information required for the Commission to submit an ITU filing, unless the hosted space station's operations are already covered by the host's ITU filing. The hosted space station licensee is also responsible for operating the space station(s) consistent with all applicable technical and operational rules in part 100.[238] The host space station is responsible for

[231] Appendix A at § 100.112(d).

[232] *See* Spire Comments at 9-10. We intentionally refer only to "hosted space stations" instead of "hosted payloads." The term "hosted payload" can refer to both payloads that use RF, i.e., an antenna, and payloads that do not, i.e., a passive sensor or mass dummy. The review of hosted payloads often falls within the purview of other federal agencies and we do not seek to duplicate that review. Instead, we are concerned with the licensing for space stations that may be hosted on a separately licensed spacecraft.

[233] *See NPRM*, 40 FCC Rcd at 8204, 8249-50, paras. 38, 159, 160.

[234] *See e.g.*, Spire Comments at 10; Blue Origin Comments at 3, 10; Astrolab Comments at 3; Leaf Comments at 17-18, 21; Hawkeye Reply Comments at 2;; CSF Reply Comments at 4.

[235] Appendix A at § 100.110(e).

[236] The "hosted space station" refers to the space station that will be onboard another spacecraft but that will not be in control of that spacecraft. We use the term "host spacecraft" to avoid confusion and to refer to the spacecraft that contains all necessary power, propulsion, and other necessary implements and that is responsible for the physical maneuvering of the spacecraft

[237] This licensing pathway is available in scenarios where the hosted space station will be launched while attached to the host spacecraft as well as when the hosted space station may be attached to a host while on orbit, as some sort of servicing mission. *See e.g.*, Space Logistics, LLC, Application for Authority to Launch and Operate a Mission Extension Pod, ICFS File No. SAT-LOA- 20260106-00007. While we anticipate that the majority of hosted space stations will launch already attached to the host spacecraft, we create rules that are flexible enough to allow for innovative technologies that may not be widely used or exist today.

[238] *See* Appendix A at §§ 100.200-100.305.

complying with the Commission's orbital debris rules and any certifications made in the application process.[239] With this hosted space station framework, we reduce the administrative burden on applicants and allowing companies to make their own business decisions, whether that is by separately licensing a hosted space station onboard a host spacecraft or having a single company seek a license for all radiofrequency operations on the spacecraft.

89. At this time, we only apply this hosted space station application framework to applicants seeking a U.S. license for a hosted space station onboard a U.S.-licensed satellite. We do not at this time allow for applicants for U.S. market access to seek a hosted space station license, nor do we allow a hosted space station license for a space station hosted upon satellites that have only U.S. market access. We seek further comment on these arrangements in the *FNPRM*.[240] There are additional issues that arise when licensing U.S. hosted space stations onboard non-U.S.-licensed spacecraft, or vice versa, that are not present when licensing U.S. hosted space stations onboard U.S.-licensed spacecraft. We do not have a record developed on these concerns and therefore limit our rules accordingly.

90. We expect that these rules will provide satellite operators with additional flexibility while maintaining appropriate oversight of radiofrequency operations. Under these arrangements, the hosted space station licensee is responsible for complying with all sharing and coordination requirements in the Commission's rules even though they will not be in physical control of the spacecraft. This may require operations at lower power levels or ceasing operations entirely because the host spacecraft cannot be moved to prevent interference from occurring. Additionally, the hosted space station licensee assumes all obligations under our rules and is subject to any enforcement action or other compliance measures as a result of operations under the license that cause harmful interference.

91. Hosted space station licensees may file modifications to authorizations in the same manner as regular space station licensees and those requests will be processed consistently with the Commission's modification rules.[241] For U.S. licensees that seek authority to add a hosted space station, we adopt a new rule to allow the U.S. host to submit a notification to the Commission of the addition of a hosted space station prior to making the change.[242] This means that a U.S.-licensed space station operator may notify the Commission either prior to launch of the spacecraft, if the hosted space station is launched onboard the spacecraft, or prior to integration of the hosted space station on orbit, if the hosted space station will be attached to the host once on orbit. If the hosted space station does not change the orbital debris mitigation information (or is accounted for in the information already provided to the Commission) or any of the other operating parameters of the U.S.-licensed host, then the U.S.-licensed host must submit a notification of the change to the Commission at least 30 days prior to the modification.[243] That notification must include information identifying the hosted space station operator and a certification that there will be no change to the host's orbital debris mitigation information or the authorized operating parameters.[244] If the addition of a hosted space station will result in a change to the host's operating parameters or orbital debris information, the host must submit a modification that will be considered as a major modification.

k. Requirements of Supplemental Coverage from Space Applications

92. We adopt our proposal to remove the part 25 requirement for equipment authorizations

[239] *See* Appendix A at §§ 100.111, 100.260, 100.261.

[240] *See infra*, section IV.E.

[241] *See* Appendix A at § 100.142.

[242] *See* Appendix A at § 100.142(d)(2)(i). *See also* Blue Origin Comments at 10 (recommending that Commission adopt licensing framework that allows VTSS operators to add hosted payloads through notification).

[243] *See* Appendix A at § 100.142(d)(2)(i).

[244] *Id.*

for supplemental coverage from space (SCS) earth stations in part 100.[245] As stated in the *NPRM*, we believe that these rules are redundant and unnecessarily constrict the growth of SCS. No commenter opposed this proposal and many agreed.[246] Some commenters request that the Commission apply the same treatment of SCS devices to mobile satellite service (MSS) mobile earth station handset devices, and we agree.[247] Accordingly, we extend the SCS licenses by rule framework to MSS handset portable devices, terrestrial mobile handset devices acting as earth stations, and hybrid terrestrial/earth station handset devices in certain circumstances.[248]

93. Commenters universally support our proposal to remove the equipment authorization requirements, but some commenters also ask that the Commission apply aspects of our SCS rule framework to MSS handset devices.[249] Although commenters suggest only applying the equipment authorization framework to MSS handset devices, we believe that the SCS license by rule framework should be expanded as well. In addition, we extend the framework to *any* device that is authorized under at least one of either part 22, part 24, or part 27.[250] To be clear, this does not mean exclusively under one of the enumerated rule parts, but it must be authorized under at least one of them and have gone through the OET equipment authorization process to ensure compliance for all rule parts it seeks to operate under.

94. For the same reasons that we choose to license SCS devices by rule, we apply that reasoning here for terrestrial devices that seek to operate as earth stations.[251] In the *SCS Order*, the Commission noted that, in many cases, terrestrial operators are unaware of the types of mobile device used on their networks thus making licensing them an impracticality in addition to a burden on both applicants and the Commission on processing such a large volume of applications that can be ever changing.[252] In addition, we recognize that the licensing of these devices as an earth station would be redundant to the already licensed parameters because the Commission would be issuing two licenses for the same technical parameters.[253] Instead, we adopt a license by rule approach similar to that of SCS with some notable differences.[254] Specifically, because the devices will be authorized under one of the

[245] Appendix A at §§ 100.113, 100.120; *see also NPRM,* 40 FCC Rcd at 8218-19, para. 77; 47 CFR § 25.125(c).

[246] *See* Iridium Comments at 16-17; Amazon Leo Comments at 32; CTIA Comments at 20-21; AST Reply Comments at 2; CSF Reply Comments at 6; Iridium Reply Comments at 12-13.

[247] *See* Iridium Comments at 16; *see also* Iridium Reply Comments at 12-13; Letter from Joseph A. Godles, Attorney, Iridium Communications Inc., to Marlene H. Dortch, Secretary, FCC, SB Docket 25-306 (filed Apr. 23, 2026) (*Iridium Ex Parte*).

[248] *See* Appendix A at § 100.120(c).

[249] *See* Iridium Comments at 16; CSF Reply Comments at 6; Iridium Reply Comments at 12-13.

[250] Note, we are not at this time removing the SCS framework from the Commission's rules. The SCS framework will still apply to licenses that seek to utilize frequencies that require spectrum leases before the spectrum can be shared. The rules adopted are meant to cover all other devices.

[251] *See In the Matter of Single Network Future: Supplemental Coverage from Space, et. al,* Report and Order and Further Notice of Proposed Rulemaking, GN Docket No. 23-65, IB Docket No. 22-271, 39 FCC Rcd 2622 (2024) (*SCS Order*). *See also* Appendix A at § 100.120(d)(7). Whereas devices authorized as SCS devices require a leasing arrangement with a terrestrial licensee, we envision that the devices addressed in this *Order* differ in that leasing arrangements are not required.

[252] *See SCS Order*, 39 FCC Rcd at 2659, para 87.

[253] For instance, the device would receive a license for Part 100 and a license under either part 22, 24, or 27 of the Commission's rules with no difference in operations.

[254] *See* Appendix A at § 100.120(d)(7). In addition, because we delete proposed section 100.270 as it pertains to radiofrequency exposure requirements, we move what was proposed section 100.270(b) to section 100.282(f). *See* Appendix A at § 100.282(f). *See also infra* section III.D.6 ("We therefore adopt our proposal and remove previously proposed section 100.270 'Radiofrequency Exposure Requirements' from part 100, and revise part 100 to instead reference the general part 1 rules").

enumerated rule sections and would have to go through equipment certification for *all* services they seek to utilize there is no need for a separate earth station license because the device will already have shown it complies with the Commission's rules. In addition, whereas SCS devices require a leasing arrangement, the rules we adopt applies to frequencies that do not require a lease arrangement. Accordingly, we revise the definition of "SCS earth station" to make clear that SCS earth stations are are subject to leasing arrangements, whereas other handsets or devices use frequencies that are not subject to such arrangements.[255]

95. Further, we extend this license by rule framework to MSS portable devices.[256] We recognize that MSS handset portable devices have to go through the equipment certification process.[257] However, currently the process for MSS handset portable devices only checks to ensure that the devices meet radiation hazard and safety requirements and does not ensure compliance with part 100 operating requirements. Therefore, to effectuate the extension of the license by rule framework to MSS handset portable devices, we revise the rules to make clear that the equipment certification process for such devices also must ensure that the devices are operated within the parameters of the part 100 rules.[258] Further, we take this opportunity to make clear that MSS handset portable devices, operating in certain bands, and all terrestrial mobile personal handsets have certain restrictions as it pertains to operations aboard civilian aircraft.[259] Nothing that we adopt in this *Order* is meant to undermine these restrictions. In addition, we will not permit this license by rule approach for MSS handset portable devices that seek a waiver of the part 100 operating requirements or of any radiation hazard requirements since the equipment certification process is intended to show conformance with the rules. In those cases, an earth station license application will be required to assess the case specific considerations that may exist before a grant can be issued.

l. U.S. Market Access

96. The NPRM asked questions regarding U.S. market access, including some aimed at determining whether there is a level playing field for U.S. and non-U.S. operators.[260] Commenters generally state that at this time the state of international satellite markets and associated regulatory frameworks are evolving rapidly and as such it would be premature for the Commission to make changes.[261] We also note that the Space Bureau and the Office of International Affairs recently identified and sought comment on instances in which competitive restrictions imposed by other nations are potentially limiting U.S.-licensed operators' access to foreign markets.[262] In this *Reciprocity Public Notice,* the Commission asked a series of questions regarding the competitive landscape for satellite competition since the establishment of rules more than 25 years ago.[263] In response, commenters raised concerns about the state of fair competition and the regulatory barriers to U.S. market access in the World

[255] *See* Appendix A at § 100.3 (defining SCS earth station as "Any earth station used for the provision of supplemental coverage from space that requires a spectrum leasing arrangement.").

[256] *See* Iridium Comments at 16; CSF Reply Comments at 6; Iridium Reply Comments at 12-13.

[257] To be clear, we limit this license by rule approach to MSS handset portable devices as defined in section 2.1093(b) of the Commission's rules because these devices are subject to the equipment certification process.

[258] *See* Appendix A at § 100.282(f)(1)-(3).

[259] *See* Appendix A at § 100.282(e); 47 CFR § 22.925.

[260] *NPRM*, 40 FCC Rcd at 8221, para. 83.

[261] *See*, *e.g.*, Eutelsat Comments at 11-12; SIA Comments at 7; SES Comments at 7-8. *But see*, TechFreedom Comments at 21-22.

[262] *See Reciprocity Public Notice.*

[263] *Id.*

Trade Organization (WTO) and non-WTO countries.[264] While we do not in this *Order* act on the broader fair market access questions raised in the *NPRM* or the *Reciprocity Public Notice*, we continue to evaluate the record on reciprocal treatment in this proceeding and in the *Reciprocity Public Notice* and intend to address these issues comprehensively at a later time. Below we clarify rule language and address other proposals related to market access.

97. We make several adjustments to the rule language proposed in the *NPRM.*[265] Specifically, consistent with Commission precedent established in *DISCO II Order*, we make clear the Effective Competitive Opportunities - Satellite (ECO-Sat) test[266] will continue to apply to non-U.S.–licensed space stations that are licensed by countries that are not Members of the World Trade Organization (WTO) or that seek to provide services not covered under the WTO Basic Telecommunications Agreement (BTA).[267] The Commission did not intend to propose modifications to the substance of the existing rule regarding the application of the ECO-Sat test to petitions for declaratory ruling seeking U.S. market access by all non-U.S.–licensed space stations, despite inadvertent changes to the language in the proposed rules.[268] The Commission has previously concluded that, where a non-U.S.

[264] *See* AnySignal Comments at 1-2, GN Docket No. 26-48 ("As an example, specific restrictions in the Canadian market access regime significantly burden the deployment of U.S. earth station infrastructure there….If a U.S. satellite operator wants to erect an earth station in Canada to support their mission, they must obtain multiple sequential approvals, each of which stacks its own lengthy approval period."); AST Comments at 3, GN Docket No. 46-48 ("The EU recently proposed adopting the draft DNA, which could erect barriers to market access by U.S.-licensed satellite systems in at least two ways: (1) imposing foreign ownership limits, and (2) establishing licensing criteria biased in favor of EU applicants, such as a preference for applicants who rely heavily on EU supply chains for manufacture of their satellites. Both of those restrictions could be read as violations of the commitments made by EU member-states under the WTO BTA."); ICLE Comments at 3, GN Docket No. 26-48 ("The rapid expansion of non-geostationary orbit (NGSO) constellations, the rise of technological sovereignty policies—particularly in the European Union—and the persistence of nontariff barriers in major markets such as India and Brazil have weakened the effectiveness of a reciprocity-based open-access model."); SpaceX Comments at 5 ("Some commenters suggest that governments have a legitimate interest in adopting policies that may, in practice, impact entry by U.S. operators. It should come as no surprise that the very same parties advocate for market access policies that restrict their U.S.-based competitors").

[265] *NPRM*, Appendix A at § 100.114.

[266] *Amendment of the Commission's Regulatory Policies to Allow Non-U.S. Licensed Space Stations to Provide Domestic and International Service in the United States*, IB Docket No. 96-111, Report and Order, 12 FCC Rcd 24094 (1997); Amendment of the Commission's Regulatory Policies to Allow Non-U.S.-Licensed Space Stations to Provide Domestic and International Satellite Service in the United States, Report and Order, 12 FCC Rcd 24094 (1997) (*DISCO II Order*), on reconsideration, First Order on Reconsideration, 15 FCC Rcd 7207 (1999), on further reconsideration, Second Order on Reconsideration, 16 FCC Rcd 19794 (2001) at 24099-24100, paras. 12-13; 47 CFR § 25.137(a)(2),establishing the ECO-SAT test (implementing for satellite services the market opening commitments made by the United States in the WTO Agreement on Basic Telecommunication Services by establishing the framework for non-U.S.-licensed satellites to access the U.S. market and adopting a public interest analysis including considerations of competition, spectrum availability, legal and regulatory compliance, and other public interest factors). The *ECO-SAT* test, requires market access requests from space stations licensees from non-WTO Members or for non-BTA covered services seeking access to the U.S. market to demonstrate that U.S.-licensed satellite systems have effective competitive opportunities to provide analogous services in the country in which the non-U.S. licensed space station is licensed and in all countries in which communications with the U.S. earth station will originate or terminate. The market opening commitments include FSS but specifically exclude Direct-to-Home (DTH) service, Direct Broadcast Satellite Service (DBS), and Digital Audio Radio Service (DARS). *DISCO II Order*, 12 FCC Rcd at 24099.

[267] Basic Telecommunications Agreement, Fourth Protocol to the General Agreement on Trade in Services (GATS), Apr. 30, 1996, 36 I.L.M. 354 (1997).

[268] *See* SES Comments at 14-15 ("The Commission should revise the draft rule on market access in Section 100.114(b) to properly reflect and articulate the rule arising from the DISCO II precedent. As far as SES can tell, the Commission is not proposing to change the existing rule. However, in the *NPRM*, both the narrative and the (continued….)

satellite is licensed by a WTO Member and the service to be provided is a WTO-covered satellite service, foreign entry is presumed to promote competition in the United States, subject to rebuttal.[269] This presumption remains the Commission's policy but can be overcome by a showing to the contrary by opposing parties, facts in the record or a grant of authority can be denied or conditions attached where necessary to constrain the potential for anticompetitive harm and to ensure the public interest is served.[270] To ensure that the final rules accurately reflect this policy, we revise section 100.114 accordingly.[271]

98. We adopt the part of our proposal to prohibit market access via earth stations, and instead require market access petitions for declaratory ruling via the satellite, with a modification.[272] Allowing market access via earth stations imposes unnecessary burdens on the Commission which must review multiple earth station applications rather than a single market access application for a non-U.S. licensed satellite.[273] We also decline to allow for a limited exemption for market access for certain types of communications, such as TT&C or remote sensing data downlinks, as suggested by some commenters.[274] Interference and coordination issues must be examined for TT&C, remote sensing, and communications with feeder links just like for other spectrum uses and review of these issues should not be circumvented indefinitely through such exemptions.[275] Suggestions that we form a new streamlined authorization for Ground-Station-as-a-Service (GSaaS) operators, or others with limited operation in the U.S., based on reciprocal treatment for U.S. operators in other jurisdictions warrants further examination and thus we have raised these issues in the *FNPRM*.[276] However, we do not wish to unnecessarily burden non-U.S.-licensed space stations without market access authorization for short term communications. Thus, earth station operators may file a request for Special Temporary Authority (STA) for communications with non-U.S.-licensed space stations in circumstances of limited duration including launch and early orbit phase operations (LEOP), in-orbit testing, orbit changes, or relocations. Since the STA will be time limited, and all operations must be on an unprotected, non-interference basis, the interference risk is mitigated and therefore we will allow the space station operation to proceed without the need for a full market access authorization. Similarly, we do not at this time establish a "carve-out" by rule for communications with earth stations in motion (ESIMs) or earth stations aboard aircraft

(Continued from previous page)
proposed rule language do not currently reflect that the [ECO-Sat test] is only required for non-U.S.-licensed space stations that are licensed by non-[WTO] Member countries or that are offering non-WTO-covered services"). *See DISCO II Order* at 24099-100, paras. 12-13; 47 CFR § 25.137(a)(2).

[269] *DISCO II Order*, 12 FCC Rcd at 24098, para. 7.

[270] *Id.*

[271] *See* Appendix A at § 100.114.

[272] *See NPRM,* 40 FCC Rcd at 8219, para. 79.

[273] *See* Eutelsat Comments at 9-10; SES Comments at 16-17.

[274] *See*, *e.g.*, CSSMA Comments at 1-4 (proposing a new streamlined process for TT&C only and/or remote sensing data downlink); SES Comments at 4 (define "market access" to exclude TT&C or LEOP services); Plan-S Comments (U.S. market access should exclude gateway or feeder link earth stations for the sole purpose of backhauling global traffic); AV Reply Comments at 5 (market access for "payload data"); ICEYE Comments at 4 (operators of receive-only space stations). *See infra* para. 283 (no market access requirement for receive only earth station if no interference protection sought and communication is with satellite with U.S. license or market access).

[275] Indeed, certain commenters supporting an expedited mechanism for foreign-licensed space stations to communicate with U.S. earth stations admit technical issues must be addressed to establish such a mechanism. *See* SIA Reply Comments at 4 ("The Commission would also need to address what protection from harmful interference and other spectrum rights would be provided to stations that have not pursued the full market access process."); Astranis Reply Comments at 18 (clarify what protections from harmful interference these satellites will receive in the authorized frequency band and whether they will be entered on the Approved Satellite Station List).

[276] *See* CSMMA Reply Comments at 12 (such distinction and streamlined application process could be based on bilateral reciprocity mechanisms and WTO membership).

(ESAAs), though we will continue our current practice of entertaining waivers of certain rules when justified for communications with U.S.-licensed aircraft in foreign airspace.[277]

99. For those satellites that have received market access via grant of an earth station license, we delegate to the Space Bureau the authority to issue a public notice announcing procedures by which space station operators must seek a space station authorization or grant of market access. This public notice must include the establishment of procedures, a grace period for continued operations, and a timeline for applying for these space station market access authorizations. We believe establishing a clear pathway for conversion of multiple earth station market access authorizations into a unified space station authorization will allow for continuity of service to U.S. customers and provide a predictable regulatory environment going forward. Delegating authority to the Space Bureau to implement this process will allow for targeted consideration of all necessary details to avoid any unnecessary burden on satellite operators already providing service to the United States.[278]

100. We also adopt a policy requiring that any operator seeking to have a spacecraft registered by the United States pursuant to the Registration Convention must obtain an FCC space station license, rather than a grant of market access.[279] The United Nations (U.N.) Register of Objects Launched into Outer Space serves as the mechanism through which member States provide information on their space objects.[280] The Commission exercises oversight of some U.S.-registered space objects through its space station licensing framework.[281] Therefore, we find that linking the licensing requirement specifically to U.S. registration of the space object appropriately balances regulatory oversight while providing operators flexibility to pursue licensing and registration in other countries.[282] Thus, applied prospectively, we require space station operators who seek to have the United States register their satellite(s) with the U.N. to apply for and obtain an FCC space station license, rather than a grant of market access. Under this approach, U.S. operators are free to pursue licensing in other jurisdictions.

101. Lastly, we decline to adopt a broader requirement that all U.S.-incorporated companies obtain an FCC space station license rather than market access.[283] The record does not demonstrate that such a requirement is necessary, and we are concerned that tying the FCC authorization mechanism to

[277] SES Comments at 16 (stating that the Commission has generally waived the full market access requirements for ESIMS/ESAA operations).

[278] *See* Eutelsat Comments at 10.

[279] *NPRM*, 40 FCC Rcd at 8220-21, paras. 81-82.

[280] Under the Registration Convention, States register space objects in a registry maintained by each State to provide information regarding each space object to the U.N., Convention on Registration of Objects Launched into Outer Space, adopted Sep. 15, 1976, 28 U.S.T. 695, 1023 U.N.T.S. 15 (Registration Convention). The United Nations maintains an online index of objects launched into outer space available at https://www.unoosa.org/oosa/osoindex/index.jspx.

[281] The FCC has jurisdiction over those space objects which require "station licenses." Station licenses are defined as "an instrument of authorization required by this chapter or the rules and regulations of the Commission made pursuant to this chapter, for the use or operation of apparatus for transmission of energy, or communications, or signals by radio . . . ." 47 U.S.C. § 153(49). *See also* 47 CFR § 25.102(a) ("No person shall use or operate apparatus for the transmission of energy or communications or signals by space or earth stations except under, and in accordance with, an appropriate authorization granted by the Federal Communications Commission."). We include this rule in section 100.2. Appendix A at § 100.2.

[282] *See* Howard and Stilwell Comments at 4 ("Requiring satellites entered on the U.S. registry also to hold FCC authorization may clarify the extent of U.S. authorization and supervision, reducing ambiguity under international space law.").

[283] *See* TechFreedom Comments at 23 ("Entities which are incorporated in the United States, at any level of their legal structure, should not be eligible to apply for market access, even if they have received a spectrum license from a different country.").

corporate domicile could create incentives for companies to adjust their corporate structures to game the rules. We believe that most U.S.-based companies will choose to pursue registration and licensing in the United States, because the changes we make to our rules today, along with other pro-innovation policies, will reduce uncertainty and allow them to focus on advancing their missions. Those operators will remain subject to the comprehensive review and continuing supervision that accompany an FCC space station license.

m. Small Satellite Systems

102. As proposed, we eliminate the streamlined small satellite and small spacecraft authorization processes in sections 25.122 and 25.123.[284] These processes are no longer needed with the overall streamlining of space station licenses that will be effectuated by these final rules. Authorizations granted under these processes were considered outside of the processing round framework and licensees were provided an extra year to post the required surety bond, providing these operators with a more streamlined path to authorization and more flexibility in meeting the financial obligations.[285] Under part 100, only those NGSO satellite systems that request authority to operate in processing round-eligible frequency bands and voluntarily request to be considered in a processing round are required to post a surety bond.[286] Furthermore, our reforms will allow applications that are currently eligible for small satellite or small spacecraft processing under part 25 to receive essentially the same or similar benefits and faster processing under the part 100 rules, and are given additional flexibility to determine whether the benefits of a priority status associated with inclusion in a processing round align with the applicant's operational interests. Specifically, NGSO satellite systems that are capable of sharing spectrum and do not materially constrain other operations in the requested frequency bands[287] will be processed quickly outside of a processing round and will not have to post a bond.[288] Indeed, an expanded class of applications will receive these benefits.[289] For example, there are no longer mass limitations or limitations on the number of satellites that may be included in a single license.[290] Since we eliminate the small satellite and small spacecraft rules, we do not consider proposals to modify them, as some commenters have suggested.[291]

n. Earth Station Licensing Application Requirements

103. We adopt our proposal to shift the application requirements for earth stations to a primarily certification-based approach, with several adjustments based on the record.[292] Applicants will

[284] *See* 47 CFR §§ 25.122; 25.123; *NPRM*, 40 FCC Rcd at 8221 – 8222, paras. 84-86.

[285] *See* 47 CFR §§ 25.157(i), 25.165(a).

[286] *See* Appendix A at § 100.140.

[287] As was required under the small satellite and small spacecraft rules. *See* 47 CFR § 25.122(d)(3). We retain this requirement in section 100.200(c). Appendix A at § 100.200(c).

[288] *See infra* Section III.B.5 and III.C4.

[289] Spire Comments at 10. Spire notes that the restrictions in the small satellite and small space station rules have limited the benefits of this licensing regime as the design of small space stations has changed. ("Changes in launch availability and solar cycles have forced several licensees to design very short mission profiles in order to comply with the restrictive six-year license and with no replacement right."). *Id.* Spire also notes the benefits of a smaller regulatory fee for small space stations but admits that consideration of regulatory fees is beyond the scope of this proceeding, as stated in the *NPRM*. *Id.*, *see also* Intuitive Machines Comments at 10.

[290] The mass limitation for the processing under the small satellite regulations was 180 kg per satellite and for 500 kg for small spacecraft. *See* 47 CFR § 25.122(c)(12) and § 25.123(b)(10). Additionally, the small satellite process only allowed for a license for up to 10 space stations. *See* 47 CFR § 25.122(b).

[291] Kepler Comments at 4; Kepler Reply Comments at 6.

[292] *NPRM,* 40 FCC Rcd at 8222-8223, para. 88.

certify whether they meet the Commission's rules rather than demonstrate compliance in the application itself.[293] Applicants will continue to provide supporting technical materials as necessary, including, in certain cases, coordination reports. Further, we establish a Nationwide, Non-Site license which is discussed in depth below, and definitions to clearly distinguish the Nationwide, Non-Site license from blanket licenses.[294] In addition, we make clear that all applications will be filed on Main Form 312—if one is not on file already—and include a Schedule B as appropriate unless registering a site pursuant to a Nationwide, Non-Site license.[295] The record contains many comments related to the decisions we make, and we address them below.

104. Regarding coordination specifically, we are persuaded by commenters who note that there are instances where an earth station operator does not coordinate with them and they rely upon the information that is in the public application to be able to run their own analysis.[296] Therefore, applicants—other than those seeking a Nationwide, Non-Site license in shared bands—must submit a coordination report that meets the requirements for earth station coordination as discussed.[297]

105. The record indicated confusion between "blanket license" and "Nationwide, Non-Site license."[298] Accordingly, we clarify that a blanket license is distinct from a Nationwide, Non-site license.[299] A blanket license may be used for all types of earth stations that do not meet the definition of an Immovable earth station. A key distinction between a blanket license and a Nationwide, Non-Site license is that a Nationwide, Non-Site license confers no operational authority until a site is registered pursuant to the license. A blanket license provides operational authority for the earth station types covered by the license once the license is issued. In addition, as discussed *infra*, the only class of earth station that can be registered pursuant to a Nationwide, Non-Site license will be Immovable earth stations. Accordingly, we revise the definitions of Immovable earth station and blanket license to better reflect this distinction.[300]

106. Further, we recognize that the proposed rules did not clearly demonstrate that an earth station applicant can apply for a license without the identified point of communication in the

[293] To paraphrase George Strait, in some cases it'll be as easy checking yes or no. (*see* "Check Yes or No", Danny Wells and Dana Hunt Black, Performed by George Strait (1995)). *See also* § 100.120.

[294] See Appendix A at § 100.3. *See also* section III.B.1.o; section III.A at para. 7.

[295] One commenter asked that we ensure that foreign operators from non-adversarial nations be permitted to take advantage of the Earth Station licensing process and certifications. *See* Myriota Comments at 13-14. We make clear that the country of origin of the applicant has no impact on the process by which the applicant applies and the application is reviewed, so long as they are from a non-adversarial country and meet the requirements to apply for and hold a license, including those related to ownership.

[296] *See* SES Comments at n. 142; American Astronomical Society Comments at 2; National Radio Astronomy Observatory Comments at 5; American Astronomical Society Reply Comments at 2; CTIA Reply Comments at 8; NWA et. al. April 10 *Ex Parte* at 4.

[297] *See* Sirius XM Comments at 7; Commercial Smallsat Spectrum Management Association Comments at 7-8; Iridium Comments at 10; Lockheed Martin Comments at 9; CTIA Comments at 19; CTIA Reply Comments at 8; IEEE ex parte at 4-5; National Weather Association et. al. *ex parte* at 4. As discussed in section III.B.o, sites registered pursuant to a Nationwide, Non-Site license must still meet all coordination requirements outlined in the rules including, if necessary, providing a coordination report.

[298] *See generally* Verizon Comments; CTIA Comments; SpaceX Comments; Amazon Leo Comments; SES Comments.

[299] *See* Appendix A at § 100.3.

[300] *See* Appendix A at § 100.3. In addition, as discussed further *infra* we agree with commenters suggestion to create a definition for Nationwide, Non-site license to provide further clarity and distinction between blanket license and Nationwide, Non-Site license. *See* CTIA Comments at 10.

application.[301] This was a mechanism that the Commission recently adopted as part of its streamlining efforts and we do not wish to unintentionally undermine that new regime which is vital for the GSaaS industry to thrive.[302] Accordingly, we adopt section 100.120 to include language such that the identified point of communication must be provided if known, but does not require it be provided if not known at the time of submitting an application for an earth station.[303]

107. We are not persuaded by concerns raised by some commenters that the certification approach we adopt shifts the responsibility to interested parties to identify issues and raise them.[304] We do not believe that the Commission should be preemptively determining that an application, that meets all the requirements of the rules, will cause harmful interference to another licensee. However, we do agree with commenters that an application (other than for a Nationwide, Non-Site license) that does not certify that it has completed coordination with other commercial entities should be considered incomplete and ineligible for grant.[305] This approach aligns with the goals of this proceeding to shift to a "default to yes" framework for applications that certify to meeting the requirements of our rules and are therefore within the public interest.

108. We see no issue with having both "Fixed Earth Station" and "Immovable earth station" in our rules.[306] VSATs, user terminals, and blanket licensed earth stations—all services that rely on fixed satellite service but cannot be licensed as Immovable earth stations—can all still be considered Fixed earth stations under our rules because they operate in the fixed satellite service and may be intended to operate at a fixed location. Therefore, we are not persuaded that we should remove the definition of Fixed earth station. Instead, as previously mentioned, we modify the definition of Immovable earth station to make clear that it does not apply to VSATs, User Terminals, ESIMs, SCS Devices, or Mobile Earth Terminals.[307]

109. Some commenters argue that earth stations should not be subject to federal coordination when similar coordination has already occurred for the associated satellite.[308] We decline to adopt this proposal from commenters. As discussed in the section on Federal Coordination and Conditional Grants, both earth stations and space stations must continue to complete federal coordination. The changes we adopt simply allow the two processes to proceed independently.[309] In addition, we decline to adopt a proposal from commenters that we not require earth station operators to file waivers if they are only needed to align with a U.S.-licensed space station.[310] We decline to adopt this proposal because waivers are reviewed on a case-by-case basis and the review of a waiver request for a space station has different considerations than the review of a waiver request for an earth station.

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[301] *See* Blue Origin Comments at 17 (requesting that the Commission allow licensing of earth stations ahead of space stations). In addition, we address conditional grants in shared bands, as raised by AWS, in the appropriate conditional grant section of this Report and Order. *See* AWS Comments at 4-5.

[302] 47 CFR § 25.115(a)(5)(i); *see Expediting Initial Processing of Satellite and Earth Station Applications,* IB Docket Nos. 22-411, 22-271, Second Report and Order, 40 FCC Rcd 6443 at 6446-47, para. 8 (2025).

[303] Appendix A at § 100.120.

[304] *See* Verizon Comments at 7.

[305] *See id* at 9. Absent grant of a waiver request, an incomplete application will not be placed on public notice or granted by the Commission.

[306] *See* Leaf Comments at 12-13, 22; CTIA Comments at 10; SES Comments at 17. *See also NPRM* at para 91 ("[w]e propose this definition to distinguish from the Commission's definition of fixed earth station…").

[307] *See* Appendix A at § 100.3.

[308] *See* CSSMA Comments at 8; Impulse Comments at 16.

[309] *See infra* Section III.B.4, paras. 122-124.

[310] *See* CSSMA Comments at 5-6.

110. We also reject proposals to require applicants - including those seeking 360 degree coordination - to submit maximum and minimum elevation and azimuth angles.[311] It is unclear from the record why the elevation and azimuth angle would be needed if the applicant is requesting 360 degree coordination where the azimuth range is inherent and minimum elevation angles are already set by the Commission's rules.[312] Particularly, since section100.120(a)(4) requires that for all applicants not requesting 360 degree coordination, they must provide the maximum and minimum azimuth and elevation angles. We acknowledge that information shared during coordination may differ from what is submitted to the Commission, but that difference does not justify requiring additional information in applications.[313]

o. Nationwide, Non-Site Licensing with Registration for Immovable Earth Stations

111. We adopt with some adjustments our proposal to establish a framework allowing a Nationwide, Non-site license with registration for Immovable earth stations.[314] Specifically, we adopt our proposal to establish a two-step licensing approach. The first step is applying for and obtaining a Nationwide, Non-site license. The second step is registering individual sites under a given Nationwide, Non-site license. This two-step regime relies on a default registration rule for all spectrum bands, unless and until overridden by band-specific licensing rules. In future proceedings, the Commission anticipates departing from this default registration rule as it looks for opportunities to license earth stations much more efficiently over time across specific frequency bands. Thus, these two-step default registration rules should be seen as an interim approach.

112. All frequency bands, including federal and commercially shared bands, are eligible for the default registration rule to the extent no band-specific requirements have been established. We establish a "first-in-time priority" scheme, as commenters proposed, that becomes effective at registration. That priority is conditioned upon commencing operations within one year.[315] To keep record of registrations under the default framework, we also direct Space Bureau to maintain information on the registrations and we delegate to the Space Bureau the authority to determine processes for such registrations.

113. As discussed in the *NPRM*, the Nationwide, Non-Site license will contain all of the required uniform information for the operations of earth stations registered pursuant to the license.[316] For instance we expect this to include the frequency bands, authorized satellite points of communication, power levels, out of band emissions, off-axis limits and antenna types. Sites registered pursuant to a Nationwide, Non-Site license will only be permitted to operate in accordance within the envelope of the associated Nationwide, Non-Site license. If an operator wishes to site an earth station which falls outside that envelope, then the operator may either modify the Nationwide, Non-Site license to change the

[311] *See* CTIA Comments at 8.

[312] *See* Appendix A at § 100.272 (setting the minimum elevation angle for earth stations).

[313] For instance, a coordination report may have different parameters from what an applicant applies for that are more broad to cover a larger group of potentially impacted services. We remind all parties that coordination must be done in good faith and parties must provide all of the information necessary to complete coordination and cannot request information that is unnecessary for that purpose.

[314] *NPRM,* 40 FCC Rcd at 8224-27, paras. 90-97.

[315] *See* Lockheed Martin Comments at 10. *See also* § 100.121(d)(4)-(5) (establishing that later filed registrants must coordinate with earlier filed registrants if the earlier filed registrant has certified within one year of filing to being in operation, but allowing parties to agree to unprotected, non-interference operations as a means of meeting any applicable buildout deadline in section 100.275).

[316] *See NPRM,* 40 FCC Rcd at 8224-27, paras. 90-97. *See also* CSSMA Comments at 5-6 (recommending that an earth station's technical parameters could be cleared once).

parameters for *all* registered sites or file for a site-specific Immovable earth station.[317] At the time of registration, a licensee will provide site specific information, such as the location, number of antennas, and height of the antennas if raised due to topography and any demonstrations of compliance required by our rules in certain frequencies.[318] However, we delegate to the Space Bureau as it creates the new Schedule B to determine which parameters will be uniform and which will be specific to the each registration. As discussed in more detail below, we will not permit sites that require a waiver of the rules to be registered pursuant to a Nationwide, Non-Site license. In practice, this means that a Nationwide, Non-Site license can also not be applied for if a waiver is required because no site can be registered pursuant to it—since all the individual sites will require a waiver. As discussed in more detail below explore whether any specific waiver requests should be permitted in the *FNPRM*.

114. We disagree with commenters that ask the Commission not to adopt the new licensing scheme for bands shared with terrestrial operators.[319] Instead, we agree with the commenters that propose we adopt this approach across all bands, but we require that registrants provide as part of their registrations all information required by the rules to demonstrate compliance with frequency specific protections.[320] The default framework we establish for Nationwide, Non-Site license registration is designed to maintain the status quo between operators, but still create a mechanism for registering sites. The framework requires that registrants under the Nationwide, Non-Site license may not begin operations in bands shared with other services before certifying that any required coordination has been completed and all information required under our rules has been provided as part of the registration.[321] In this way, we maintain the status quo of requiring coordination in all co-equally shared bands and allow for rulemakings about registration for specific frequencies to be handled separately and do not diminish the ability of potentially affected operators from being able to protect any operations authorized pursuant to their licenses.[322]

115. Under the default registration framework, we continue to require that registrants provide as part of their registrations all of the demonstrations that the rules require.[323] By establishing this default

[317] If an operator chooses to modify a Nationwide, Non-Site license then any already-registered sites that will no longer be in conformance with the Nationwide, Non-Site license must cease operations.

[318] Although not specified in the rules, we anticipate that operators will likely register on an antenna by antenna basis due to the impracticalities of coordination. However, we do not set strict rules as to the granularity of the registration since that is better determined at the time any database is established and may differ based on frequency bands. At this time, registration must only be achieved in accordance with the default rules we establish.

[319] *See* CTIA Comments at 18-19; *see also* Verizon Comments at 4 (proposing to exclude UMFUS bands from proposed Nationwide, Non-Site Licensing framework).

[320] *See* ITIF Comments at 3; CSF Comments at 4; AWS Comments at 11; SpaceX Comments at 14; Astranis Comments at 6. *See also* Verizon Comments at 4 (explaining the importance of the demonstrations for ensuring protection of UMFUS operations).

[321] *See* Appendix A at § 100.121(d). Therefore, registrants must provide the same information they did prior to the adoption of part 100 so that incumbent and potentially impacted operators will have access to accurately assess how these registered sites will impact existing facilities where operations are in shared bands. (*see* Verizon Comments at 4-6).

[322] Verizon argues that we should not "alter[] its review process in a way that significantly reduces the ability of other operators to protect their legitimate and investment-backed interests." (Verizon Comments at 5) We believe that by establishing a framework that maintains the status quo this regime will not negatively impact users in the band, other than requiring more active review of registrations.

[323] *See e.g.*, Appendix A at § 100.280 (requiring certain information to demonstrate compliance with the UMFUS protection criteria). *See also* Verizon Comments at 9 ("Coordination is not a sufficient safeguard for incumbent licensees or a reason to eliminate the requirement that applicants provide technical and other relevant information supporting certifications").

framework we adopt a mechanism that can be built upon or changed as needed by frequency specific rulemakings in the future, but allows for a more streamlined licensing approach today by allowing applicants to "bundle" sites into a single license review. In addition, we direct the Bureau issue as part of the weekly public notices a list of all sites registered during the preceding week, including the location and the Nationwide, Non-Site license file number they are registering pursuant to.[324]

116. We adopt protections to prevent operators from squatting on priority rights. As part of this default framework, and only for sites registered under the default framework, we will establish a "first-in-time priority right" as proposed by one commenter.[325] We also agree with commenters who oppose a pure "first-to-file" priority regime.[326] Instead, we adopt a hybrid approach between a first-in-time to file regime and a first to build regime. Specifically, as it relates solely to sites registered pursuant to the default framework we establish, we adopt the requirement that later-filed registrants must coordinate with earlier filed registrants if the earlier filed registrant has certified within one year of filing to being in operation.[327] To prevent gamesmanship and to encourage efficient coordination, we also will allow parties to agree to unprotected, non-interference operations.[328] As an illustration, what this means is that: if two registrants file a registration for the same site, but "registrant A" files before "registrant B" then nothing prevents "registrant B" from building their site and bringing it into use. But if "registrant A" certifies that it has met required coordination and brings into use its earth station within one year, then "registrant B" must protect and coordinate with "registrant A." Because we do not want to create a regime where "registrant A" can force "registrant B" to stop operating, we will permit "registrant B" to continue operations on a non-interference, unprotected basis as it relates to "registrant A" during coordination. Since at the time of registration, "registrant A" will have provided all the necessary information about the site, and because the registered site can *only* operate in accordance with the parameters of the Nationwide, Non-Site license and the registered site can have no waivers, "registrant B" will be fully aware of the operational parameters with which it must coordinate and assumes the risk if they choose to not account for those operations when building their site. We believe that this approach will allow for efficient use of the default registration regime without injecting uncertainty into the process, while also ensuring that operators who register their site will have confidence that they will be able to operate even if later filed operators are able to register and build at the same site faster. As discussed, the default framework, which includes the first-in-time priority we establish here, is intended to serve as a mechanism for registering sites unless and until the Commission establishes frequency specific registration and/or priority criteria.

117. The default framework we adopt will reduce administrative burdens and expedite the registration process. In practice, registrants must undergo the full licensing process only once, as part of the Nationwide, Non-Site license. Whenever a new site is added registrants, must provide all site information necessary to ensure compliance with the Commission's rules. For example, if a registrant wants to register a site for frequency bands subject to section 100.280 of our rules the registrant will need to provide all of the information that demonstrates protection of incumbent terrestrial sites as required by section 100.280 prior to operating.[329] Under this same example, as it relates to the "first-in-time" rights in

[324] *See* Appendix A at § 100.132.

[325] *See* Lockheed Martin Comments at 10. *See also* § 100.121(d)(4)-(5) (establishing that later filed registrants must coordinate with earlier filed registrants if the earlier filed registrant has certified within one year of filing to being in operation, but allowing parties to agree to unprotected, non-interference operations as a means of meeting any applicable buildout deadline in § 100.275).

[326] Intuitive Machines Comments at 11-12.

[327] *See* Appendix A at § 100.121(e)(1)-(2).

[328] *See id.*

[329] *See* Appendix A, § 100.280. *See e.g.* Verizon Comments at 4 (stating "UMFUS licensees rely on demonstrations to protect existing facilities from harmful interference…"); CTIA Comments at 4 ("Relying on certifications without (continued….)

bands subject to section 100.280, the same priority and protection rights that are outlined in section 100.280 must be followed because the rules already have a priority regime for operations in the UMFUS frequencies. Thus, a registrant for the section 100.280 frequency bands that wishes to operate a site not be in conformance with the section 100.280 rules would in that instance require a waiver and would not be permitted to take advantage of the registration process because, as stated above, Nationwide, Non-Site licenses and registrations are only permitted when no waiver is requested. As stated in the NPRM, we do not wish to establish a process that can circumvent coordination. We believe that the default process established achieves that goal and ensures that registrants are meeting their obligations under our rules. At the same time, we expect that incumbent or potentially impacted operators will be vigilant in reviewing registrations that are filed and that are listed in the weekly public notices to ensure that registrants are complying with the rules.

118. To effectuate our adoption of the Nationwide, Non-Site license and registration regime, we adopt the proposal to establish a database for registering sites pursuant to a Nationwide, Non-Site license.[330] Initially, the Commission envisions this database will serve as a location to maintain and keep records of registrations, and the Commission may establish more detailed parameters for any database as part of another proceeding if any specific registration requirements are established for frequency bands. In order to populate such a future database, we will need to have the site registration information available. We believe that directing the specifics of any database and what it might be capable of at this time would be premature because it is likely to change with the creation of any frequency specific registration requirements. Instead, we delegate authority to the Space Bureau to establish via public notice a process for Nationwide, Non-Site licensees to make registrations including by submitting all required supporting materials to the Commission that the Commission will make publicly available, unless confidential treatment is requested, for the Nationwide, Non-Site license and associated registrations. For instance, the Commission already has the ability to issue multi-site licenses under a single call sign and the Space Bureau may find that using this mechanism, with some modifications, will create an efficient process for applying for a Nationwide, Non-Site license and registering future sites until such time that a more permanent system is established. In addition, we delegate to the Space Bureau the manner and place in which this database for site registration is maintained. Any process established by the Space Bureau must account for the potential to convert a registration that was filed with the Commission to a database, along with the associated "first-in-time" rights, should any database be established.

119. In addition, to foster the ability to allow for robust coordination, we also make clear what we establish does not prevent a Nationwide, Non-Site licensee and an incumbent or shared spectrum user from establishing coordination arrangement so long as those arrangement meet the requirements of our rules.[331] For instance, Nationwide, Non-Site licensees and incumbent or shared spectrum operators may agree to non-interference, unprotected operations or interim coordination, or that no coordination is necessary given the difference in operations. To be clear, under the default registration regime, coordination will not always be required, and in many instances we believe that coordination will not be necessary or can be achieved in creative ways.

120. We also are not persuaded that we should prohibit non-interference, unprotected

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accompanying demonstrations in shared spectrum can lead to a tragedy of the commons and impose disproportionate burdens on incumbent license holders"); Viasat Comments at 2 ("The Commission should ensure that its modernized licensing procedures leverage certifications as a tool but not as a substitute for technical and other analysis by the applicant and the Commission").

[330] *See e.g.*, ITI Space Enterprise Council Comments at 1; Leaf Space Comments at 19, 22-23; Amazon Leo Comments at 30.

[331] For instance, part 100.280 has specific requirements for coordination and ensuring protection, but does allow for agreements between operators under certain circumstances. *See* Appendix A at § 100.280.

operations while coordination is ongoing if the two parties agree to such operations.[332] This will allow parties to effectively agree to STA-like operations without the need for an STA, which reduces redundant the work that the Commission has to do if the operations are aligned with what was authorized and are on a non-interference, unprotected basis. We simply require that, when required, a Nationwide, Non-Site licensee must certify that the registered site has achieved coordination.

121. As noted, we allow for the use of a Nationwide, Non-Site license in bands shared with federal users. Many commenters suggest that if we restrict the use of Nationwide, Non-Site licenses to only those applications that do not need a waiver and are not in federally shared bands we would effectively create a regime that no earth station operator could use.[333] We agree that excluding federally shared bands would unnecessarily limit the new system given that most frequency bands that applicants seek to use are shared with federal users. However, we are unpersuaded that waiver-dependent sites should be authorized through registration at this time. Accordingly, we do not allow sites that require waivers generally to be authorized via registration. Instead, we ask further questions in the *FNPRM* about specific waiver requests that may be acceptable under this framework.[334]

122. Lastly, we reject other commenter proposals as outside the scope of this proceeding.[335]

2. Application Handling

123. Once the Commission receives an application, it will be processed in a timely and predictable fashion on the licensing assembly line. To ensure that applications are processed appropriately, we adopt new rules regarding completeness, public notice, processing timelines, and information requests.[336] Each of these rule sections discussed in detail below will support predictable, fair, and efficient Commission review of space and earth station applications.

a. Completeness

124. In the *NPRM*, we proposed a new rule section and definition of "completeness" to clearly articulate the elements of a complete application and acceptability for filing and to replace overlapping and subjective standards in part 25.[337] The Commission requested comment on the proposed definition and on any alternative proposals or methods the Commission should consider in determining

[332] *See* Iridium Comments at 7.

[333] *See* AWS Comments at 11; SpaceX comments at 14; Astranis Comments at 6; CSF Comments at 4; ITI Comments at 1.

[334] To address commenter concerns, we make clear that a licensee of a Nationwide, Non-Site license cannot register an Immovable earth station pursuant to its Nationwide, Non-Site license if that Immovable earth station would require a waiver of the rules. *See* Iridium Comments at 6.

[335] *See* SES Comments at 20 (proposing that the Commission should license earth stations to communicate with any approved satellite that appears on a Commission approved satellite list); *see also* Leaf Comments at 14 and 23 (proposing the Commission experiment with structured or tabled comments to make Public Notice easier); Impulse Comments at 16 (proposing that in the Shared Space Science Bands, there should be no duplicative US earth station review and approval); KSAT Comments at 4-5 (arguing that an earth station should be allowed to "ride the coattails" of a completed federal coordination for a licensed satellite operator);

[336] This does not modify or otherwise alter the Commission's "red light" rule under which the Commission will not act on any application or request for benefit filed by a party that owes delinquent debt to the Commission. The delinquent debtor must pay its debt in full or make payment arrangements satisfactory to the Commission. Failure to do so will result in dismissal of the debtor's filing. 47 CFR §§ 1.1164, 1.1910; *Amendment of Parts 0 and 1 of the Commission's Rules*, Report and Order, 19 FCC Rcd 6540 (2004). Thus, an applicant which is in "red light" status would have processing of their application halted upon imposition of "red light" status and timelines for processing would be stayed during this period or their application dismissed if no payment is made.

[337] *NPRM,* 40 FCC Rcd at 8228-29, paras. 99-101.

that an application is "complete."[338] We will find an application complete when it includes all required information, forms, certifications, exhibits and showings and contains no internal inconsistencies.[339] We adopt this standard of completeness and include two minimal additions to the proposed section 100.131.[340] The adopted rule adds "internal inconsistencies" to the completeness standard in section 100.131(a), which is carried over from the Commission's defective application provision in section 25.112(a).[341] Based on staff experience, applications with internal inconsistencies often prevent the Commission and the public from fully understanding the application. If, in the context of reviewing an application to confirm it contains the required materials, staff determines that there is such an internal inconsistency, then a determination of completeness is premature until those inconsistencies are remedied by the applicant. We therefore include this requirement in the final rule. We additionally revise proposed section 100.131(b) to more explicitly state that an application is not complete if an applicant is unable to certify to any of the required certifications and does not provide the appropriate waiver requests, justification or additional information.[342]

125. DarkSky suggests that review at this stage should ensure that all information and showings are themselves substantially complete.[343] We reject this concept for this stage of review as such analyses are not related to completeness at the acceptable for filing stage but rather pertain to review of an application on the merits. We want to avoid potentially foreclosing the submission of applications for novel systems that require additional review.[344] We do add, however, language in section 100.131 that codifies the Commission's existing policy, as stated in public notices, that the Commission reserves the right to dismiss applications if, upon further examination, it is determined that the application is not in conformance with the Commission's rules or its policies.[345] This language will make clear to all applicants and interested parties that just because an application has been found acceptable for filing and complete, this does not prevent it from being dismissed in the future if it is found to be inconsistent with the Commission's rules. In addition, we adopt a rule that states the Commission may, in its discretion, place an application on public notice without first finding the application complete, if it determines it is in the public interest to do so.[346] This will allow the Commission to place applications for novel operations

[338] *Id.*

[339] Appendix A at § 100.131(a). *See* 47 CFR § 25.112.

[340] *See NPRM*, Appendix A at § 100.131.

[341] Appendix A at § 100.131(a); 47 CFR § 25.112(a)(1).

[342] *See* SIIA Comments at 4 (completeness check is satisfied by the inclusion of a specific exhibit addressing that exception); CSF Comments at 8 (deferral of orbital debris for non-processing round systems should not be a bar to a determination of completeness). The *NPRM* proposed the following regulatory text in Appendix A, § 100.131(b): "Applications with negative certifications and without the appropriate waiver requests or additional information are incomplete and may be dismissed." We adopt that rule with revisions given changes adopted in this *Order*. Specifically, section 100.131(b) now requires: "Applications that are unable to certify to all relevant application certifications must provide the appropriate waiver request(s) and/or additional information and justification in order to be deemed complete."

[343] *See* Globalstar Comments at 5; DarkSky Comments at 14.

[344] SIIA Comments at 3 (application containing the data necessary for the public to understand the spectrum use and orbital characteristics should be placed on public notice even if the Commission staff eventually disagrees with the applicant's public interest argument).

[345] *See e.g., Satellite Licensing Division and Satellite Programs and Policy Division Information, Space Station Applications Accepted for Filing*, Public Notice, Report No. SAT-01986 (Mar. 27, 2026). *See also* Globalstar Comments at 6 (asking that the Commission retain the ability to deny "complete" applications based on lack of available spectrum or likelihood of harmful interference.).

[346] Appendix A at § 100.131(d).

or that raise unique policy considerations on public notice without necessarily finding the application complete. We believe this will serve the public interest because the Commission can receive public comment earlier in the process which may ultimately lead to quicker review.

126. The Commission will review all space and earth station applications submitted and make a completeness determination within 30 days of filing. Applications deemed complete will be placed on public notice pursuant to section 100.132.[347] If an application is determined to be incomplete, the Commission will provide notice to the applicant identifying deficiencies with the application. The applicant then must amend or supplement the application within the time required by the Commission, usually within 30 days, or the application will be dismissed.[348] Finally, we agree with commenters who encourage automation of completeness checks or "green light" checklists for required information and intend to pursue such improvements as systems become automated.[349]

b. Public Notices and Oppositions to Applications

127. *Public Notice Timelines*. To further enhance the Commission's processing speed, we adopt a single, 15-day public notice period for all earth and space station applications, except where otherwise required by statute.[350] In the *NPRM*, we proposed to modify the public notice timelines for space station and earth station applications.[351] Specifically, we proposed two separate public notice periods, a 7-day public notice period for applications eligible for "expedited processing," and a 15-day public notice period for applications not eligible for expedited processing because of one or more "exceptions."[352] As we explain more fully below,[353] we do not adopt an expedited processing pathway and therefore do not adopt the proposed bifurcated public notice periods. Instead, we adopt a single 15-day public notice period that will balance the Commission's goal of processing space and earth station applications more quickly while ensuring adequate time for public comment.

128. Although most commenters support adopting a single public notice period, many commenters urged the Commission to retain a 30-day public notice period, arguing that shorter periods would not allow sufficient time for review of complex filings, especially for smaller operators.[354] Other commenters recommend alternative timelines, such as 14 days for expedited processing applications or 21-days for other applications.[355] We decline to adopt these proposals. Longer notice periods may delay application processing without producing clear benefits, and the current 30-day period adds two weeks of waiting time for routine or uncontested applications.[356] Interested parties typically file comments or

[347] Appendix A at § 100.132.

[348] *See id.*

[349] *See, e.g.*, Lockheed Martin Comments at 10; Blue Origin Comments at 4.

[350] We retain the 30-day public notice period for applications specified in section 309 of the Communications Act. *See* 47 U.S.C. § 309(b).

[351] *NPRM,* 40 FCC Rcd at 8230, paras. 102-104.

[352] *See NPRM,* 40 FCC Rcd at 8230, paras. 102-104.

[353] *See infra*, Section III.B.3.

[354] *See e.g.*, Viasat Comments at 10; SES Comments at 22; LEO Comments at 14-16; Iridium Comments at 11-12; CTIA Comments at 12; GRSS Reply at 2; Verizon Reply at 6-7.: Leaf Reply Comments at 6 (shortening public notice period disadvantages smaller players); AAS Reply Comments at 2 (burden on smaller stakeholders).

[355] *See* Astranis Reply at 16; Kepler Reply at 2; DarkSky Comments at 6; NASA Comments at 6.

[356] *See, e.g.*, Viasat Comments at 10; SES Comments at 22; LEO Comments at 14-16. Iridium argues that "the benefits of shorter public notice periods are minimal. At best, processing times would be reduced by 2-3 weeks." We believe that such an improvement in processing time, multiplied over the thousands of applications received each year, is significant. Iridium April 23, 2025 *Ex Parte*.

oppositions at the last minute and also file requests for extensions under the current 30-day public notice period, undermining the argument that a 30-day period reduces burdens or improves efficiency.[357] While some commenters argue that a shortened time period will be counterproductive because interested parties who have not completed their evaluations will file objections to preserve their right to participate in a proceeding, we believe this is unlikely for most routine applications.[358] Moreover, many of the reforms to the application process, including standardized application formats, the reuse of Form 312, and the modularity of Schedule F and Schedule O, should enable significantly faster review than was possible when 30-day periods were originally developed, making longer timelines a holdover from process constraints that no longer exist. These reforms will benefit all companies, regardless of size. Additionally, we will continue to update ICFS to allow for more automation to make it easier for interested parties to monitor applications even before they are placed on public notice.[359] Currently, interested parties must monitor ICFS to identify relevant applications that are filed before they are placed on public notice.[360] We expect, in the future, to make it easier for interest parties to do this, by perhaps setting up the ability for those interested parties to be notified when a specific type of application—i.e., earth station, NGSO satellite system, GSO satellite system, etc.—is filed, so that they are able to review the application even before it is placed on public notice.

129. We also note that interested parties, including small operators, who are unable to review an application and submit comments or oppositions within the 15-day public notice period will have the opportunity to request an extension of time.[361] We expect this to be the exception, not the norm, and parties must submit a showing demonstrating the need for an extension based on the complexity of the application. The Commission also retains discretion to establish a longer or shorter public notice period where warranted, and can do so upon request of the applicant, a petitioner, or commenter.[362] We therefore find that a uniform 15-day public notice period strikes an appropriate balance across applications with varying levels of complexity, providing adequate time for meaningful participation while advancing the Commission's goals of increased processing speed.

130. *Oppositions, Pleadings, and Comments*. We adopt, with certain modifications, our proposals related to oppositions, pleadings, and comments filed in response to applications.[363] We also clarify the timelines and requirements for submitting replies to comments and oppositions.[364] Specifically, petitions, objections or comments must be filed within the designated public notice period for an application and must comply with specific requirements set out in section 100.133.[365] Notably, these pleadings must contain the contact information for the filing party, including the email address at which the party may be served a reply, and, unless otherwise required by statute, no longer need to be supported by an affidavit.[366] We specify in section 100.133(f) that petitions, objections, or comments

[357] *See* Iridium Comments at 11-12; CTIA Reply at 3; SIA Reply at 8.

[358] Iridium *Ex Parte* at 2.

[359] CTIA argues against a shorter public notice period due to the difficulties associated with transitioning to new forms and systems. *See* CTIA Comments at 12. These difficulties, if any, should be temporary and do not warrant extending the comment period.

[360] We note that this is a light burden given the "Recent Filings" tab on the ICFS webpage. *See* www.fcc.gov/ICFS.

[361] *See* 47 CFR § 1.46.

[362] Appendix A at 100.132(d). The Commission may also extend a public notice period upon request of another government agency.

[363] *See NPRM,* 40 FCC Rcd at 8230, paras. 103-04.

[364] *See* Appendix A at § 100.133.

[365] *See id.*

[366] Section 25.154 of the Commission's rules requires petitions, objections, and comments to "contain specific allegations of fact…which shall be supported by affidavit of a person or persons with personal knowledge thereof." (continued….)

filed pursuant to section 100.133 may be served via email only, and need not be served by mail or paper copy.[367] Additionally, we no longer allow for "informal objections."[368] These were allowed under part 25 and often led to late-filed objections or comments that the Commission had to address prior to acting on an application. They often slowed down the review process and caused uncertainty with applicants if a comment or objection would be filed on an application, even months after the public notice process. Instead, under part 100, all objections, petitions, comments, and other pleadings must be filed within the relevant time periods and conform with the relevant Commission rules.[369] Parties wishing to file comments on an application outside of the relevant filing window must request and be granted leave to file by the Commission for those filings to be considered.[370] This will increase license processing speed and predictability for applicants so that the record for an application is closed after a specific period of time.

131. We retain a ten-day window during which oppositions to petitions to deny an application or responses to comments regarding an application may be filed.[371] In the *NPRM*, we proposed to require that oppositions or responses to petitions to deny or comments be submitted within seven days after the end of the public notice period.[372] We received few comments addressing this window, but commenters generally suggest retaining the longer filing window.[373] We therefore retain the ten-day filing window for filing oppositions to petitions to deny or responses to comments. We note that any interested party may file during the public notice period or the ten-day opposition or response period. We also adopt a five-day window for reply comments to any opposition or response filed during the ten-day opposition/response window.[374] In the NPRM, we proposed to retain the current rule that limits this five-day window to only those parties that filed a petition to deny.[375] Commenters objected to this and asked the Commission to allow more public input.[376] We therefore do not adopt our proposal. Instead, we will allow any party that participated during the public notice period to file reply comments during this five-

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47 CFR § 25.154(a)(4). While we do not believe an affidavit is necessary to ensure thorough review of relevant petitions, objections, or other comments, we note that an affidavit is required to file a petition to deny an application listed in Section 309(b) of the Act, which includes applications for stations in the broadcasting or common carrier services. 47 U.S.C. § 309(b)(1)-(2). We do not remove the affidavit requirement for petitions to deny such applications.

[367] Appendix A at § 100.133(f). *See also* 47 CFR § 1.47(d). Because of the public access to ICFS and the requirement to serve the relevant parties via email, we believe it is more efficient to remove the requirement to serve via mail or paper copy while preserving public access to the filings.

[368] Section 25.154(b) of the Commission's rules classified as "informal objections" any pleading that was not in conformance with section 25.154, any pleading to which the public notice period did not apply, or any objections to a grant of an application where the objection did not conform with the Commission's rules. 47 CFR § 25.154(b).

[369] *See e.g.*, 47 CFR §§ 1.41 through 1.52.

[370] *See NPRM,* 40 FCC Rcd at 8230, para. 103.

[371] *See* Appendix A, § 100.133(b).

[372] *See NPRM,* 40 FCC Rcd at 8230, para. 103. This was a proposal to shorten the time period from the ten days allowed under part 25. *See* 47 CFR § 25.154(c).

[373] *See e.g.*, Sirius XM Comments at 6 (supporting retaining a ten-day reply comment window);

[374] Appendix A at § 100.133(x).

[375] *NPRM,* 40 FCC Rcd at 8230, para. 103; 47 CFR § 25.154(d). *See* Appendix A, § 100.133(c). We note that some commenters were against the proposal to limit reply comments during the 5-day window to only those parties that filed a petition to deny. *See* Verizon Comments at 14; NASA Comments at 7. We took this rule directly from 47 CFR § 25.154(d) and do not change it here.

[376] *See* Verizon Comments at 14 (recommending that Commission not adopt its proposal to limit reply comments to only parties that filed a petition to deny).

day window. This will ensure that all interested parties have a chance to respond to any opposition or response.

132. The rules will promote greater processing speed, efficiency, and clarity by clearly delineating the timelines and procedures for the public notice process for space and earth stations. Applications for space and earth station licenses will generally follow the following public notice timelines:

- Within 30 days of filing, an application will be reviewed by Commission staff to determine whether it is complete. Complete applications will be accepted for filing and placed on public notice. For incomplete applications, the Commission will notify the applicant of the deficiencies and provide a deadline for curing those deficiencies.
- Applications accepted for filing will be placed on public notice for 15 days.[377] During this time, interested parties may file petitions, comments, or other pleadings, as the rules allow.
- If an application receives any pleadings during the public notice period, there will be an additional ten-day period during which the applicant and other interested parties may file oppositions or responses to the pleadings.
- After the ten-day opposition/response window, any party who filed during the initial public notice period will have five days to submit a reply to any opposition or response.

133. Therefore, once an application has been placed on public notice, the record will be complete within 30 days. Many times, the record will be complete within 15 days if no pleadings or comments are filed. This process will allow the Commission to review the complete record sooner than under the part 25 rules and ultimately result in quicker Commission action while providing adequate time for filings regarding applications.

c. Space Station Processing Timelines

134. We adopt our proposals to improve transparency and accountability in space station application processing.[378] Specifically, we require the Space Bureau to notify an applicant and identify specific deficiencies or areas of an application requiring further review that may be preventing the Commission from acting upon the application within 60 days after the end of the public notice period.[379] We therefore incorporate into the rules an enumerated list of "targeted review categories" that the Space Bureau will refer to when notifying applicants as to why an application has not been acted upon by the 60-day date.[380] These categories were described in the *NPRM* as "exceptions" to expedited processing.[381] We do not adopt the proposed expedited processing pathway,[382] but will use the identified list of proposed exceptions as the targeted review categories that the Bureau will use to review and explain to applicants why action has not been taken on an application within the 60-day period. This will increase predictability for applicants and reinforce the Commission's commitment to transparency and efficient application processing. These rules will ensure that the Space Bureau informs applicants *with specificity* why action has not been taken by referencing the targeted review categories. We do not, however, limit the notification that the Space Bureau will provide to only these targeted review categories, as there may be circumstances where issues not within the targeted review categories may affect action on an

[377] *See supra*, para. 89 for instances where the public notice period may be different.

[378] *NPRM,* 40 FCC Rcd at 8230-31, para 105.

[379] *Id.*; Leaf Space Comments at 12, 24.

[380] *See* Appendix A at § 100.136(c).

[381] *See NPRM,* 40 FCC Rcd at 8234-35, para. 117.

[382] *See infra*, section III.B.s.

application.

135. We decline to adopt commenters' suggestion that the Bureau provide recurrent updates every 60 days after the initial notification until action has been taken on the application.[383] In situations where the Commission does not act within the initial 60-day period, we expect ongoing dialogue between staff and the applicant, including updates regarding the steps necessary to resolve remaining issues and realistic expectations for further processing. This approach will ensure transparency and forward progress without imposing unnecessary, formulaic reporting obligations upon the Commission. Finally, we delegate to the Space Bureau the ability to decide the form and format it will use to notify the applicant at the 60-day mark, directing it to do so in a way that promotes transparency and efficiency.

d. Earth Station Application Processing

136. We generally adopt our proposals for streamlining the processing of earth station applications, and commenters generally support the Commission's efforts to do so.[384] However, because we are not adopting an expedited processing pathway there will only be one path for earth station review.[385] Given the volume of earth station requests received annually, we believe there is considerable benefit allow earth station operations to begin quickly with relatively low risk. Unlike with space stations, where oversights may be difficult to remedy post-launch, the Commission has considerably greater ability to intervene in the operation of an earth station if there is an oversight in the licensing process.

137. In line with our view that applications which fully comply with the rules should be presumed acceptable, we adopt an approach to earth station processing which will greatly improve for a large number of earth stations how quickly operations may commence. Specifically, we adopt our proposal, with some adjustments, to allow certain applicants that do not require a rule waiver to begin operations on a non-interference, unprotected basis prior to Commission action on the request. For applications associated with an previously approved Form 312 Main Form, non-interference, unprotected operations may begin once the application is placed on public notice.[386] However, applicants who do not currently hold an authorization with an approved Form 312 will not be able to receive such treatment, and the Commission will need to complete review before operations may begin.[387] We believe our approach is appropriate because the Commission will have already conducted review of an applicant, including reviewing foreign ownership, if they hold an active authorization and have a current Form 312 Main Form. In cases where an applicant seeks to operate in both federally shared and non-federally shared bands, we will allow them to begin operations in the non-federally shared bands when the application is

[383] KSAT Comments at 7-8 (urging the Commission to provide "subsequent notifications at regular intervals (e.g., 60-day) to allow applicants to track progress with the application process").

[384] *See e.g.*, Blue Origin Comments at 17; SES Comments at 17 ("SES supports the Commission's efforts to move the earth station licensing process away from the 'current, burdensome' process and toward a 'much more streamlined approach.'); Amazon Leo Comments at 29 ("Amazon Leo strongly supports the Commission's efforts to simplify and streamline earth station licensing…"); Verizon Comments at 4 (Although Verizon raises some concerns, "…Verizon appreciates the Commission's goal to broadly streamline earth station applications…"); Globalstar Comments at 4 ("Globalstar supports the Commission's vision of an "assembly line" for space station and earth station applications"); SpaceX Comments at 12 (noting that the proposals in the Notice would speed and simplify earth station licensing); SES Reply Comments at 9 (supporting proposals to streamline radiofrequency requirements); KSAT Reply Comments at 4 (supporting proposals to allow for temporary pre-grant operations for earth stations). *See also NPRM,* 40 FCC Rcd at 8231-32, paras. 106-109.

[385] *See infra* section III.B.3.a.

[386] *See* Appendix A at § 100.121.

[387] *See id.* However, after an entity's first authorization, it should be able to make use of this approach to begin operating immediately.

placed on public notice.[388] It is our belief that allowing operations to begin in non-federal bands when placed on public notice will be beneficial to operators while still protecting federal equities. We also expect our approach to greatly reduce the need for STAs. Indeed, STA requests result in double work for the Commission—having to review STAs that mirror permanent authority applications—which in turn slows down the entire process.

138. We believe limiting the ability to use this mechanism to only those applications that are associated with an approved Form 312 Main Form and certify in accordance with section 100.101(b) will allow the Commission to maintain proper oversight of who is receiving an authorization. We believe that such a certification serves as a backstop so that the Commission can have confidence that only those entities that are operating are ones we have deemed meet the criteria to be a licensee. In addition, it serves as an incentive for licensees to keep their Form 312 Main Forms current so that they may utilize our more streamlined procedures.

139. Although some commenters raise issue with allowing for earth stations placed on public notice to begin operations on a non-interference, unprotected basis, we are not persuaded by these concerns.[389] As noted above, what we are adopting is similar in effect to an STA—many of which do not go on public notice for review by other operators under the existing part 25 rules but an applicant is still permitted to operate.[390] The Commission routinely grants these STAs, and as such we are not persuaded that we should prohibit similar operations by rule for applications that do not request any waivers. We also point out that section 100.121 as adopted only allows for pre-grant operations in bands that require coordination if any required coordination has been achieved as reflected in the submitted coordination report.[391] We therefore see no reason why these unprotected, non-interference operations when an application goes on public notice should be subject to different treatment or scrutiny.[392]

e. Information Requests

140. To increase predictability for applicants while ensuring the Commission receives clear, complete, and accurate applications, we adopt proposed rule section 100.134 specifying the scope and process for Commission information requests, with minor modifications.[393] Consistent with our proposals, information requests must be targeted, tied to specific regulatory requirements, and limited to

[388] *See* Appendix A at § 100.121.

[389] *See e.g.*, Iridium Comments at 7; NRAO comments at 3; Verizon Comments at 16; IEEE *Ex Parte* at 4-5. *But see* KSAT Comments at 8; ITIF Comments at 4 ("enabling pre-grant operations on a temporary, non-interference, and unprotected basis for earth stations will benefit consumers because operations can begin more quickly"); KSAT Reply Comments at 4. In fact, we believe that the public will have a greater opportunity to comment on the underlying operations than what is allowed under the current part 25 rules where an STA can be granted without going on public notice.

[390] *See, e.g.,* 47 CFR § 25.120 (noting that only the 180-day STAs go on public notice).

[391] *See* Appendix A at § 100.121(a)(2) ("When an application is placed on public notice pursuant to this subsection, the applicant may begin operating pursuant to the parameters requested in the underlying application *that have already been coordinated, if coordination is required as reflected in the filed coordination report*. These operations must be on a non-interference, unprotected basis until further action is taken by the Commission on the application." (emphasis added)). We note that sites registered pursuant to a Nationwide, Non-Site license are not applications, merely registrations, and do not go on public notice and therefore cannot take advantage of this provision.

[392] For the same reasons, we reject Iridium's proposal to exclude the shared GSO/NGSO co-primary bands. (*see* Iridium Comments). In addition, we note that the operations under this rule are only permitted until the Commission acts on the application, and are also only permitted if the applicant certifies to meeting all the requirements of the rules, including any necessary coordination.

[393] *NPRM,* 40 FCC Rcd at 8232-8233, paras. 110-112. *See* Appendix A at § 100.134.

matters directly material to the Commission's review of an application.[394] In response to comments, we also adopt a specific provision that allows an information request if requested by one of the Commission's federal agency partners, as long as it pertains to an issue for which we have jurisdiction.[395]

141. Under part 100, information requests must be tied to identifiable rule provisions. Requests may not seek information on matters for which no applicable rule or legal authority exists. This bright-line limitation is designed to prohibit open-ended or exploratory inquiries, while preserving the Commission's ability to obtain information that is necessary to review applications and determine whether they are in the public interest.

142. Information requests may be issued at any point in the review process, including after an application has been deemed complete and placed on public notice. While we require Commission staff to identify all known deficiencies in an initial request for information, issues may arise through closer staff review or through concerns raised during the public comment period, and the Commission must retain the ability to address such issues to ensure an accurate record and rigorous licensing process.[396] We reject commenters' suggestions for a single-follow up before dismissal, a time limit on information requests, or to limit subsequent inquiry to issues arising from applicant's response or new facts.[397] When an application includes complex issues, including the use of new technology or innovative proposals, the Commission must have the discretion to engage with applicants. However, since each information request under the rules we adopt must relate to a specific rule or legal requirement, these limitations will guard against "fishing expeditions" or protracted reviews.

143. We also add to our rules specific direction on how information requested by federal agencies will be handled.[398] The Commission may request information needed by federal agencies to complete required interagency review but only if it pertains to issues within the Commission's jurisdiction and germane under the rules for review.[399] That is, such information requests must comply with the same procedural safeguards and limitations. The request must be directly material to the rules, legal authority or other legal requirements of the Commission. We decline to include a requirement that the Commission communicate contact details for other federal agency points-of-contact.[400] Imposing such an obligation would potentially place the Commission in the position of intermediary between personnel within other federal agencies and applicants, which would be unduly intrusive and inefficient. Applicants seeking grants conditioned on federal coordination will ordinarily obtain agency point-of-contact information through those coordination processes.

3. Review of Applications for Decision

144. The part 100 rules are designed to organize the application review process so that the

[394] We do not adopt the proposal to allow information requests to determine whether an exception to expedited processing applies because we do not adopt the expedited processing framework proposed in the *NPRM*. *See infra*, section III.B.3.

[395] Appendix A at § 100.134(a)(6).

[396] *See* Viasat Comments at 7-8 (deficiencies may become apparent only after public notice period); Verizon Comments at 8 (ability to resolve issues outside of public notice period critical for certification-based process).

[397] *See e.g.*, Lockheed Martin Comments at 13 (single follow-up communication to applicants requesting information within 10 days before dismissal); Amazon LEO Comments at 17 (reasonable amount of time after application submitted); Impulse Comments at B-3 (subsequent requests should be limited to issues arising from the applicant's response, those not reasonably identifiable, or to new facts/safety concerns); Blue Origin Comments at 11 (limit requests to spectrum use, interference, and safety issues within the FCC's remit).

[398] *See* Blue Origin Comments at 11-12 (limit requests for information related to other agencies' licensing regimes).

[399] Appendix A at § 100.134(a)(6).

[400] *See* Lockheed Martin Comments at 11, 12.

Commission can efficiently reach a decision in line with our responsibilities and goals.[401] The revised application forms will allow the Commission and the public to clearly understand an applicant's proposal and to quickly identify any elements which cannot be presumed acceptable. The standards and procedures we adopt today for completeness, public notice, information requests, as well as dismissal of applications, and review of amendments to applications will provide the Commission with the relevant information needed to complete the application review process. At that point, once all relevant information about the application has been obtained, the Commission can focus on deciding whether grant of an application is in the public interest.

145. In the *NPRM*, we articulated our vision for application review in a "default to yes" regime.[402] We now establish that presumption in explicitly in section 100.136.[403] Section 100.136(a) establishes the presumption that if an application falls within the bounds of the Commission's rules, regulations, and policies, the application will be reviewed under the presumption that authorization is in the public interest.[404] Section 100.136(b) provides further guidance on the review and identifies certain "targeted review categories.[405] Section 100.136(c), similar to existing section 25.156(a), explains the conditions under which an application will be granted.[406] By reviewing applications with a presumption that they are in the public interest if they comply with the Commission's rules, regulations, and policies, we provide applicants with predictability that applications for authorization that comply with the Commission's rules will likely be granted. While section 100.136(a) applies to applications as a whole, we also expect it will guide review of particular elements of applications. By identifying individual elements of an application that carry a presumption of being in the public interest the Commission can then focus on areas of an application that deviate from the rules and requirements or are otherwise not presumed to be in the public interest. Our overall goal with section 100.136 is to provide more predictability for applicants to ensure that they can engage in the extensive capital outlays and business planning needed to participate in the space economy.

a. Section 100.136 Review

146. Section 100.136, as proposed in the NPRM, sets forth the Commission's standard for reviewing applications for space and earth station applications.[407] We proposed to fundamentally shift the Commission's approach to licensing, proposing that an application will be presumed to be in the public interest and reviewed under an expedited processing framework, unless the application includes certain elements, or "exceptions," that would require more targeted review.[408] We adopt section 100.136 and the public interest presumption and provide clarification as to how the Commission will review and process applications under this presumption.[409] In practice, even though we do not adopt the expedited processing framework proposed in the NPRM, we incorporate the proposed "exceptions" as the specific parts of an application that may rebut the public interest presumption. We revise and incorporate these elements into the broader application review standard of section 100.136.[410]

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[401] *See supra* section I, para. 3

[402] *See NPRM,* 40 FCC Rcd at 8196, para.14.

[403] *See* Appendix A at § 100.136.

[404] Appendix A at § 100.136(a).

[405] Appendix A at § 100.136(b).

[406] 47 CFR § 25.156(a).

[407] *See* Appendix A at § 100.136.

[408] *NPRM,* 40 FCC Rcd at section III.A.3 (review of applications for decision).

[409] Appendix A at § 100.136(a).

[410] Appendix A at § 100.136(b).

147. We now clarify what the section 100.136 application review process will entail under typical circumstances. We identify specific "targeted review categories" where either additional review is needed or a request cannot be presumed to be in the public interest under section 100.136(a).[411] These targeted review categories are: Failure to Certify, Waiver Requests, Foreign Ownership, Market Access, Processing Rounds, Spectral Constraints, and Federal Coordination.[412] Under typical circumstances, these review categories identify the main areas where the Commission will focus its review to determine whether grant of an application is in the public interest. Therefore, we codify these targeted review categories in section 100.136(b).[413] These review categories will also be used by the Commission to identify specific reasons why no action has been taken on an application within 60 days following the end of the public comment period.[414] We align the key elements of application review and the 60-day notice to applicants to provide clarity and predictability. We provide a more detailed description of each of the targeted review categories below.[415]

148. *Failure to Certify*.[416] As described in the *NPRM*,[417] if an applicant does not affirmatively certify whether it will comply with a particular requirement that the Commission has presumed to be in the public interest, the Commission must further review the application materials and demonstrations to determine whether authorization is in the public interest under section 100.136(b). In some cases, a failure to certify may require an applicant to submit a request for waiver of the Commission's rules.[418] For example, if an applicant for an NGSO satellite system operating at 500 kilometers states that they will not dispose of their satellites via atmospheric reentry, that applicant fails to certify compliance with a bright-line criteria.[419] In this case, the applicant must also request a waiver of section 100.260(e) of the

[411] In the NPRM, these targeted review categories were proposed as "exceptions" to expedited processing. While we do not adopt an expedited processing approach, we believe these categories are still useful for guiding application review. *See* Appendix A at § 100.138.

[412] *See* Appendix A at § 100.136(b).

[413] *See* Appendix A at § 100.136(c).

[414] *See supra*, section III.B.2.c.

[415] Many commenters were concerned with certain proposed "exceptions" to expedited processing in the NPRM. *See e.g.*, Verizon Comments at 6-7; Telesat Comments at 2-3; Tomorrow Comments at 2; SES Comments at 26; SpaceX Comments at 18-19; Leaf Space Comments at 16; Myriota Comments at 5-6. These commenters generally raised arguments that the proposed exceptions would encompass nearly every space and earth station application or request for market access, thereby reducing the benefits of any expedited processing. *See* SES Comments at 27 (expressing concern that the spectral constraints section would "swallow the rule and would essentially prevent any spectrum band from being subject to expedited processing.") We believe these concerns are addressed by the alternative approach we adopt today. Because we do not adopt an expedited processing pathway, we no longer adopt "exceptions" that risk encompassing every application the Commission receives. Instead, the "targeted review categories" we base on these exceptions provide clarity and guidance to applicants, but do not result in an application being processed differently. Therefore, even if most space or earth station applications or requests for market access the Commission receives fall within one of the categories, applicants need not worry about not benefitting from expedited review. Instead, they will have clarity as to which parts of their requests may need targeted review and are not presumed acceptable.

[416] We note that in the *NPRM* we referred to this "exception" as a "Negative Certification." *See NPRM* at para. 117. We refer to it now as a "failure to certify" for the sake of clarity. As described above, applicants for space and earth station licenses will be required to certify to whether their proposed systems satisfy specific bright-line rules. *See supra*, section III.B.3.a. If an applicant is unable to certify to any of the specific criteria, they have "failed to certify."

[417] *See NPRM*, 40 FCC Rcd at 8234, para. 117.

[418] We discuss waiver requests in more detail below. *See infra* para. 108.

[419] *See* Appendix A at § 100.111(c)(2)(ix).

Commission's rules and provide a justification as to why grant of the waiver is in the public interest.[420] In other cases, however, a failure to certify may not require a request for waiver. Instead, an applicant who fails to certify to an application requirement would have to provide additional information for the Commission to review. For example, if an applicant for an NGSO satellite system cannot certify that their satellites will be 10 centimeters or larger in the smallest dimension, they could instead provide information demonstrating how the satellites would be trackable.[421] This failure to certify would not be a proposal to operate contrary to the Commission's rules, but rather would mean the application element does not carry a presumption. The applicant would provide a demonstration, such as explaining how the spacecraft would still be trackable, to assist the Commission review to determine if a grant is in the public interest. We believe this framework will help support innovation by allowing proposals that fall outside the certification envelop but do not require a waiver to demonstrate in a straightforward manner why grant is in the public interest.

149. *Waiver Requests*. Applications that request a waiver of the Commission's rules may require additional review if they raise policy issues that the Commission must address prior to grant. Many commenters were particularly concerned that identifying waiver requests as an exception to expedited processing would remove most applications from that pathway.[422] By instead identifying waiver requests as a review category, we no longer need to determine whether certain waiver requests should or should not remove an application from expedited processing. As a general matter, applications with administrative waivers or waivers that are more routinely granted may be reviewed quickly, while waiver requests that are novel, highly technical, or raise broader policy concerns may require more extensive review. This way, an application with one or more less complex waiver requests may be acted upon as quickly as an application without waiver requests.

150. *Market Access*. As noted in the NPRM,[423] petitions for U.S. market access must be reviewed in light of the market access rules addressing whether applicants' home administrations have opened access to U.S. companies.[424] Therefore, we include requests for U.S. market access as a category of applications that do not fall under the public interest presumption and that may require additional review for the Commission to determine that the application is in the public interest.

151. *Foreign Ownership*. Applications with reportable foreign ownership above the adopted ten percent threshold, including foreign adversary ownership or control, will require additional review by the Commission.[425] Certain applications may require further review to determine whether the application should be referred to the Executive Branch, under the Bureau's discretion, for review to assess any national security or law enforcement issues presented by the foreign ownership.[426]

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[420] *See* Appendix A at § 100.260(e).

[421] *See* Appendix A at § 100.261(a). The Commission's rules require satellites to be trackable and provide a safe harbor for satellites that operate in low-Earth orbit that are 10 centimeters or larger in the smallest dimension.

[422] *See e.g.*, Capella Comments at 6 ("…there are many other waiver requests that . . . have nonetheless become routine and should not preclude expedited treatment."); CSF Comments at 3-4; SES Comments at 27 ("…certain waivers should not preclude expedited processing, including requests for extensions of waivers the Commission has already granted."); Blue Origin Comments at 5 ("[T]he Commission should distinguish between waivers that implicate core safety or interference protections and those that seek relief from outdated or purely procedural requirements.").

[423] *See NPRM*, 40 FCC Rcd at 8234.

[424] *See* Appendix A at § 100.114.

[425] *See supra* section III.B.1.b.

[426] *See generally Process Reform for Executive Branch Review of Certain FCC Applications and Petitions Involving Foreign Ownership*, IB Docket No. 16-155, Report and Order, 35 FCC Rcd 10927 (2020); Exec. Order No. 13,913, 85 Fed. Reg. 19643 (Apr. 8, 2020).

152. *Processing Rounds*. Applications which request to be processed via a processing round may require additional review under the Commission's processing round rules. Therefore, we include this as a targeted review category.

153. *Spectral Constraints*. Certain applications may need additional review because of spectral constraints. Commenters were generally confused by the spectral constraints exception and requested examples or further explanation which we provide here.[427] By "spectral constraints," we refer to requests to operate in frequency bands which are subject to limitations prescribed by rule or that are difficult or impossible to operate in due to existing users or international arrangements. For example, an application that requests to use spectrum that is exclusively licensed to another operator would fall within the category of spectral constraints.[428] We do not intend for this category to cover every instance where an application requests operations in shared bands or where there are rules regarding use of spectrum to ensure compatibility between operations.[429] In both processing round and non-processing round situations, the Commission's rules that clearly govern the sharing and use of spectrum.[430] Therefore we do not expect a "spectral constraint" will be part of most reviews since the sharing and operational rules should resolve the constraint. Instead, this category covers a narrower set of circumstances where proposed operations cannot be presumed to be in the public interest because of a previously identified constraint with the requested spectrum that goes beyond established sharing and use rules.

154. *Federal Coordination*. Applications that request operation in frequency bands allocated for federal use under the U.S. Table will require coordination and may require additional review by the Commission. We proposed in the *NPRM* to include federal coordination as an exception to expedited processing and commenters were largely concerned that this would remove the majority of applications from that pathway.[431] We agree that a federal coordination exception to expedited processing would capture most applications received by the Commission. Since we do not adopt an expedited processing pathway, this is moot. Instead, we retain federal coordination as one category that may require additional review by the Commission to determine whether grant of an application is in the public interest. Additionally, the conditional grant process will allow the Commission to more quickly process applications that request operation in federal bands.[432] Therefore, while we retain federal coordination as a targeted review category, we expect that most applications for operations in federal bands will be acted upon quickly.

4. Conditional Grants

155. We generally adopt our proposals to allow applicants to receive a conditional grant in

[427] *See e.g.*, NRAO Comments at 3 (requesting clarification as to whether operations under ITU RR 4.4 would fall under spectral constraints); Verizon Comments at 12-13; SpaceX Comments at 15; CTIA Comments at 14. *But see* Globalstar Comments at 6 (urging the Commission "to find that such constraints are present where the requested spectrum is already exclusively licensed or where there is insufficient spectrum in a frequency band to support more than one operator…").

[428] For example, the Space Bureau recently dismissed several applications for spectrum use in the MSS bands that had been previously licensed exclusively to other entities and it determined that grant of the applications would have created regulatory uncertainty. *See Space Bureau Reaffirms Existing Licensees' Exclusive Rights to Use Certain D2D Spectrum Bands by Dismissing the Requests of Several Operators to Enter Those Same Bands and Dismissing Two Petitions for Rulemaking*, Order, DA 26 -398 (SB Apr. 23, 2026).

[429] *See e.g.*, Verizon Comments at 13; CTIA Comments at 15.

[430] Appendix A at §§ 100.240, 100.241. *See infra* para. 188.

[431] *See NPRM*, 40 FCC Rcd at 8234; *see e.g.*, Amazon Leo Comments at 19; Blue Origin Comments at 5; CSF Comments at 2-3; SpaceX Comments at 17-18; Spire Comments at 7; Capella Comments at 4; SES Comments at 28.

[432] *See infra*, section III.B.4.

specific situations in part 100.[433] We proposed to allow a path to authorization for space station and earth station applications that the Commission has reviewed and determined to be in the public interest, conditioned on either submission and approval of the required orbital debris mitigation plan or completion of coordination with federal or commercial operators.[434] This proposal received significant support in the record.[435] We adopt an orbital debris conditional grant, a commercial coordination conditional grant, and a federal coordination conditional grant for space station applicants. We also adopt a federal coordination conditional grant for earth station applicants. We also proposed to allow conditional grants for applications eligible for expedited processing.[436] We do not adopt this proposal because we do not adopt the proposed expedited processing pathway.

156. These conditional grants are intended to allow the Commission to issue a grant in specific circumstances where other activities still need to take place before certain operations may commence. Allowing conditional grants in the narrow instances we describe below will enable the Commission to process certain applications more quickly, without waiting for circumstances outside the Commission's control. Under these rules , the Commission will be able to issue a conditional grant to space station applicants prior to the completion of federal or commercial coordination and to earth station applicants prior to the completion of federal coordination. This grant will be conditioned upon the required coordination prior to beginning operations in certain frequency bands.[437] Licensees receiving a commercial or federal coordination conditional grant will then be able to begin operating in certain frequency bands for which coordination has been completed or is not required while they coordinate operations in other bands. Similarly, allowing space station applicants the option to defer submission of the required orbital debris mitigation plan will allow operators to obtain a space station license, even while spacecraft design is still underway. The Commission has previously authorized such conditional grants on an *ad hoc* basis,[438] and our experience suggests that this practice can reduce the need for the Commission to focus resources on trying to manage and coordinate multiple workstreams in order to issue a license.

157. We make several changes to the proposals in the *NPRM*.[439] We do not adopt the proposed expedited processing conditional grant because we do not adopt the expedited processing

[433] *See generally NPRM,* 40 FCC Rcd at 8237-40, paras. 125-132.

[434] *NPRM*, 40 FCC Rcd at 8238-39, para. 128-131.

[435] *See* SpaceX Comments at 18; ITIF Comments at 3; Capella Comments at 7; ITI Space Council Comments at 3; AIA Comments at 4-5; Astranis Comments at 9; Myriota Comments at 6; Lockheed Martin Comments at 12-13; Amazon Leo Comments at 20-21; AST Comments at 4; Astranis Reply Comments at 16; AnySignal Reply Comments at 2-3; Intuitive Machines Reply Comments at 5; Amazon Leo Reply Comments at 19-20; Rivada Reply Comments at 10.

[436] *NPRM*, 40 FCC Rcd at 8237, para. 126.

[437] For example, many space station applicants request use of the 2025-2110 MHz (Earth-to-space) and 2200-2290 MHz (space-to-Earth) frequency bands, commonly known as the S-band. Currently, the Commission waits for federal coordination to be completed prior to granting applications that request these bands, even if the application also requests the use of frequency bands that do not require federal coordination. Under the federal coordination conditional grant we adopt today, an applicant requesting the S-band along with other bands could receive a conditional grant that allows operations in the requested non-federal bands while coordination with federal operators is ongoing. Upon completion of the federal coordination, the licensee will notify the Commission and may begin operating in the federal bands, without further action from the Commission. This will greatly increase the speed with which certain licenses may be issued while preserving the federal coordination process.

[438] *See Kuiper Systems LLC*, *Request for Modification of the Authorization for the Kuiper NGSO Satellite System*, Order and Authorization, IBFS File No. SAT-MOD-20211207-00186 (Feb. 8, 2023).

[439] *See NPRM* at paras. 125-132, Appendix A at § 100.139.

framework.[440] We also do not allow commercial coordination conditional grants for earth stations, as we proposed, which we explain below.[441] We do adopt our proposal to allow operators to launch and operate under commercial and federal coordination conditional grants.[442] We agree with commenters that for conditional grants to be beneficial, they must allow for launch and operation of the authorized space stations.[443] We also revise language in the adopted rules to clarify the rights and obligations of conditional grant holders.

158. Several commenters raise general concerns with the conditional grant process and ask the Commission to ensure that the process is limited in scope to reduce abuse.[444] The rules will ensure that conditional grants are not abused and are appropriately limited to protect against potential gamesmanship or harmful interference. First, we emphasize that the conditional grant process is optional and at the discretion of the Commission.[445] Applicants must request a conditional grant, and the Commission has discretion in deciding whether to issue one. Applicants will not have a right to receive a conditional grant. We also clarify that operations under a conditional grant are entirely at a licensee's own risk and the conditional grant may be automatically terminated at any time for failure to meet the conditions of the grant.[446] We also do not agree that the conditional grant procedures will pose an additional risk of interference.[447] Conditional grants are limited in scope. They simply allow the Commission to issue a conditional grant in three distinct circumstances, to allow grants to be issued more quickly, rather than wait for a full orbital debris showing or completion of coordination. Additionally, commercial and federal coordination conditional grant recipients are required to operate pursuant to coordination arrangements or agreements, meaning if coordination is required prior to operating in a specific shared band, a conditional grant recipient will still have to coordinate prior to operating in that shared band. This is similar to our current rules, except the conditional grants will allow licensees to begin operations in frequency bands for which coordination is not required without waiting for the completion of coordination and without the need for STAs. This will reduce the burden on Commission staff and applicants while still affording other operators the necessary protection from harmful interference.

159. Additionally, conditional grants do not conflict with other requirements in the Commission's rules.[448] Applicants who seek a conditional grant are still required to comply with all

[440] *See supra*, at section III.B.3.

[441] *NPRM*, 40 FCC Rcd at 8238, para. 129.

[442] *NPRM*, 40 FCC Rcd at 8239, para. 130. We proposed to allow launch and operation under a conditional grant only upon express authorization of the Commission. We do not adopt rule text requiring this "express authorization" because the conditional grant is itself express authorization from the Commission. The Commission may choose not to issue a conditional grant for various reasons, thereby not allowing launch and operation while coordination is underway. Additionally, for modifications to space station authorizations where satellites are already on orbit and operating a conditional grant could allow certain new radiofrequency communications quickly after grant, without the need for the launch of new satellites.

[443] *See* Capella Comments at 7; Muon Space Comments at 5.

[444] *See e.g.*, TechFreedom Comments at 17 (warning of potential abuse with conditional grants and recommending the Commission make clear that "the licensee is proceeding at its own risk"); Blue Origin Comments at 6 (supporting effective and safe conditional grants that are limited in scope); NRAO Comments at 4.

[445] Appendix A at § 100.139(a).

[446] Appendix A at § 100.139(b).

[447] *See* Iridium Comments at 12. We note that Iridium was primarily concerned with the expedited processing conditional grant, which this Order does not adopt.

[448] *See* Iridium Comments at 13 (arguing that an earth station applicant could receive an expedited processing conditional grant without completing coordination in certain bands prior to applying, as required by section 25.203(k) and section 100.276). Again, we do not adopt an expedited processing conditional grant, which resolves most of Iridium's concerns.

relevant Commission rules or seek a waiver. Additionally, because the Commission has discretion to issue conditional grants, there may be certain circumstances where the Commission will not issue a conditional grant due to concerns presented by a waiver request or issues raised by commenters. For example, Iridium raises concerns over earth station applicants who request the use of bands shared on a co-primary basis between GSO and NGSO system earth stations that must be coordinated prior to filing an application under section 100.275(i).[449] In that case, if an earth station applicant files an application requesting use of those bands without having completed coordination or met the requirements demonstrating there will be no unacceptable interference, it would need to request a waiver of section 100.275(i). Even if the Commission granted the waiver and the underlying application, the result would be a conditional grant requiring the applicant to complete coordination prior to operating in the specific frequency bands.[450] Either way, Iridium and other concerned operators would remain protected. Similarly, we believe the conditional grant framework will protect radio astronomy because our rules require certain levels of coordination and protection for radio astronomy that conditional grant licensees must also follow.[451] Finally, we do not believe that STAs that automatically renew are a suitable alternative to conditional grants.[452] Although we recognize that there is a utility to continuing STAs in certain situations, STAs that automatically renew create a risk of allowing operators to avoid the need for full license authority which could serve as a workaround for, among other things, regulatory fees and licensee obligations.

160. *Orbital Debris Deferral Conditional Grant*. We adopt our proposal to permit space station applicants to defer submission of the required orbital debris mitigation and end-of-life disposal plan at the time of filing the initial application and request a grant conditioned on submitting the required information at least six months prior to integration with a launch vehicle.[453] Many commenters support this proposal, and we address opposition below.[454] We clarify that this conditional grant will be available to all space station applicants, including those requesting inclusion in a processing round.[455] To be eligible to receive an orbital debris deferral conditional grant, an applicant must first request such a grant and then provide the following information: all application materials required under sections 100.110 through 100.113, except for the orbital debris mitigation and end-of-life disposal plan; a certification that the finished operational satellite system proposed in the application will comply with all requirements in sections 100.111, 100.260, and 100.261, including all relevant certifications; and a certification that the applicant will submit a complete orbital debris mitigation and end-of-life disposal plan demonstrating compliance with the relevant rules at least six months prior to integration of any requested space stations with a launch vehicle.[456] This will allow applicants whose proposed satellite systems will comply with all Commission rules and bright-line certifications, but who are unable to provide a complete orbital debris

[449] *See* Iridium Comments at 13 ("Under Section 100.139, an earth station applicant could file to use a non-federal NGSO/GSO co-primary band, receive expedited processing, and begin operating under a conditional license even though it had not coordinated its operations."). We note that the relevant rule section in the *NPRM* was 100.276(i), but it is now 100.275(i) in the adopted rules.

[450] Given the Commission's discretion in issuing conditional grants, it could choose to deny the waiver and refrain from issuing a conditional grant altogether.

[451] *See* NRAO Comments at 4; *see e.g.* Appendix A at §§ 100.111, 100.220, 100.275, 100.281, 100.282.

[452] *See e.g.,* Iridium Comments at 12-14.

[453] *See NPRM*, 40 FCC Rcd at 8238, para. 128.

[454] *See e.g.*, Amazon Leo Comments at 20; Lockheed Martin Comments at 12; Logos Comments at 5; Impulse Space Comments at 14.

[455] *See* CSF Comments at 8.

[456] Appendix A at § 100.139(a)(1). We do not adopt language related to grandfathering existing space station licensees into the current rules. *See* SES Comments at 24. The conditional grant process is prospective and therefore will not apply to currently authorized space stations.

mitigation plan at the time of filing, to receive a conditional grant prior to submitting final orbital debris information. Applicants requesting a waiver of any relevant orbital debris rules or whose proposed satellite systems do not fall within the bright-line criteria in section 100.111 will not be eligible for this conditional grant. Additionally, we require conditional grant recipients to file a major modification if the orbital debris mitigation and end-of-life plan they submit does not align with the Commission's rules or does not include, and provide support for, all certifications required in section 100.111.[457] A major modification to an orbital debris deferral conditional grant will also automatically terminate the conditional grant.[458] We believe that this conditional grant will provide operators with additional flexibility to seek an FCC space station license prior to finalizing satellite design and will encourage operators to continuously improve system design and orbital debris management.[459]

161. We do not allow for integration, launch, or operation of any satellites authorized pursuant to an orbital debris deferral conditional grant prior to Commission approval of submitted orbital debris and end of life plans.[460] We acknowledge NASA's concerns that not requiring orbital debris information until the end of mission design process could make engineering design changes more difficult.[461] We believe the parameters that we adopt for orbital debris deferral conditional grants will address these concerns. Specifically, the Commission may, in its discretion, choose not to issue a conditional grant. Additionally, these conditional grants will only be available in the narrow circumstances where an applicant is able to certify to all of the presumed acceptable criteria, thereby requiring them to design to those specifications. Licensees may not launch or operate any space stations under the conditional authorization until the Commission has reviewed and approved the submitted plans as compliant with the relevant rules. These factors, along with the six-month period the Commission will have to review the orbital debris information, which is longer than some current application review periods, will prevent applicants from merely achieving "technical compliance with the letter, if not the spirit, of the rules."[462] Conditional grantees also assume the risk that the Commission may not approve their orbital debris mitigation plan if it is insufficient or does not comply with the Commission's rules which would lead to a potential dismissal of an application and leave an applicant without the required FCC license for radiofrequency operations.

162. We also adopt the requirement that final orbital debris mitigation and end-of-life disposal plans must be submitted at least six months prior to integration of any requested space stations with a launch vehicle.[463] We believe that six months is sufficient time for the Commission to review the information and request any additional information needed from the applicant. It also allows time for an applicant to submit, and the Commission to review and act upon, a modification application in the event the conditional grant recipient is unable to provide an orbital debris mitigation and end-of-life disposal plan that conforms with the requirements in section 100.139(a)(1). Upon submission of an orbital debris

[457] An applicant seeking to modify any of the certifications made in the initial application after receiving a conditional grant and before providing the orbital debris information must also file a modification that will be treated as a major modification.

[458] Appendix A at § 100.111(a)(1)(v).

[459] *See* Amazon Leo Comments at 20 ("operators will no longer be disincentivized from improving system design or orbital debris management due to potential administrative delays").

[460] Appendix A at § 100.139(a)(1)(iv) ("A conditionally authorized licensee under this section is not authorized to begin operations until the Commission has reviewed and expressly approved the submitted orbital debris mitigation and end-of-life disposal plan.")

[461] *See* NASA Comments at 7 (suggesting the Commission only allow orbital debris deferral conditional grants by waiver).

[462] *Id.*

[463] Appendix A at § 100.139(a)(1)(iii)(C); *NPRM*, 40 FCC Rcd at 8238, para. 128. *See also* Logos Comments at 5-6 (requesting a shorter time period).

conditional grant recipient's orbital debris mitigation and end-of-life disposal plan, the Space Bureau will announce via informational public notice that the plan is available for interested parties to review. This new conditional grant will provide a significant benefit to satellite operators by allowing them to seek and receive authorization from the Commission earlier, while continuing to build and design their systems and by encouraging them to design to the specific presumed acceptable criteria the Commission has established for space safety.

163. *Commercial Coordination Conditional Grant*. We adopt our proposal to allow space station applicants to receive a commercial coordination conditional grant but we do not adopt this type of grant for earth stations.[464] Space station applicants that request authority to operate in frequency bands shared with other commercial operators where completing coordination is required prior to beginning operations will be able to request a commercial coordination conditional grant. The Commission may, after reviewing the application, issue a grant conditioned upon successfully completing commercial coordination. This would allow a satellite operator to begin operations in certain requested frequency bands without having to wait to complete coordination in shared frequency bands. The operator would still be required to complete the necessary coordination prior to beginning operations in the shared bands and provide a notification to the Commission,[465] but the Commission will not have to take any further action. We also clarify that NGSO space station applicants seeking a license or requesting market access and electing to be in a processing round under section 100.140 are not eligible for a commercial coordination conditional grant because there are specific rules that apply to coordination for processing rounds.[466]

164. *Federal Coordination Conditional Grant.* Finally, we adopt our proposal to allow conditional grants for both earth station and space station applicants in situations where the only issue preventing the Commission from issuing a grant is federal coordination. Under section 100.139(a)(3), the Commission may issue a grant conditioned upon federal coordination.[467] This means in certain circumstances an applicant will not need to complete federal coordination *before* the Commission can act on an application seeking to use shared federal spectrum bands.[468] Instead, the Commission may issue a federal coordination conditional grant that authorizes operations in other requested frequencies and authorizes operations in shared federal bands conditioned upon federal coordination.[469] When the conditional grant holder reaches a coordination arrangement or agreement,[470] they must first notify the Commission and then may begin operating in the shared bands pursuant to any federal coordination

[464] *See NPRM* at para. 129.

[465] Appendix A at § 100.139(a)(2) ("Recipients of a conditional grant under this section must provide notice to the Commission in ICFS once coordination has been completed.").

[466] Appendix A at § 100.139(a)(2)(i).

[467] Appendix A at § 100.139(a)(3).

[468] We do not make substantive changes to federal coordination requirements or remove federal coordination requirements for specific types of earth station applications in this proceeding. *See* AWS Comments at 10 (requesting that the Commission remove coordination requirements for earth station applications requesting communications with EESS satellites in shared federal bands that have already coordinated X-band downlink operations at specific earth stations with federal entities).

[469] We do not require in our rules that conditional grant holders under this section complete federal coordination prior to beginning operations in shared federal bands in all circumstances. The Commission may specify certain frequency bands in which an operator may begin operations while coordination is ongoing and may also specify certain frequency bands for which coordination must be completed prior to beginning operations.

[470] We adopt this language so that applicants are able to notify the Commission of partial coordination, or coordination in specific frequency bands, so that conditional grant holders may begin operations in certain frequency bands without waiting for coordination of additional frequency bands.

arrangement(s).[471] This will allow applicants in certain circumstances to receive authorization from the Commission without having to wait for the completion of federal coordination.[472] And instead of incorporating specific conditions related to operations in shared federal bands into the final Commission grant, we expect these conditions will be memorialized in coordination arrangements or agreements between space station or earth station operators and federal entities.[473] This federal coordination conditional grant will increase the Commission's application efficiency while providing more flexibility to operators. Additionally, instead of needing to file modifications or STA requests under the current rules when operators wish to change a condition on a license related to federal coordination, under the conditional grant process the licensee will be able to work directly with the relevant federal entities to modify any coordination agreement. Recently, in collaboration with NTIA, the Commission has applied broad federal coordination conditions to several grants, and we therefore have further confidence that this approach will make the process more efficient while also protecting federal interests.[474] The Commission will continue to work with NTIA to improve the federal coordination process and increase efficiency.

165. *Conditional Coordination Grants Generally.* We do not allow operations under a commercial or federal coordination conditional grant to begin on an unprotected, non-interference basis *by rule* before the satisfaction of the condition.[475] This may lead operators, specifically earth station operators, who obtain a conditional grant to file for STAs to allow operations in federal bands that are being coordinated in order to operate immediately on an unprotected, non-interference basis.[476] While we

[471] Appendix A at § 100.139(a)(3). We do not adopt a rule that explicitly requires applicants to "provide evidence of completed coordination upon request by the Commission or any impacted federal agency," as AST requests, but we note that a licensee with a federal coordination conditional grant must provide notice to the Commission once coordination is completed or a coordination arrangement has been reached and the Commission may confirm this with NTIA or other federal entities if there is reason to doubt the licensee's notice. *See* AST Comments at 4; Appendix A at § 100.139(a)(3). We also note that AST suggests that the FCC may need to update a Memorandum of Understanding with the NTIA that governs frequency coordination. *Id.* While this is outside the scope of this proceeding, the Commission will continue to work with NTIA and all our federal partners to improve the federal coordination process.

[472] We note that this process is optional, and space or earth station applicants who prefer to wait for federal coordination to be complete and for the Commission to incorporate any conditions that result from that federal coordination into a regular grant are free to do so. Additionally, the Commission will continue to provide assistance to applicants regarding the federal coordination process. While we do not adopt a specific requirement that the Commission provide a point of contact at NTIA as part of the conditional grant process, we note that the Commission has done so in the past and will continue to do so going forward. *See* ITI Comments at 3.

[473] The Commission will retain the ability to enforce compliance with these conditions because operating in accordance with the coordination agreements is a requirement in the rules and therefore violating the coordination agreement would be a violation of the Commission's rules. In case of a potential violation, the Commission would work with the relevant federal entities, including NTIA, to investigate any alleged violation.

[474] *See e.g.*, Space Exploration Holdings, LLC, Grant Stamp, ICFS File Nos. SAT-LOA-20200526-00055, SAT-AMD-20210818-00105, SAT-AMD-20221216-00175, SAT-AMD-20241017-00228 and SAT-AMD-20241011-00224 (granted Jan. 9, 2026); Kuiper Systems LLC, Grant Stamp, ICFS File Nos. SAT-AMD-20250311-00068 and SAT-LOA-20211104-00145 (granted Feb. 10, 2026); Logos Space Services, Inc., Grant Stamp, ICFS File Nos. SAT-LOA-20241030-00243 (granted Jan. 30, 2026).

[475] *See NPRM* at para. 127. We note several commenters raised concerns with operations on an unprotected, non-interference basis prior to satisfying the requisite coordination condition. These commenters were primarily concerned with operations in shared commercial frequency bands by earth stations. *See* Verizon Comments at 18; CTIA Comments at 19; Iridium Comments at 7,12;Viasat Comments at 12-13; Verizon Reply Comments at 11; CTIA Reply Comments at -7; Iridium Reply Comments at 9-10; Letter from Daudeline Meme, Vice President & Associate General Counsel, Verizon, to Marlene H. Dortch, Secretary, FCC, SB Docket No. 25-306 (filed Mar. 30, 2026) (Verizon *Ex Parte*); Iridium *Ex Parte*. Because we do not adopt commercial coordination conditional grants for earth stations, we do not address those related concerns.

[476] *Seeinfra* para. 199 (noting that this results in multiple and redundant STAs).

generally seek to reduce reliance on STAs through accelerating the licensing process with our reforms, operators wishing to begin operations while full requests are under review or before completing the coordination required pursuant to a conditional grant will likely submit STA requests that the Commission must act upon.[477] If granted, these applicants will be able to operate in the authorized frequency bands that are shared with federal operators on an unprotected, non-interference basis. For earth station federal coordination conditional grants, to reduce the administrative burden on Commission staff and ensure that operations authorized on an unprotected, non-interference basis pursuant to an STA are allowed to continue under a conditional grant, we adopt section 100.139(a)(3)(i)(B).[478] This clarifies that, unless otherwise specified, if an earth station applicant who receives a federal coordination conditional grant also has an STA that allows operations in shared federal bands on an unprotected, non-interference basis, the applicant can to continue those operations consistent with the terms and conditions of the STA under the conditional grant without the need for the Commission to issue additional STAs.[479] We believe this mechanism achieves the right balance of ensuring that earth station operators are able to maintain their operations as granted under an STA once they receive a full conditional grant without the need for the applicants to submit, and the Commission to review multiple additional STAs while the licensee is attempting to satisfy any coordination requirements. In addition, we believe that this guarantees that incumbent or shared spectrum users will be protected from harmful interference. This approach also will be more transparent for other interested parties because there will not be multiple STAs on top of a conditional license that would need to be tracked.[480]

5. Processing Rounds

166. The Commission proposed to reform and update the traditional processing round framework to create a modernized and more predictable path to authorization for NGSO systems.[481] The NPRM proposed to pre-designate specific frequency bands determined as eligible for a processing round, shift to an annual processing round structure with extended filing windows, and revise the process by which applicants are placed into a processing round. [482] We generally adopt these proposals, with certain modifications discussed below. Overall, part 100 adopts a voluntary, opt-in processing round framework for NGSO systems that seek to operate in specific frequency bands that will be pre-determined and identified on an annual basis.[483]

167. Processing rounds were created as a mechanism to ensure coexistence during an era in which an NGSO satellite system operating in the same frequency band meant precluding other systems

[477] We expect that the majority of STA requests in these circumstances will come from earth station applicants seeking to operate in shared federal bands.

[478] Appendix A at § 100.139(a)(3)(i)(B) ("Unless otherwise specified, earth station operators who receive a conditional grant under this section may continue operating in shared federal bands for which they hold an authorization for special temporary authority on an unprotected, non-interference basis pursuant to that special temporary authorization until coordination is complete.").

[479] We do not extend this section to space station licensees who have a federal coordination conditional grant. Space station applicants that receive a federal coordination conditional grant may continue to operate on an unprotected, non-interference basis in shared federal bands pursuant to any grants of special temporary authority because those STAs do not automatically terminate upon the issuance of a conditional grant. Additionally, the Commission could authorize, in certain circumstances, operations in shared bands on an unprotected, non-interference basis in the conditional grant itself, despite there being no rule requiring that it do so.

[480] We also believe that incumbent or shared services operators will be vigilant in informing the Commission of any operations that violate the conditions of any conditional grant, and the Commission will be able to take any necessary enforcement actions.

[481] *NPRM*, 40 FCC Rcd at 8240-43, paras. 132-139.

[482] *NPRM*, 40 FCC Rcd at 8240, para. 132.

[483] Appendix A at § 100.140.

from operation.[484] With the considerable recent growth in NGSO applications, we find that the legacy processing-round framework operates too slowly and unpredictably to meet commercial needs. Accordingly, in recent years, the Commission has regularly applied its discretion to waive processing rounds rather than open new ones.

168. Decades later, NGSO operators are no longer operating under the same constraints.[485] The NPRM asked for input on whether the legacy processing round framework still provides applicants, licensees, and the Commission with the same functionality and advantages as originally intended when processing rounds were first implemented.[486] Commenters agree that it does not.[487] Further, the record reflects that NGSOs in the current and future marketplace may reasonably differ in prioritizing certain benefits granted through the regulatory process. The rules we adopt in this *Order* focus on the practical benefits of the processing round structure and orderly assignment of status as well as the protections granted to earlier-round systems by the spectrum sharing framework.

169. While processing rounds retain value as a mechanism to give NGSO systems priority relative to others, we find they are ill-suited to deter "paper" systems and should not be structured to serve that function. While the possibility of speculative systems is necessarily inherent to some extent in part 100, just as in part 25, we find that the surety bonds and deployment milestones best mitigate that risk, and we adopt those protections below. We also adopt stricter rules around major amendments and dismissal of applications for incompleteness which will also help us address potential concerns about ill-conceived, "paper" systems.[488] Lastly, while regulatory fees are not strictly intended to deter speculative systems, we note that the requirement for authorized systems to pay significant regulatory fees annually wards against premature or theoretical NGSO applications. Collectively, we believe these factors work together to mitigate any downsides of processing rounds while allowing us to put in place a new transparent and predictable processing round framework.

170. We modernize our processing-round framework to offer priority-based protection for NGSO systems while offering more *ex ante* predictability so potential applicants can plan rationally and seek necessary interference protections for their systems without years of delay. And we regularize our recent practice to avoid the need for repetitive waivers that rely on artificial consideration of case-by-case factors. Under our new framework: (1) the Commission will open a processing round annually; (2) priority will be established at the date of the NGSO application's filing; (3) annual processing rounds will apply to conventional spectrum bands that are heavily occupied and require shared access through coordination; (4) applicants may elect to participate in an annual processing round; and (5) applicants that

[484] *2003 Order* at 10775-75.

[485] *See 2003 Order* at para. 25. The Commission initially adopted processing rounds to support competitive entry into the marketplace after determining that the first-come, first-served procedure for GSO systems was not as effective to apply for NGSO-like systems. With regard to concerns of unnecessary preclusion, the Commission stated, "This is especially true with respect to NGSO-like satellite systems, in which licensing one satellite system operator to provide service in a particular frequency band segment precludes other satellite system operators from providing service in that frequency band segment."

[486] *NPRM,* 40 FCC Rcd at 8240, para. 133.

[487] *See, e.g.*, Blue Origin Comments at 6 ("The FCC is right to consider if processing rounds as a concept, even done at more frequent and predictable intervals, are the right solution long term."); Logos Comments at 2 ("[A]dvancements in satellite system design and architecture have vastly improved spectrum sharing capabilities, opening opportunities for the Commission to re-examine the necessity and structure of its processing round rules."); Amazon LEO Comments at 8 (supporting the goal to update the processing round framework and encourages a simplified process in light of the recently updated spectrum sharing framework); SpaceX Reply Comments at 6 (noting that the record reinforces that the current processing round framework is in need of reform); TechFreedom Comments at 30 (acknowledges that the rules are outdated in offering alternative framework suggestions).

[488] *See supra* section III.C.2.a.; section III.C.1.

seek valuable priority rights through processing rounds must satisfy heightened bond and milestone requirements to ensure that they do not unnecessarily preclude later-in-time entrants that must design around earlier-in-time systems.

171. *Processing Round-Eligible Frequency Bands.* First, the NPRM proposed for the Commission to determine which frequency bands will open for a processing round annually, rather than initiate a processing round in response to a lead application requesting operation in certain bands.[489] We adopt this proposal to pre-designate certain frequency bands as "processing round-eligible bands" to be announced in advance of an annual processing round.[490] We delegate authority to the Space Bureau to annually determine and announce the processing round-eligible bands for the following year via public notice, to be released not later than 30 days prior to January 1.[491] The Bureau may only *add* processing-round eligible bands to those from the previous year so as to ensure consistency from year to year in which bands operators can expect will be available in the processing rounds. The Commission will announce the frequency bands designated to open for the 2027 annual processing round by public notice.[492]

172. We invited comment from operators on how the Commission can most effectively make these band determinations, in terms of both the frequency band segments and selection process. We anticipate that this advance designation process would be most useful for the workhorse bands that are optimal for NGSO FSS operations, like the Ka-, Ku-, V-, and Q-bands.[493] However, we decline to designate bands by rule in the interest of maintaining flexibility in the evolving satellite spectrum environment. We instead delegate authority to the Space Bureau to initially open processing rounds for Ka-, Ku-, V-, and Q-bands and then add to these bands as appropriate each year. This therefore will be the mechanism by which we ensure bands can be added to the initial set of processing round-eligible bands in an orderly fashion. A number of commenters support designating these core NGSO FSS bands outright as subject to the annual processing rounds, with the Bureau's additional delegated authority to either announce or seek comment on including other frequency bands in the next year's processing round.[494] Other commenters propose including all frequency bands available for NGSO FSS in each annual processing round to avoid creating regulatory uncertainty between rounds.[495]

173. *Annual Processing Rounds*. The NPRM designed a new framework for processing rounds, proposing to replace the current application-based procedure under section 25.157 of the

[489] *See* 47 CFR § 25.157. Under the current rules, a processing round is initiated when an application for an NGSO-like satellite system is placed on public notice as a "lead application," establishing a filing window and cut-off date for applications to be filed in response, or "competing applications." Once the filing window is closed and all applications are submitted, the Commission reviews each application to determine whether an applicant is legally, technically, and otherwise qualified, and whether the proposed operations will comply with all applicable rules and policies and will serve the public interest, convenience, and necessity. The Commission will then issue licenses to qualified applicants based on a determination of available spectrum in the identified bands, subject to the spectrum sharing rules.

[490] *NPRM*, 40 FCC Rcd at 8241, para. 134.

[491] Appendix A § at 100.140(b).

[492] If, for any administrative reason, the 2027 processing rounds are not able to be announced and opened as planned, we delegate authority to the Space Bureau to adjust and announce the opening of the window. We expect public notice would still be made 30 days prior to the opening of the window.

[493] *NPRM*, 40 FCC Rcd at 8242, para. 136.

[494] Amazon Leo Reply Comments at 8-9 (stating that identifying the workhorse bands for annual processing round bands with delegated authority to the Bureau would ensure that processing rounds are effective and promote predictability and orderly licensing).

[495] Eutelsat Comments at 9; SES Comments at 29; Rivada Comments at 13.

Commission's rules with annual processing rounds.[496] We adopt this proposal.

174. Under the annual processing round framework, the Commission proposed to pre-determine specific frequency bands as "processing round-eligible bands."[497] As adopted, each band-specific processing round, as determined by the Commission in advance, will automatically open to applicants and petitioners for declaratory ruling at the start of each year and remain to accept applications throughout most of that year. If an application requests authorization to operate in one or more processing-round eligible bands and requests inclusion in a processing round, that application will be placed into the corresponding processing round(s). Processing rounds will automatically open on January 1 at 12:00 am Eastern Time and close on October 31 at 11:59 pm Eastern Time.[498]

175. We believe that moving to these extended processing round filing windows accomplishes the Commission's goal of providing a more effective structure to encourage more complete applications for operational systems and deter spectrum warehousing in the workhouse frequency bands for NGSO operators. When processing rounds were first adopted, the Commission recognized that "announcing a cut-off date can cause a sense of scarcity to develop, when applicants recognize that this may be their only opportunity to secure access that orbit/spectrum resource."[499] The Commission then adopted safeguards on processing rounds, limiting the number of pending applications permitted per applicant, to avoid creating an incentive for speculative applications.[500] In recent processing rounds, the Commission provided interested entities with 90 days to submit competing applications and petitions for declaratory ruling for U.S. market access to operate NGSO FSS systems in specific frequency bands announced via public notice.[501] However, based on Commission experience, the procedures for recent processing rounds have not proved effective in reducing applications filed in response to a perceived limited window of access to spectrum resources. The majority of commenters support the annual processing round framework.[502] Commenters generally agree on the January 1 to October 31 filing window, agreeing with our conclusion that a longer filing window will provide greater predictability and lead to better applications.[503] Our action to extend the processing round filing window and open filing windows on an annual basis, combined with other rules discussed elsewhere, continues to implement the Commission's longstanding priority to deter speculative filings and seeks to incentivize complete applications for viable systems. While the regular, longer widow to file each year could encourage more non-viable systems to

[496] 47 CFR § 25.157. We note that the *NPRM* also referred to the proposed processing rounds as "synthetic processing rounds." NPRM at para. 143. In this *Order* and in part 100, we only refer to this component of the adopted processing round structure as "annual processing rounds."

[497] *NPRM*, 40 FCC Rcd at 820, para. 132.

[498] *NPRM*, 40 FCC Rcd at 8241, para. 134; Appendix A § 100.140. We recognize that applications filed on October 31, the close of the annual processing window, may request a trick, or in the alternative, a treat. We clarify that any such requests may be deemed as "spooky" and are subject to the Commission's discretion.

[499] *2003 Order* at para. 227.

[500] *Id.* at para. 228.

[501] *See*, *e.g.*, *Cut-Off Established for Additional NGSO-like Satellite Systems in the 37.5-40.0 GHz, 40.0-42.0 GHz, 47.2-50.2 GHz, and 50.4-51.4 GHz Bands*, Satellite Policy Branch Information, Public Notice Report No. SPB-288, DA 21-941 (Aug. 4, 2021) ("Second V-Band Processing Round Public Notice") (opening the second V-band processing round for competing applications).

[502] *See, e.g.,* SES Comments at 28; Amazon Reply at 8; Myriota at 11-12 ("The Commission's proposal to open new processing rounds at the beginning of the year would be a welcome change from its existing processing round protocol"); ITIF Comments at 4 ("The Commission should adopt a synthetic processing round that runs from January 1 to October 31 of each year because it will improve the application process by creating greater predictability, allowing applicants to file for inclusion at any time, and eliminating cut-off dates and the need for lead applications); Kepler Comments at 5.

[503] *See* ITIF Comments at 4; Myriota Comments at 11-12; Muon Comments at 9.

apply relative to the shorter period to file following a lead application under the part 25 model, we believe the other policies we adopt (e.g., the surety bond reforms) will significantly raise the costs of such behavior.

176. The *NPRM* sought comment on alternative structures or additional processing round considerations, as well as any potential complications of the proposed framework.[504] We decline to adopt Blue Origin's proposal to implement a rolling approach to annual processing rounds, whereby a round would close mid-year if no applications for that particular band have been received, as a mechanism against potential warehousing or gaming.[505] Alternatively, Blue Origin suggests lengthening a processing round until some minimum number of applications have filed and use conditional grants to bridge any gaps.[506] While we understand these concerns, this framework intends to allow for applicants to file viable applications when they are ready to do so, rather than within a short window of time.

177. TechFreedom argues that the extended filing window may incentivize applicants to file late in the year to wait for the window to close.[507] We see little concern if applicants file late in the window since there is little apparent harm to other applicants of doing so, and such delay will mean the application would also be reviewed later in time than earlier-filed applications based on our processing timelines. In fact, since we adopt a rule in section 100.137(d) making clear that processing round applications will be treated as major amendments and thus could be placed in a later processing round, an applicant choosing to file a system late in the window takes considerable risk if the application is not complete and well specified.[508] Further, all NGSO FSS operators licensed or granted market access must coordinate in good faith, regardless of processing round status.[509] The good-faith coordination requirement means that any such gaming is of limited utility.

178. We also disagree with concerns that annual processing rounds would upend the spectrum sharing framework. SpaceX argues that the extended filing windows may "invite a barrage of speculative applications" by creating a false impression of spectrum scarcity and require the Commission to prematurely divide spectrum among operators under the default spectrum splitting rules.[510] SpaceX further contends that an increase in speculative applications could delay or block upgrades to legitimate systems by requiring them to show through modification applications that they will not increase interference problems into non-existent systems.[511] We acknowledge these concerns, but we are not persuaded that opening new processing rounds would invite such a "barrage" on an annual basis. As a preliminary matter, any time the Commission has previously opened new processing rounds, it is precisely intended to invite applications.[512] In fact, as we discuss in this section, one of the intentions in reforming the processing round structure is to move away from creating an impression of spectrum scarcity and resulting flood of speculative or placeholder applications. We also believe that the surety bond and annual regulatory fees for authorized NGSO systems in processing rounds, as well as our new

[504] *NPRM*, 40 FCC Rcd at 8242, para. 136.

[505] *See* Blue Origin Comments at 7.

[506] *See* Blue Origin Comments at 7.

[507] *See* TechFreedom Comments at 32.

[508] *See* Appendix A at § 100.136(d).

[509] *Revising Spectrum Sharing Rules for Non-Geostationary Orbit, Fixed-Satellite Service Systems*, IB Docket No.21-456, Report and Order, 38 FCC Rcd 3699 at 3708 (2023) (*2023 Order*).

[510] *See* SpaceX Reply Comments at 6-7.

[511] *Id.* at 7.

[512] *See, e.g.*, *Second V-band Processing Round Public Notice*, DA 21-941 at 3 ("We invite additional applications and petitions for declaratory ruling for NGSO satellite operations in the 37.5-40.0 GHz, 40.0-42.0 GHz, 47.2-50.2 GHz, and 50.4-51.4 GHz bands.").

rules for completeness and dismissal, will safeguard against such a "barrage." As Logos states, the Commission's milestone and surety bond rules together "set clear expectations" for applicants, and this structure helps to preserve access to spectrum for qualified entrants while "discouraging filings that would otherwise 'paper' priority rights without service deployment."[513]

179. We reiterate that the rules adopted in this *Order* are designed to move applications more efficiently through the review process and allow applicants to receive authorization for authority on a timely, predictable basis. Thus, we expect licensees to comply with the applicable operational and regulatory requirements, including the surety bond requirement. We detail the Commission's adopted surety bond rules in section III.C.4, but by requiring processing round licensees to post a surety bond as an attached requirement of the processing round rules within 30 days of authorization, we believe this will further discourage speculative or bad faith applications or filing of applications before an NGSO operator may be financially ready to do so.

180. *Processing Round Eligibility Criteria*. The NPRM proposed criteria to determine when or which applications for NGSO systems would be placed in a processing round.[514] We proposed to automatically consider an NGSO application in a processing round if: (1) the applicant seeks to operate in one or more frequency bands that the Commission has designated as a processing round-eligible band and; (2) the NGSO system includes 200 or more space stations.[515] We additionally proposed to allow NGSO system applicants that request to operate in a processing round-eligible band but with fewer than 200 satellites to voluntarily request that the application be considered in a processing round.[516]

181. We decline to automatically consider all NGSO system applications with 200 or more space stations under the processing round framework, and instead will consider NGSO systems as eligible for a processing round if the application: (1) seeks to operate in one or more processing round-eligible frequency bands; and (2) expressly requests consideration in a processing round.[517] While a number of commenters supported the criteria, especially operators of smaller systems, we believe that the adopted criteria ultimately provides the intended purpose for these operators.[518] The adopted criteria relieves these operators of the required processing round pathway, and the associated surety bond, while still offering them the flexibility to determine whether inclusion in a processing round would better support their specific mission. We believe the modified, opt-in framework strikes the right balance in addressing the interests and concerns of all NGSO operators.

182. Commenters were divided on including applications in a processing round based on the number of space stations in a proposed system. Operators in support of the criteria, particularly smaller NGSO operators, strongly encourage the Commission to exempt systems with 200 or fewer satellites from processing rounds.[519] These operators contend that smaller systems, which generally have fewer than 200 space stations, typically do not constrain future market entry into these frequency bands and can effectively operate on a non-interference basis if authorized outside of a processing round. Supporters

[513] *See* Logos Reply Comments at 4-5.

[514] *NPRM*, 40 FCC Rcd at 8242, para. 137. Section 25.156 specifies that applications "NGSO-like satellite operation[s]" will be considered under the processing round framework. Section 25.157(a) defines "NGSO-like satellite operation" as meaning the operation of any NGSO satellite system and operation of a GSO MSS satellite to communicate with earth stations with non-directional antennas. 47 CFR §§ 25.156, 25.157(a).

[515] *NPRM*, 40 FCC Rcd at 8242, para.137.

[516] *Id.* at para. 138.

[517] Appendix A at § 100.141.

[518] *See, e.g.,* Capella Comments at 13-14 ("As the Commission notes, this approach provides operators of smaller systems 'flexibility to seek priority in a processing round if that is worth the cost of taking on the bond'").

[519] *See* Capella Comments at 13-14; Muon Reply at 9; Reflect Orbital Comments at 3.

also note that this threshold would be a more effective way to manage priority status among systems authorized in processing rounds.[520] However, other commenters express concern with determining processing round eligibility solely based on the number of space stations included in a proposed system and caution that establishing the threshold for inclusion in a processing round based on the number of space stations in a proposed NGSO satellite system may introduce complications into the processing round framework.[521] Amazon Leo argues that an NGSO system with 200 or fewer satellites can effectively warehouse spectrum as a larger system if the operator has no real plans to deploy, and suggests that the Commission's anti-warehousing measures should focus on "ensuring genuine deployment intent, not on arbitrary size thresholds that bear no relationship to actual warehousing risk."[522]

183. After review of the record, and in alignment with the surety bond rules adopted in this *Order*, we adopt the proposed eligibility criteria in part and establish that all NGSO system applicants will be eligible for inclusion in a processing round, regardless of the number of space stations included in the proposed constellation. An NGSO system applicant can voluntarily request inclusion and consideration in a processing round if the applicant seeks to operate in a processing round-eligible frequency band.[523] NGSO systems that are authorized in a processing round will be required to post a surety bond within 30 days from authorization, consistent with the part 25 surety bond rules for NGSO systems.[524] In other words, any NGSO applicant can opt in, if the application requests to operate in frequency bands that the Commission has designated as processing round eligible bands, but must post a surety bond.

184. Additionally, the *NPRM* proposed that NGSO system applicants that request to operate in multiple frequency bands would be placed in the corresponding processing round for each processing round-eligible frequency band, and the remainder of the requested frequency bands that are not designated to open for a processing round would be considered under the expedited processing procedures. We decline to adopt this proposal. We retain the Commission's existing rule on this point and confirm that an application requesting to operate in both processing round-eligible bands and bands reviewed under standard processing, the entire application will be included in the request for inclusion in a processing round. Regarding applicants that request to operate in more than one processing round-eligible band, the application will be considered as having requested inclusion in each corresponding processing round.

185. *Priority Status*. The *NPRM* proposed to determine the processing round in which an application is included based on the date of authorization, rather than by the date of filing, as under the current framework.[525] The NGSO FSS spectrum sharing framework outlines the operating requirements for licensed systems based on the specific processing round in which they are authorized, as established at the date of application filing.[526] We do not adopt the proposal and instead retain the current approach, that the application filing date determines the processing round and the associated priority status.[527]

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[520] *See* Muon Reply at 8; Kepler Comments at 5 ("Managing and attributing priority status this way reconciles with the varying needs of individual operators (e.g., operators of systems composed of less than 200 satellites who have already coordinated all their activities or who do not have any interference concerns)").

[521] *See* SpaceX Comments at 11 ("A system with 200 satellites has the same share of spectrum as a system with 10,000 satellites. Moreover, a 200-satellite system can have a greater preclusive effect than a 10,000- satellite system").

[522] Amazon Leo Comments at 11.

[523] Appendix A at § 100.140.

[524] Appendix A at § 100.147; *see* 47 CFR § 25.165.

[525] *NPRM*, 40 FCC Rcd at 8241, para. 135.

[526] *See* 47 CFR §§ 25.157, 25.161.

[527] Appendix A at § 100.140.

Commenters strongly opposed moving away from establishing processing rounds based on filing date, urging the Commission to retain this rule.[528] Operators assert that tying processing round status to the application filing date gives more predictability to both applicants and licensees and provides operators with the information required for coordination and protection of incumbent systems.[529] Further, commenters note that determining priority status based on authorization date may unintentionally incentivize gamesmanship by inviting oppositions or other delays in application filing and processing, which in some cases may be no fault of the applicant.[530] We agree that the risks outweigh the benefits and shifting this approach may upset the current spectrum sharing landscape for incumbent operators. The Commission will continue to determine the priority status attached to a system authorization for NGSO systems authorized in a processing round based on the particular processing round in which the application was filed.[531] As an overall matter, commenters urged the Commission to ensure that any reforms adopted are consistent as one comprehensive and cohesive regulatory framework, especially for processing rounds, surety bonds, and milestones.[532] The adopted surety bond reforms are discussed in section III.B.4, but we determine that the surety bond requirements will attach to those NGSO systems voluntarily requesting processing of the application for authorization within a processing round. The reformed milestone deployment requirements, as discussed in section III.C.3, are additionally revised in connection with processing rounds and the surety bond obligations.

186. *Transition to annual processing rounds*. The revised processing round framework will apply prospectively to new applications for NGSO satellite system applicants requesting inclusion in a processing round.[533] We note that the Bureau has recently granted several NGSO system applicants' requests for waiver to operate in certain frequency bands either outside of a processing round or where the Bureau declined to open a new processing round at that time.[534] In these cases, operation in the identified bands is conditioned on coordination with all existing and future operators in the band and the operator must comply with any sharing requirements adopted as part of a future processing round.[535] We require

[528] Eutelsat Reply Comments at 9; Amazon LEO Reply Comments at 8; Rivada Reply Comments at 6.

[529] SES Comments at 28 ("Setting processing round status based on grant date, as proposed, would mean that operators would not know what systems they would be required to protect, coordinate equally with, or be protected by until much further on in the process."); Amazon Leo Reply Comments at 8.

[530] *See* Amazon Leo Comments at 9; Amazon Leo Reply Comments at 8 ("Basing status on Commission action introduces uncertainty and incentivizes oppositions designed to delay grants and manipulate round placement."); SIA Comments at 6; Logos Comments at 3; Tech Freedom Comments at 32; Rivada Reply Comments at 6; Eutelsat Reply Comments at 9.

[531] *See* Appendix A at § 100.241.

[532] Amazon LEO Comments at 8; Amazon Reply Comments at 4 ("the record supports adopting these proposals together as a single and cohesive policy shift.").

[533] *See* CFS Reply Comments at 5 (requesting clarification that any new processing round rules only apply to new licensees).

[534] *See, e.g.*, Space Exploration Holdings LLC, Request for Orbital Deployment and Operating Authority for the SpaceX Gen2 NGSO Satellite System, Order and Authorization, DA 24-222, ICFS File Nos. SAT-LOA-20200526-00055, SAT-AMD-20210818-00105, SAT-AMD-20221216-00175 (March 8, 2024) (declining to open a processing round for NGSO FSS operations in the E-band (65-71 GHz band) but conditioning SpaceX's operation in the 65-71 GHz band on coordination with any and all existing and future FSS operators in the band and on compliance with any sharing requirements adopted as part of a future E-band processing round. If the Commission opens a processing round for this band in the future, the round may include SpaceX, depending on the number of applications in the band and the ability to effectively share spectrum.); *see* Application of Logos Space Services, Inc., to Construct, Launch, and Operate a Non-Geostationary Orbit System in the Fixed-Satellite Service, ICFS File No. SAT-LOA-20241030-00243, ICFS File No. SAT-AMD-20250328-00084, *Satellite Licensing Division and Satellite Programs and Policy Division Information*, Public Notice, Report No. SAT-01971 (Jan. 30, 2026).

[535] *Id.*

the Space Bureau to release a public notice detailing the specific procedures applicable to any such conditioned operations in certain frequency bands and outlining next steps for any interim or transition periods prior to the effective date of the new processing round framework in section 100.140.[536]

187. *NGSO FSS Spectrum Sharing*. NGSO FSS operators who are granted authority to operate in certain frequency bands through a processing round are required to comply with the Commission's spectrum sharing rules among NGSO FSS systems.[537] This requirement works in conjunction with the orderly processing round framework we adopt, as it means that all systems authorized through processing rounds will have clear rules for sharing within and across processing rounds. For these systems, the Commission recently adopted specific protection criteria and other sharing obligations developed with the benefit of a substantial technical record.[538] Specifically, NGSO FSS systems authorized in a later processing round are required to either certify that they have reached a coordination agreement with any earlier-round, operational NGSO FSS system or demonstrate that they will satisfy the dual protection criteria of: (1) causing no more than 3% degraded throughput to the earlier-round system; and (2) causing no more than 0.4% absolute change in availability to the earlier-round system.[539] We did not propose, nor do we adopt, any substantive changes to the NGSO FSS sharing criteria in section 25.261, including the requirement that NGSO FSS licensees and market access recipients must coordinate in good faith the use of commonly authorized frequencies regardless of their processing round status.[540] We proposed to carry over the provision in section 25.157(b)(2) requiring that NGSO FSS space station licenses are exempt from the frequency band segmentation procedures that otherwise apply to applications for NGSO operations.[541] We incorporate these rules into section 100.241.[542]

188. The Commission currently applies a default spectrum-splitting procedure for NGSO FSS systems approved in the same processing round, absent a coordination agreement, and requires later-round systems to either coordinate with or otherwise demonstrate they will protect earlier-round systems, subject to the sunsetting provision.[543] NGSO FSS systems authorized in the same processing round share spectrum on an equal basis under a $\Delta T/T$ 6% spectrum-splitting rule, and this equal treatment is also extended to later-round NGSO FSS systems following a 10-year sunset period. We proposed to incorporate these procedures into part 100, with no substantive revisions. We adopt the spectrum splitting procedures into section 100.241 as well. In the *FNPRM*, we also seek comment on whether we should adjust the sunset period for NGSO-NGSO sharing to begin at the same time each year (i.e., January 1 of the year following the relevant processing round), rather than with the date of the first grant in the processing round.[544] This would allow for all sunsets going forward to be uniform and easy to track.

189. *Mutually Exclusive Applications*. The NPRM proposed to delete rule section 25.155 regarding mutually exclusive applications.[545] We tentatively determined that this requirement is no longer needed, given that satellite and earth station operators share spectrum and the rules proposed

[536] Appendix A at § 100.140.

[537] 47 CFR § 25.261; Appendix A at § 100.241.

[538] 47 CFR § 25.161; *see 2024 Second Report and Order*.

[539] *NPRM*, 40 FCC Rcd at 8245, para. 146.

[540] *NPRM*, 40 FCC Rcd at 8244, para. 141.

[541] *NPRM*, 40 FCC Rcd at 8243-44, para. 140.

[542] Appendix A at § 100.241.

[543] 47 CFR § 25.261.

[544] *See infra FNPRM* at para. 360.

[545] *NPRM* at para. 143; 47 CFR § 25.155.

account for the compatible operations of different licensees through first-come, first-served application processing, processing rounds, and various technical requirements on space and earth station operation.[546] No commenters opposed this proposed deletion and we accordingly eliminate the mutual exclusivity requirement from the rules. We add to this section language previously contained in section 25.113(g) that allows emergency replacement satellites to be exempted from first-come, first served processing to allow for replacements as result of a launch failure or a catastrophic in-orbit failure.[547]

190. *Compatibility of Systems Authorized Outside of a Processing Round.* For NGSO satellite systems authorized to operate in frequency bands that are not granted in a processing round, the *NPRM* proposed to require compatibility with existing or future operations in those bands.[548] We proposed to incorporate the Commission's existing requirement applicable to small satellites and small spacecraft under the streamlined licensing procedures, which requires NGSO system applicants to certify and demonstrate that operation of the proposed NGSO system will be compatible with existing operations in the requested frequency bands and will not materially constrain future space station entrants from using the requested frequency bands.[549]

191. Since the *NPRM* proposed to eliminate the streamlined processing framework as a separate path to authorization, we proposed to retain this compatibility criteria for NGSO system applications under part 100.[550] We proposed to incorporate in part 100 that NGSO satellite systems authorized outside of a processing round "must be compatible with existing operations in the authorized frequency band(s) and must not materially constrain future space station entrants from using the authorized frequency band(s)."[551] We adopt this requirement, with modifications, in sections 100.112 and 100.200.[552]

192. The Commission adopted this compatibility provision for NGSO systems applying for a license or U.S. market access authorization through the streamlined small satellite and spacecraft authorization frameworks in sections 25.122 and 25.123.[553] In the *Streamlining Licensing Procedures for Small Satellites Order*, the Commission determined that a certification and demonstration requirements at the application stage for eligible streamlined processing applicants supported exempting these NGSO systems from the NGSO system processing round procedures.[554] The Commission concluded that "the spectrum demands of systems qualifying for the streamlined process will differ substantially from the requirements for full-time system availability that characterize the NGSO systems typically processed through a processing round."[555] Notably, the Commission added that it "has granted waivers of the processing round rules for NGSO satellites, including small satellites, based on the applicants' demonstrations that they can avoid interference events through means such as schedule of transmissions,

[546] *NPRM* at para. 143.

[547] Appendix A at § 100.141(b).

[548] *NPRM*, 40 FCC Rcd at 8244-45, para. 144.

[549] 47 CFR §§ 25.122(c)(9), (d)(3), 25.123(b)(7).

[550] *NPRM*, 40 FCC Rcd at 8244-45, para. 144.

[551] *Id.*, citing Appendix A at § 100.140(c)(4)(iii).

[552] Appendix A at §§ 100.112(b)(13), 100.200(c).

[553] *See Streamlining Licensing Procedures for Small Satellites*, IB Docket No. 18-86, Report and Order, 34 FCC Rcd 13077 at 13108-09, para. 82 (2019) (*2019 Small Satellite Order*); 47 CFR §§ 25.122, 25.123.

[554] *2019 Small Satellite Order*, 34 FCC Rcd at 13108-09, para. 81. "An applicant will be required to (a) certify that operations of its satellites will not interfere with those of existing operators, (b) certify that it will not materially constrain future operators from using the assigned frequency bands(s), and (c) provide a brief narrative description illustrating the method by which both current and future operators will not be materially constrained."

[555] *Id.*

and also that they would not preclude future entrants from using the same spectrum."[556] The Commission determined that the "materially constrain" standard provided clearer guidance in establishing the certification on a system's impact on future entrants into the band while allowing applicants more flexibility to adjust their system operations and accommodate other operators as needed.[557]

193. Commenters addressing this proposal support including this obligation to avoid causing harmful interference to other licensed operators.[558] We believe that including this required certification and demonstration for NGSO systems not authorized in a processing round is consistent with Commission practice and precedent, and is appropriate to incorporate into the NGSO system part 100 application rules. The streamlined processing eligibility criteria, which we eliminate in this *Order*, was limited to NGSO systems with ten or fewer space stations and further limited to only those systems meeting each of the remaining technical and operational criteria and certifications.[559] A majority of NGSO system applications the Commission receives request operations of ten or fewer space stations, or another relatively low number, but may not meet one or more of the streamlined processing criteria and are thus required to file under standard part 25 processing. The Commission's rationale in adopting this rule in 2019 remains reflective of current practice as well. We continue to rely on NGSO system applicants' demonstrations that they can avoid interference events, especially for those applicants seeking waiver of the processing round rules. The Commission also noted that "we expect the methodology for sharing to include coordination in good faith with other operators, including, if necessary, acceptance of new constraints on operations, because failing to do so would in effect be 'materially constraining' other operations."[560] We reiterate this point in adopting the requirements in part 100.[561]

6. First-Come, First-Served Processing

194. *GSO Systems*. We incorporate into part 100 the first-come, first-served application processing procedures under section 25.158, and accompanying technical requirements, for GSO FSS and GSO BSS networks as they currently apply in part 25 and as proposed in the *NPRM*. [562]

195. *NGSO System*s. For NGSO systems, we adopt two processing frameworks above—a new processing round procedure and a procedure for applications considered outside of a processing round. As these two frameworks are complementary and address all NGSO applications, we do not adopt any first-come, first-served processing procedures for NGSO systems.

C. Additional Reforms for Licensing Efficiency

196. In addition to the key reforms already discussed, we adopt several other changes to improve license processing. First, we modernize our application dismissal framework by replacing broad, subjective standards with clearly enumerated criteria for dismissals and major amendments. We also streamline requirements for space station modifications, including transitioning to post-change notification for specified updates and making modifications to hosted and software-defined payloads easier. To promote more efficiency for temporary operations, we establish standardized 60-day and 180-day STA terms and provide for automatic extensions when a timely underlying application is pending. Further, we reorganize the assignment and transfers of control provisions of part 25 to improve usability, allow ITU filings to be submitted independent of a space station application, revise milestones,

[556] *Id.* at n. 223, 235.

[557] *Id.* at para. 82.

[558] Globalstar Comments at 6; Eutelsat Reply at 9; Muon Comments at 9.

[559] *2019 Small Satellite Order*, 34 FCC Rcd at 13084, para. 19.

[560] *Id.* at 13109, para. 83.

[561] Appendix A at § 100.140(d).

[562] *NPRM,* 40 FCC Rcd at 8245, para.145.

and revise surety bond obligations. We also harmonize license terms and adopt new measures to enhance accountability and transparency across the licensing process. Finally, we provide guidance the transition from part 25 to part 100.

1. Dismissal and Return of Applications

197. We adopt our proposed changes to the Commission's rules dealing with dismissal and return of applications and replace the existing section 25.112 with the proposed rule contained in section 100.135.[563] The new rule restructures and updates the current standards and establishes seven detailed dismissal criteria. The proposed framework replaces broad standards with enumerated, objective criteria to support more predictable application processing.

198. Section 25.112(a) provides that an application will be returned if it is defective with respect to completeness, informational showings, internal inconsistencies, execution errors, or other matters of a formal character, or if it does not substantially comply with applicable Commission requirements. We replace the general completeness and substantial-compliance standards of sections 25.112(a)(1)–(2) with reference to the new completeness definition in section 100.131 and with targeted grounds for dismissal. The final rule introduces several specific bases for dismissal not found in section 25.112. These include failures to submit all necessary forms (§ 100.135(b)(2)); mismatches between the type of authority sought and the operations proposed (§ 100.135(b)(4)); and non-compliance with application requirements contained in sections 100.100–100.121 (§ 100.135(b)(5)). Section 100.135(b)(7) adds a new basis for dismissal where the application contains, or appears to contain, materially false information. Section 100.135(b)(1) also provides that an application deemed incomplete under section 100.131 may be dismissed if the applicant fails to correct the deficiencies within 30 days of a Commission notice—an explicit cure period not contained in the current part 25 rule.

199. The new rule also includes certain procedural safeguards intended to streamline processing. For example, section 100.135(a) establishes a new default rule providing that dismissal or return of an application is "without prejudice" unless otherwise specified, a formulation not present in the existing rule. Other procedural changes include dismissal if the application is not accompanied by required application fees at time of filing (§ 100.135(e)); an applicant-initiated mechanism permitting dismissal or return without action, though without refund of fees (§ 100.135(f)); and a new withdrawal provision allowing applicants to withdraw filings at any time (§ 100.135(g)).[564] Some commenters object to requiring that the application fee be paid at the time of filing rather than continuing to follow existing part 1 rule, 47 CFR § 1.1000(e)(4), which allows applicants a 14-day window after filing to pay the associated application fee.[565] The deviation from part 1 is warranted to effectuate the processing timelines we adopt here, specifically that staff must place an application on public notice within 30 days or contact the applicant to cure deficiencies.[566] Given that resources will likely be given to an application soon after submission in order to meet this timeframe, it is important that fees be paid at the time of submission. The waiver framework in section 100.135(c) preserves the essential structure of section 25.112(b), permitting acceptance of applications where accompanied by a waiver request or where the Commission grants a waiver on its own motion.

2. Other Application Filings

a. Applications for Amendments to Applications

200. We adopt our proposals for major amendments, with changes.[567] In the *NPRM*, we

[563] *NPRM*, Appendix A at § 100.135.

[564] We add the phrase "at time of filing" to section 100.135(e) to clarify this requirement.

[565] *See, e.g.,* Lockhead Martin Comments at 13.

[566] Appendix A § 100.138(a)(1).

[567] *See NPRM,* 40 FCC Rcd at 8247, para. 150.

proposed criteria that would qualify an application as a "major amendment" and would require another public notice period.[568] We retain many of the proposed criteria, however, we eliminate the proposal to qualify an application as a major amendment if the amendment would result in the application falling within one of the proposed exceptions to expedited processing. We delete this language as we no longer include exceptions to expedited processing in our part 100 processing. Instead, we codify a set of criteria, which were proposed in the *NPRM* and are now enumerated in section 100.137, that result in an amendment being deemed major. Though not included in our *NPRM* proposal, we now include an increase in the number of space stations requested as such a change would generally affect interference and orbital location assumptions. In addition, we include changes in the requested orbit(s) or orbital location in section 100.137(c) to reflect language which is contained in our current rule at section 25.116(b)(1). Many of the criteria capture issues that were covered by the exceptions to expedited processing at the proposed rule section 100.137(b)(1).[569] The list of criteria is similar to those currently contained in section 25.116 but includes more specificity to give applicants predictable guidance. For example, while section 25.116(b)(1) discusses an increase in "the potential for interference" broadly, our new rule discusses more clearly discernable changes that result in potential interference increases: changes to power, power density, out of band emissions, changes to antenna gain, the addition of satellites beyond the number previously requested or power beyond what is permitted in the Commission's rules.[570] This specificity is meant to make it clear in advance of filing if an amendment is "major" rather than requiring a detailed analysis by Commission staff to make that determination. We also include in our new regulations operations requiring re-coordination, including with federal agencies, as that condition may affect the interference environment for other operators, including commercial operators and government agencies.[571]

201. If an amendment qualifies as a major amendment under section 100.137(c) and is filed to amend to a pending application for an NGSO FSS system that has requested consideration under the processing round procedures, the amendment will be reviewed as a newly filed application, consistent with section 25.116(c).[572] However, we decline to carve out the provision that a major amendment to a pending application in a processing round will only be considered as a newly filed application if it is filed after an established "cut-off" date.[573] The extended processing round windows adopted in this *Order* negate the need to include a similar requirement past the pre-established, annual October 31 close of all opened processing round windows.[574] Given these extended filing windows, a major amendment to a pending application in a processing round will reset the underlying application's date of filing to the date the major amendment is filed, unless the applicant demonstrates that the requested amendment resolves frequency conflicts with authorized systems and does not create new or increased frequency conflicts.[575] Thus, if a major amendment is filed to a pending application in a processing round and that processing round has since closed, the application will be considered as part of the corresponding processing round

[568] *NPRM,* 40 FCC Rcd at 8247, para. 154.

[569] *See NPRM*, Appendix A at § 100.137(b)(1).

[570] Appendix A at § 100.137(c).

[571] Other additions to part 100 which were proposed in the *NPRM* and codified in this *Order* are the inclusion of waiver requests, an increase in the number of space stations, more specificity regarding radiation safety considerations and changes to earth station location. *See* Appendix A at §§ 100.137(c)(2, (c)(7)-(c)(9).

[572] *See id.*; 47 CFR § 25.116(c).

[573] 47 CFR § 25.116(c).

[574] See *infra* section B(6).

[575] Appendix A at § 100.137; *see* 47 CFR § 25.116(c).

open on the date the major amendment is filed.[576] The major amendment will similarly adjust the attached priority status to the appropriate processing round. Applicants requesting a waiver of this provision must demonstrate a showing of good cause and that special circumstances justify that deviation from the rule and grant of the waiver is in the public interest.[577]

202. The NPRM also proposed a bright-line rule of 45 days from the date of initial application filing after which major amendments would not be entertained, to further our goal of increasing application processing speed.[578] We decline to adopt this proposal. The record reflects substantial concern that a rigid 45-day window would be impractical and could undermine, rather than advance, the Commission's objective of efficient and accurate application processing. Most commenters explain that applicants may need more than 45 days to identify and develop information necessary to update or correct an application, particularly in the context of complex satellite system designs, ongoing system testing, or federal coordination processes that applicants do not control.[579] Commenters also note that engineering refinements, coordination outcomes, and other developments routinely occur beyond the initial 45-day period and that prohibiting or automatically dismissing amendments filed after that deadline would risk preventing applicants from providing the Commission with complete, up-to-date information.[580] Given these concerns, and in light of the Commission's interest in ensuring that applicants can provide accurate information throughout the application review process, the Commission concludes that imposing a 45-day deadline and automatic dismissal rule for major amendments would not serve the public interest. We emphasize, however, that the Commission may dismiss applications that are not complete at any time in the review process.[581]

203. We remind applicants that they are responsible for the continuing accuracy and completeness of information provided in a pending application or in a proceeding involving a pending application.[582] The Commission's rules require that, whenever the information furnished in a pending application is no longer substantially accurate and complete in significant respects, the applicant shall as promptly as possible, but within 30 days, amend or request amendment of the application to furnish such additional or corrected information as may be appropriate, except as otherwise required by specific rules applicable to specific types of applications.[583] Section 1.65 of the Commission's rules categorizes an application as "pending" from the time it is accepted for filing by the Commission until a Commission grant or denial of the application is no longer subject to reconsideration by the Commission or to review by any court.[584] Considering the review standards, procedures, and timelines adopted for space and earth station applications in this *Order*, and consistent with the Space Bureau's practice in reviewing applications, we adopt that an application will be considered as "pending" under section 100.136 from the time of filing. We codify this language in section 100.137 for clarity and consistency with both the

[576] *See* Appendix A at § 100.137. In the event a major amendment is filed after the close of one year's processing round but before the beginning of the next year's processing round, the application will be considered part of the next year's processing round.

[577] 47 CFR § 26.116(c)(4) (requiring that the amendment is demonstrably necessitated by events which the applicant could not have reasonably foreseen at the time of filing).

[578] *NPRM*, 40 FCC Rcd at 8247-48, para. 152.

[579] *See* SES Comments at 22-23; SIA Comments at 6-7; Leaf Space Comments at 16, 24; LEO Comments at 24. *But see* Lockheed Martin Comments at 13 (supports adoption of 45-day amendment window).

[580] *See* Viasat Comments at 16-17; Astranis Reply at 17; Intuitive Machines Reply at 3-4.

[581] *See* Appendix A at § 100.135(b)(1).

[582] 47 CFR § 1.65(a).

[583] *Id.*

[584] *Id.*

Commission's rules and the part 100 application framework.[585]

b. Applications for License Modifications

204. We adopt our proposals related to modifications of station licenses and authorizations, with a few changes.[586] Our overall objective in adopting these modification rules is to limit review of changes to licensed systems as much as possible, while ensuring that the Commission meets its statutory obligations and disincentivizing licensees trying to bypass review. Many commenters support the Commission's goals of making the modification process less cumbersome[587] and some offer targeted changes to the proposed rules.[588] We therefore alter our modification rules from those proposed in the *NPRM* based on input from the comments.

205. The *NPRM* proposed to classify certain proposed changes to the terms or parameters of a license or authorization as either major modifications, minor modifications, or modifications not requiring notice to the Commission.[589] A major modification, as proposed, would include any requested modification that requires an application for modification requiring Commission approval. A minor modification would encompass permissible changes to an authorization that would not require Commission approval prior to implementation, but would require, depending on the change, an application for modification or notice to the Commission either before or after the change is made.[590] Modifications not requiring notice to the Commission would be changes that the operator may make freely, without requiring notice to the Commission. Further, we proposed the specific operational and technical changes that would fall into each category.[591] The *NPRM* sought comment on establishing these major and minor modification categories, the types of modifications included in each, and corresponding application and notice procedures.[592] We adopt these modification categories with support from the record.

206. We adopt a general rule allowing licensees to modify their system operations without notifying the Commission or prior authorization if the change does not constitute a major or minor

[585] Appendix A at § 100.137(b).

[586] *See NPRM,* 40 FCC Rcd at 8248-50, paras. 153-160.

[587] *See* SpaceX Comments at 15-16; Sateliot Comments at 5; Spire Comments at 4, 10; Leaf Comments at 16-17; Hawkeye 360 Comments at 3.

[588] *See* SpaceX Comments at 15-16 (proposing a simplified list of what constitutes a major modification); Sateliot Comments at 5-7 (suggesting the Commission publish a guide of what type of modifications fall into each category; proposes that payload modifications for expanded services that are within already authorized frequency bands be considered minor modification; and asks the Commission to recognize narrowband IoT service operations with very low aggregate PFD and short duty cycles and allow minor payload software updates and to treat these updates as minor modifications if no frequency or PFD limits change); Spire Comments at 4, 10 (requests the Commission remove the notification requirement for changes to antennas, sensors, or microelectronics; proposes that where a U.S. licensee seeks to host a non-U.S. licensed hosted payload the licensee should be required to file a minor modification that includes certain information); CTIA Comments at 9 (suggests that the Commission clarify that changes to coordination with commercial entities would constitute a major modification and should treat these modifications as initial requests); Viasat Comments at 16-17 (suggests that the Commission enumerate specific types of modifications that can be implemented without raising concerns).

[589] See *NPRM,* 40 FCC Rcd at 8248, para. 155 (citing Appendix A at § 100.143).

[590] *See NPRM*, 40 FCC Rcd at 8248; Appendix A § 100.143(d).

[591] We note that the *NPRM* did not propose to enumerate all possible changes a licensee may make that do not require notification or prior authorization. *NPRM* at Appendix A at § 100.143(b). We adopt the same rule text proposed in the *NPRM* that says licensees may modify system operations without notice or prior authorization unless the change is a minor or major modification.

[592] *NPRM,* 40 FCC Rcd at 8248-49, para. 155.

modification.[593] We list the specific requested changes that qualify as major modifications in section 100.142(c).[594] We specify the changes that will constitute minor modifications in section 100.142(d), and further define the minor modifications that require notification after modification and those that require notification before modification.[595]

207. We adopt section 100.142(c) for major modifications. Applications for major modifications are effectively processed as initial applications, subject to the same application processing procedures, and will be listed on public notice as acceptable for filing following a determination of completeness.[596] We list twelve specific types of major modifications, but generally, a major modification is one that generally creates a change in the interference environment, affects coordination, adds authorized frequencies, or changes the orbital parameters of a licensed system.[597] Applicants proposing to modify their system in one of these ways must file an application for modification with the Commission subject to the same process as filing a new license application.[598] We are not persuaded by commenters who recommend adopting a more limited set of changes that qualify as a major amendment.[599] Instead, by clearly stating the changes that will constitute either a major modification or a minor modification, we provide licensees with greater predictability and flexibility. Changes that are not enumerated in section 100.142 do not require an application for modification or notice of the modified operations to the Commission. The purpose of these revisions to the license modification rules is to allow for considerable flexibility for operators while still ensuring sufficient Commission oversight and alleviating the need for STAs.[600] We reject SpaceX's proposal to replace the enumerated list of major modifications with more general language, as this may provide less guidance to applicants and inadvertently broaden the set of changes that actually require a major modification.[601]

208. The adopted rules establish two types of minor modifications, which do not require prior Commission authorization: (1) minor modifications, where notification to the Commission is required after the change is made,[602] and (2) minor modifications, where notification to the Commission is required prior to the change in operations.[603] We clarify that notification, for purposes of minor modifications, refers to an application for modification filed via either Schedule O or Schedule F, depending on the proposed change to the system's authorized operations, unless specified otherwise.[604] Applications for earth station authorization modifications will continue to be filed using Schedule B. We remind licensees that if they make a change to their operations that would trigger a major modification,

[593] Appendix A at § 100.142(b).

[594] Appendix A at § 100.142(c).

[595] Appendix A at § 100.142(d).

[596] Appendix A at § 100.142(c).

[597] Appendix A at § 100.142(c)(2).

[598] *See* Appendix A at §§ 100.100-100.121.

[599] *See* SpaceX Comments at 15-16; Viasat Comments at 16-17; Sateliot Comments at 5, 7.

[600] *See NPRM,* 40 FCC Rcd at 8248-49, para. 155.

[601] *See* SpaceX Comments at 15-16 (specifically, we believe that the proposed language "requests changes to terms, conditions, or technical constraints placed on the applicant's license, including changes that invalidate prior certification" may unintentionally include changes to items that have no bearing on the operations of a license, such as antenna ID information).

[602] Appendix A, § 100.142(d)(1).

[603] Appendix A, § 100.142(d)(2).

[604] As discussed above in regard to the adopted modularized application model, that an applicant need only file the schedule applicable to the proposed change in operations. A refiled FCC Form 312 – Main Form is not required, unless the applicant proposes changes to the information included to the form on file.

they are required to seek Commission approval prior to operations, and failure to do so could subject the licensee to enforcement action.

209. We specify two minor modifications that require notification to the Commission after modifying operations. Space station operators may commence inclined orbit operations without prior authorization, provided they notify the Commission within 30 days of the change and provide the information required under section 100.142(d)(1)(i).[605] Space station operators may also change an antenna, sensor, or microelectronics, so long as doing so would not result in a major modification, provided they notify the Commission within 30 days of the change.[606] Considering the universe of changes to operation that qualify as major amendments, we believe there is a greater benefit in allowing to licensees to make these adjustments without prior authorization, but the licensee must formally modify the authorization to accurately reflect the equipment used to operate the system.

210. We reject the proposal by Sateliot to affirm that modifications to payloads to conform with 3rd Generation Partnership Project (3GPP) standards do not constitute a new system and should be considered minor modifications.[607] This specific situation warrants individual review in the context of a license because the manner in which 3GPP standards is applied may be specific to the facts of a particular authorization. These proposals may be developed in a future proceeding where the Commission can fully assess the impacts of these changes on other operators.

211. As discussed herein, the *Order* adopts a process to reduce the barriers to licensing hosted payloads and software defined payloads.[608] To better effectuate this change, we allow a U.S. licensed space station or spacecraft to add a U.S. licensed hosted space station upon notification to the Commission prior to the modification.[609] As discussed, we decline at this time to fully adopt the proposal put forward by Spire.[610] Further, we do not extend these procedures to non-U.S.-licensed spacecraft or hosted payloads. We believe that additional record development is needed to determine mechanisms that would ensure national-security protections and appropriate oversight, and we consider these issues in the *FNPRM*.

212. Further, as discussed more fully in the section discussing U.S. market access authorization, we decline to adopt commenters' request for a "notification only" process to add a point of communication for earth stations to communicate with non-U.S. licensed and non-U.S. market grantee spacecraft for purposes of TT&C only. We seek comment on this issue in the *FNPRM*.[611]

213. In addition, we reject CTIA's request to clarify that changes to coordination with commercial entities would constitute a major modification and we should treat these modification

[605] Appendix A at § 100.142(d)(1)(i).

[606] Appendix A at § 100.142(d)(1)(ii). In the *NPRM*, we proposed that changes to antenna, sensors, or microelectronics would require notification prior to approval. *See NPRM*, Appendix A at § 100.142(d)(2)(i). We believe that given the changes to major modifications and the application process, we do not need notification prior to changes under this section. We will instead require notification after the modification to ensure the licensee's file reflects the correct equipment in use by the satellite. We also do not adopt the proposed rule allowing licensees to relocate satellites across authorized orbital shells provided they notify the Commission within 30 days of modification. *NPRM*, Appendix A at§ 100.143(d)(i). This rule is no longer necessary given the authority for short term TT&C we grant in section 100. 210. *See* Spire Comments at 10. *See also* Appendix A at § 100.142(d)(2)(iii).

[607] Sateliot Comments at 5-6.

[608] *Supra* Section III.B.1.j.

[609] *See* Appendix A at § 100.142(d)(2).

[610] *See* Spire Comments at 10. *See also supra* section III.B.1.j. (discussing hosted payloads).

[611] *See supra* Section III.B.l (discussing U.S. market access).

requests as initial requests.[612] Coordination agreements between operators are private agreements and the Commission typically does not involve itself with these agreements unless a party seeks the Commission's intervention. If a licensee coordinates with terrestrial operators pursuant to the Commission's rules regarding coordination, the limits coordinated would be the upper most limits of a licensee's authorized operations.[613] We aim to ensure that commercial operators have flexibility to make agreements with each other and modify those agreements when mutually beneficial. By requiring that changes to coordination agreements rise to the level of an application for major modification, the Commission would effectively chill flexibility because operators would have to weigh the benefits of changing coordination agreements against the cost of filing and preparing a major modification application.

214. Finally, we agree with Iridium that changes to the framework for adding a point of communication at this time would be premature.[614] To date, the process adopted by the Commission has been used infrequently, and changes at this time may risk causing confusion given it was adopted less than a year ago.[615] We therefore do not adopt our proposal to make changes to this process at this time, but note that the Commission may explore changes in a future proceeding.[616]

c. Special Temporary Authorizations

215. We adopt, with modifications, our proposal to streamline and overhaul the Special Temporary Authorization (STA) rules.[617] Specifically, we adopt our proposal to limit STAs to either a 60-day STA or a 180-day STA and will allow for an automatic extension of an STA by rule if an underlying application for full authority is filled no less than 15 days prior to the end of the STA term.[618] The Commission will retain the authority to limit the length of the STA in the original grant or cancel the extended STA upon notice to the applicant but an extension will be automatic by rule unless or until the Commission acts on the underlying application or notifies the applicant. Public notice will be required for STAs greater than 60 days or those subject to section 309(b) of the Act.[619] For earth stations, an STA for 60 days or fewer will be deemed granted 5 days after filing and payment of fees if there is already an approved 312 Main Form and the applicant certifies that there are no changes to the 312 Main Form, unless the applications is subject to section 309(b) of the Act. The Commission will continue to retain its ability to issue STAs in the case of an emergency via telephone or email request, at the sole discretion of the Commission. In addition, the Commission retains its authority to revoke an STA at any time. Because we no longer allow for renewal of STAs, but instead extensions of STAs, section 1.62(a) of the Commission's rules will no longer apply and operations pursuant to an STA will not be of a continuing

[612] *See* CTIA Comments at 9.

[613] *See* Appendix A at § 100.142(c).

[614] Iridium Comments at 15-16.

[615] *See Expediting Initial Processing of Satellite and Earth Station Applications*, IB Docket Nos. 22-411 and 22-271, Second Report and Order, FCC 25-48 (2025) (*2025 Streamlining Report and Order*).

[616] We note that nothing in the rules prohibits adding points of communication under the streamlined process if the operations are in shared federal bands so long as the requirements of the rule are met and no other changes to the license are being made. (*see* AWS Comments; *see also* AV Comments).

[617] *See NPRM,* 40 FCC Rcd at 8250, para. 161. *See also* Appendix A at § 100.143.

[618] We delegate authority to the Space Bureau to determine as part of the creation of the new application forms how an applicant can indicate to the Commission that they wish to extend their STA such that the requirements of 47 U.S.C. § 308(a) are met.

[619] 47 U.S.C. § 309(b). STA requests for operations or licensees subject to 309(b) of the Act will continue to follow the current STA procedures for either a 30-day, 60-day, or 180-day STA. *See* Appendix A at § 100.143(e).

nature.[620] We adopt our proposal to only allow a single STA without public notice and require that any subsequent STA requires listing on public notice.

216. Commenters raised concerns with the Commission's proposal in the *NPRM*, particularly regarding ending the applicability of section 1.62(a) of the Commission's rules to STAs.[621] In addition, commenters noted that a primary reason that operations continue is because of the need for federal coordination—which is outside the control of the Commission.[622] We believe that the approach we adopt instead strikes the correct balance between ensuring that STAs are not used as de facto licenses and maintaining a mechanism for operators to quickly adjust or begin operations in certain situations.[623] Notably, because we now allow for extension by rule if an underlying application for full authority is filed no less than 15 days prior to the end of the STA term, an applicant needs now to only file a single STA request rather than multiple requests on an ongoing basis, saving the applicant resources and ensuring that Commission resources are used efficiently.[624] In addition, while we continue to only allow a single STA that will not go on public notice (i.e., 60 days or less) to be applied for and requiring subsequent STAs to go on public notice, we believe that because we will allow for automatic extensions of an STA that is associated with an application for full authority, all other STA requests would inherently be for short term operations—because if the operations were meant to be ongoing or permanent an application for full authority would be filed.[625] Finally, we believe that this approach, coupled with the federal coordination conditional grants, will alleviate much of the need to file for multiple STAs.[626]

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[620] The Commission's rules differentiate the procedures between a renewal of a license relating to a continuing activity, as required by the Administrative Procedure Act, versus an extension of a license relating to an activity that is not continuous. *Compare* 47 CFR § 1.62(a)(1) ("Where there is pending before the Commission at the time of expiration of license any proper *and timely application for renewal of license* with respect to any activity of a continuing nature, in accordance with the provisions of section 9(b) of the Administrative Procedure Act, such license shall continue in effect without further action by the Commission until such time as the Commission shall make a final determination with respect to the renewal application.") (emphasis added) *with* 47 CFR § 1.62(b) ("Where there is pending before the Commission at the time of expiration of license *any proper and timely application for renewal or extension of the term of a license* with respect to any activity not of a continuing nature, the Commission may in its discretion grant a temporary extension of such license pending determination of such application.") (emphasis added).

[621] *See* KSAT Comments at 13; AWS Comments at 6-7; Intuitive Machines Reply at 5-6; SES Americom Comments at 34; AWS Reply at 5-6; Capella Comments at 11-13.

[622] *See e.g.*, AWS Comments at 7-8 (stating that extensive delays in federal coordination have shaped reliance on STAs by AWS and other companies); KSAT Reply Comments at 5.

[623] Note that as discussed *supra* section III.B.3.4. (conditional grants), we will incorporate by rule STA operations to the license in certain circumstances.

[624] The Commission previously rejected the idea of allowing for automatic extensions of STAs, however, at the time operations pursuant to STAs was considered subject to part 1.62 of the Commission's rules whereas today we remove that authority for STAs. *See Expediting Initial Processing of Satellite and Earth Station Applications et. al*, IB Docket Nos. 22-411 and 22-271, Report and Order and Further Notice of Proposed Rulemaking, 38 FCC Rcd 8838 paras. 66-68 (2023). We believe that this distinction warrants a change from what the Commission previously rejected.

[625] An operator may file multiple STAs for different operations per call sign. An operator may only file one STA for each set of unique circumstances or situations before being required to apply for full authority or an STA that goes on public notice.

[626] Because we will now be using a federal coordination condition, we see no issues with allowing for deemed granted and automatic extensions of STAs because they will have to adhere to the any coordination condition as part of their STA. (*But see* 38 FCC Rcd 8838, para. 67 (2023) (stating "because requests for special temporary authority are meant to be granted under exceptional circumstances and for relatively short duration, any coordination that is needed for the temporary authorization is generally limited to the time period requested by the applicant, or no more than up to 180 days. Additional requests then require additional coordination for the new time period").

217. As noted, we adopt a revised proposal and instead of deeming earth station STAs that do not go on public notice granted upon filing and payment of fees, we will instead deem them granted five days after filing and payment of fees and require that the STA be associated with an already approved Form 312 - Main Form and certify as part of the application that there are no changes to the information contained within the Form 312 - Main Form.[627] We believe that by having a five-day period instead of deeming these STAs granted upon filing will allow the Commission and the public the ability to review these applications and raise any concerns that may mean that the applications should not be granted. Some commenters raise questions as to how potentially-affected users could be notified or allowed to comment on the operations.[628] While we note that typically there is no opportunity to comment on most STAs since they do not go on public notice, we agree with the commenters that deeming granted STAs upon filing has risks. For the same reasons, for an applicant to take advantage of these procedures we will require that they have an already approved Form 312 - Main Form on file and certify as part of their application that they are making no changes to the information contained in the Form 312 -Main Form. This will safeguard against permitting an entity which is unqualified to hold an authorization from commencing operations. We therefore revise section 100.143 to reflect the changes to our proposal we discuss herein. Applications for earth station STAs that do not require public notice and that do not meet the deemed granted criteria we must be acted upon by the Commission prior to operations commencing.

d. Assignments and Transfers of Control

218. We adopt our proposal in the *NPRM* to largely maintain the part 25 rule in section 25.119, but with organization to more logically group relevant requirements together and changes to make language clearer and to require diagrams of ownership.[629] The assignment and transfer of control rules are adopted at section 100.145.[630] We also adopt our proposals to incorporate into this section assignments and transfers of control for non-U.S. licenses space stations granted U.S. market access.[631] One commenter raised concerns regarding potential burdens associated with extending assignment and transfer of control requirements to non-U.S. licensed satellites that hold U.S. market access.[632] We emphasize that we do not impose the same assignment and transfer of control approval obligations that apply to U.S. licensed space stations. The rule we establish for market access requires only post-consummation notification for non-U.S. licensed satellites, except for circumstances where additional review is already required under existing market-access policies. This approach ensures that the Commission is able to confirm that the entity that receives market access continues to satisfy the same qualifications that justified the original grant of U.S. market access. The Commission's approach, which requires notification rather than prior approval, preserves industry flexibility and respects national sovereignty, while allowing the Commission to assess whether new ownership raises concerns related to national security.

e. Submission of ITU Filings

219. We adopt our proposal to allow for ITU filings to be submitted without an underlying space station application.[633] This, we believe, will level the playing field when competing with foreign operators for which their licensing administration does not require a license application before submitting the associated ITU filing. While most commenters supported the idea of submitting ITU filings without

[627] Appendix A at § 100.143.

[628] *See e.g.*, NRAO Comments at 4. *But see* Intuitive Machine Comments at 17 (supporting deemed granted STAs).

[629] *See supra* III.B. at para. 48.

[630] *See* Appendix A at § 100.145.

[631] *NPRM*, 40 FCC Rcd at 8251, para. 164, Appendix A at § 100.146(d). *See* Appendix A at § 100.145(f).

[632] Embratel Comments at 3.

[633] 47 CFR § 25.119; see *NPRM,* 40 FCC Rcd at 8252, paras. 165-167.

an underlying space station application,[634] certain commenters raise concerns about spectrum warehousing and gamesmanship and suggest that the Commission establish safeguards.[635] To address the concerns of spectrum warehousing and gamesmanship, we are limiting the number of associated ITU filings that may be submitted per prospective applicant to no more than five without an underlying space station application.[636] However, such underlying space station applications must be filed with the Commission within two years from the date of receipt by the ITU of the ITU filing or the ITU filing will be suppressed. To further safeguard from spectrum warehousing and gamesmanship, we will monitor each of these ITU filings. We also adopt this as Commission policy, but do not codify this practice.[637] An ITU filing does not confer any spectrum rights or expectations. Such rights or expectations will be conferred when an underlying space station application is granted. We do require, as TechFreedom suggests, an entity to have a Form 312 – Main Form on file before the Commission will submit any ITU filing on its behalf.[638] In this way, the Commission can ensure that it has basic contact information about an applicant. We will monitor this new process to ensure that speculative filings and spectrum warehousing do not occur if filing fees alone do not serve as a sufficient deterrent. In addition, we are shortening the time period we proposed in the *NPRM* during which an ITU filing can be pending without the filing of an associated space station application from four years to two years.[639] This should also alleviate concerns about spectrum warehousing. If an ITU submission remains pending for more than two years without a corresponding space station application, the Commission will move to suppress the ITU filing. Regarding concerns asking that the Commission ensure that ITU filings are not "generic,"[640] Commission staff will continue to review ITU filings for sufficiency and completeness before submitting them to the ITU.

220. The *NPRM* also sought comment on submitting ITU filings for part 5 experimental applications earlier than the current process.[641] These filings are generally submitted to the ITU after the experimental authorization has been granted.[642] Commenters universally suggest that the Commission submit ITU filings earlier for all experimental applications, including those that require NTIA

[634] Astrolab Comments at 6 (proposal to allow applicants to submit an ITU filing without prior filings with the Commission meaningfully reduces regulatory risk for commercial operators and strengthens the United States' ability to compete in the international space economy), Intuitive Machines Comments at 17, Intuitive Machines Reply at 6-7;Leaf Comments at 18, 25; AnySignal Reply at 4; Impulse Comments at B-4, B-5 (proposing single advance filing and four-year deadline). *Contra*, Lockheed Martin Comments at 14 (cautioning against due to concerns about speculative ITU filings).

[635] TechFreedom Comments at 42 (suggesting that the FCC require applicants to submit FCC Form 312 with any ITU filings),); CSSMA Comments at 11 (urging the Commission to take precautions when authorizing ITU submissions prior to a license grant).

[636] *See* Appendix A at § 100.115. We note that the Appendix A to the *NPRM* did not contain section 100.115. It was inadvertently omitted. This rule text is largely pulled from section 25.111(d) with minor edits.

[637] We note that section 25.111(e) stated that the Commission could submit up to five ITU filings on behalf of an entity that were not accompanied by an underlying space station application. 47 CFR § 25.111(e). In 2016, the Commission stopped forwarding Advance Publication filings on behalf of entities without an underlying space station application. *See* Note to 47 CFR § 25.111(e). We do not carry over this rule to part 100 because we instead adopt the policy of allowing entities to have the Commission submit ITU information on their behalf without an underlying space station application.

[638] *See* TechFreedom Comments at 42.

[639] *NPRM*, 40 FCC Rcd at 8252, para. 166.

[640] Leaf Comments at 18.

[641] *NPRM*, 40 FCC Rcd at 8252, para 167.

[642] *NPRM*, 40 FCC Rcd at 8252, para. 167.

coordination.[643] We therefore adopt our modified policy for submission of ITU filings for part 5 experimental applications as well. For bands that require NTIA coordination, the Commission will submit the associated ITU filing while the part 5 application is pending, provided the applicant has obtained a letter from NTIA indicating that NTIA has no objection to the submission of the ITU filing. This safeguard is necessary to minimize the risk of coordination resulting in federal agencies requesting any changes to technical parameters which could result in needing to amend or re-submit the ITU filing. For bands that do not require NTIA coordination, the Commission will submit the ITU filing while the application is pending, after the applicant has submitted the necessary information.

221. *ITU Filing Responsibilities*. The prospective applicant or licensee will be required to follow the ITU procedures for these filings. These responsibilities include timely payment of any ITU cost recovery fees, fulfillment of any coordination obligations, and provision of information necessary for bringing into use the frequency assignments or the suppression of any filing and frequency assignment that is no longer in use.[644]

3. Milestones

222. The *NPRM* proposed reforms to modernize the Commission's milestone deployment benchmarks, seeking to simplify the regulatory obligations of licensees and reduce costs associated with licensing, launch, and deployment, while still ensuring that the requirements remain effective backstops against warehousing of spectrum and orbital resources.[645] The Commission has established milestone requirements as a mechanism to deter warehousing by satellite operators before a space station has launched and began operating its system.[646] For systems operating in shared bands, we view milestones as a mechanism to ensure that operators who fail to deploy in a timely fashion do not constrain the operating environment for others.[647] These potential impacts may differ based on whether the system is in a processing round or not; therefore, we assess and consider each separately.

223. Part 25 establishes specific deployment timelines for GSO and NGSO systems. [648] GSO space station licensees must launch and deploy an authorized space station within five years from the date of license grant. [649] Licensed and authorized NGSO satellite system operators must launch and operate 50% of the maximum number of space stations authorized for service within six years from the date of authorization.[650] NGSO operators meeting the interim 50% benchmark are required to deploy and operate the remaining space stations to reach 100% deployment no later than nine years from the date of authorization.[651] All space station operators are required to demonstrate compliance with their applicable

[643] *See, e.g.*, Leaf Comments at 18 (noting that this is "vital for part 5 grantees, who are historically receiving authorization just closer to launch date"); Lockheed Comments at 14-15 (noting that applicants seeking authority under Part 5 are often conducting short- or medium-term missions, with tight construction, integration, and launch deadlines.); Impulse Comments at 5; CSSMA Comments at 12-13.

[644] Impulse Comments at 5-6.

[645] *NPRM* 40 FCC Rcd at 8252-55, paras. 168-174.

[646] *Comprehensive Review of Licensing and Operating Rules for Satellite Servies*, Second Report and Order, 28 FCC Rcd 12403, at 12422-23, para. 53 (2015). The Commission has clarified that, in this context, "warehousing refers to the retention of preemptive rights to use spectrum and orbital resources by an entity that does not intend to bear the cost and risks of constructing, launching, and operating an authorized space station, is not fully committed to doing so, or finds out after accepting the license that it is unable to fulfill the associated obligations."

[647] *See* ITU Res-35 (REV.WRC-23).

[648] 47 CFR § 25.164.

[649] 47 CFR § 25.164(a).

[650] 47 CFR § 25.164(b)(1).

[651] 47 CFR § 25.164(b)(2).

milestones, and failure to meet a milestone risks losing authority for undeployed space stations.[652] A missed milestone deadline also renders the licensee in default of its surety bond, which then becomes payable to the U.S. Treasury.[653] Aside from the Commission's rules, NGSO system operators are required to comply with the deployment milestone requirements established by the ITU.[654]

224. *Milestones Applicable to NGSO Systems*. The *NPRM* proposed to revise the Commission's benchmark deployment milestones applicable to NGSO operators and align these deployment timelines with those required by the ITU for licensed NGSO systems.[655] NGSO operators providing service in certain frequency bands in Region 2 must certify deployment at the 10%, 50%, and 100% benchmarks. Operators must notify the Bureau of Radiocommunications that it has deployed 10% of the total number of satellites within nine years, 50% within 12 years, and 100% within 14 years.[656] We proposed to revise the milestones in section 25.164(b) to incorporate these timelines in part 100. The *NPRM* sought comment on alternative milestone deployment frameworks, including whether the Commission should adopt different or additional milestone requirements applicable to NGSO systems authorized in a processing round.[657]

225. We adopt this proposal, in part. We implement two separate milestone deployment deadlines for NGSO systems: one applicable to NGSO systems licensed or authorized under standard section 100.136 processing and one applicable to NGSO systems authorized within a processing round under section 100.140. We adopt the proposal to amend the current NGSO milestone requirements for NGSO space station systems authorized under the standard application processing rules to match the ITU's deployment timelines.[658] We do, however, retain the Commission's current six- and nine-year deployment milestones for NGSO systems that are authorized in a processing round under section 100.140.[659]

226. A majority of commenters support adopting and aligning the Commission's milestone deployment timelines for NGSO systems with those required by the ITU for licensed NGSO operators.[660] We agree with commenters' positions that harmonizing our milestone requirements with the international timelines will allow new entrants to remain competitive in the global satellite marketplace without defaulting on their domestic buildout requirements.[661] Commenters like Kepler and Amazon LEO assert that the ITU milestones would provide more meaningful checkpoints on deployment while allowing for increased flexibility as systems mature over time.[662] Accordingly, recipients of an initial authorization for an NGSO satellite system are required to deploy at least one satellite in the authorized system no later than seven years after the date of the license grant, consistent with the ITU's bringing into use (BIU) period.[663] Licensees will be considered to have met this requirement upon notification to the Commission

[652] 47 CFR § 25.164.

[653] 47 CFR §§ 25.165(b), (c).

[654] ITU REV.WRC-35.

[655] *NPRM* 40 FCC Rcd at 8253-54, paras. 170-173.

[656] ITU REV.WRC-23.

[657] *Id.*

[658] Appendix A at § 100.146.

[659] *Id.*

[660] *See* Spire Comments at 13; Blue Origin Comments at 12; Blue Origin Reply Comments at 3; Amazon Leo Comments at 4; CCIA Comments at 1; Rivada Reply Comments at 7; Eutelsat Reply Comments at 10.

[661] *See, e.g.*, Amazon Leo Comments at 5; CCIA Comments at 1-2.

[662] Amazon Leo Comments at 5; Kepler Reply Comments at 7-8.

[663] Appendix A at § 100.146

that at least one satellite has been deployed and operating for a continuous period of 90 days consistent with a system's authorization.[664] Failure to meet this requirement will result in automatic termination of the license, consistent with section 25.161, which we incorporate into section 100.302. NGSO system licensees are required to deploy and operate 10% of the authorized satellites no later than nine years from the date of grant, 50% of the authorized satellites no later than twelve years from the date of grant, and the remainder of the authorized satellites no later than fourteen years from the date of authorization.[665] Licensees are still required to demonstrate compliance with the milestone deployment requirements or otherwise notify the Commission in writing that a milestone requirement was not met within 15 days after a specified deadline.[666] We confirm that the milestone obligations will apply to both U.S.-licensed operators and grantees of U.S. market access authority. [667] By aligning the Commission's milestone deadlines with the ITU, applicants and licensees for NGSO systems can coordinate and operate within a more harmonized global regulatory framework.[668] This action further reduces regulatory burdens on licensees by allowing operators to more effectively plan and deploy their systems within one set of deployment timelines, rather than one established by the Commission and one by the ITU.

227. We are not persuaded by concerns that extending the NGSO deployment milestones may incentive operators to inflate the number of space stations they include in applications for authorization.[669] Some commenters argue that this could, in turn, adversely affect the NGSO sharing environment by requiring operators to accommodate much larger constellations that may never come to fruition and constrain smaller systems.[670] Viasat argues that by adopting the ITU milestones for NGSO operators, we are "substantially weaken[ing]" the milestone requirements and would incent operators to inflate numbers of requested satellites for systems they cannot deploy.[671] We disagree with this assertion or that its impact would be particularly concerning outside of a processing round. Outside of processing rounds, since operators are not granted priority status, we believe there is a lower risk that these operators will warehouse spectrum in a way that constrains the sharing environment and harms other operators. Further, these operators are still subject to the Commission's regulatory fees, which impose ongoing, annual financial obligations on licensees and authorized operators regardless of their deployment progress.

228. Licensees subject to the milestone requirements must demonstrate compliance with the milestone or otherwise notify the Commission within 15 days of a missed milestone.[672] Under the current rules, failure to meet a milestone deadline subjects the licensee to termination of authority for either some or all of the remaining undeployed satellites, depending on the deployment requirement.[673] We retain this

[664] *Id.*

[665] *Id.*

[666] *Id.*

[667] *See* Amazon Leo Comments at 5 (noting that adopting the ITU deployment benchmarks eliminates duplicative frameworks and helps to create regulatory parity by ensuring that U.S.-licensed NGSO operators are on the same deployment timelines as international operators); Embratel Comments at 5 (encouraging the Commission to apply the milestones to both U.S. and foreign licensed operators to avoid imposing unequal burdens on foreign operators and deter U.S. investment and market competition); CSF Reply Comments at 6 (recommending aligning the deployment milestone for market access grantees with U.S. licensed systems).

[668] Blue Origin Comments at 12.

[669] Viasat Comments at 14-15.

[670] Viasat Comments at 15 (requesting that the Commission retain the six- and nine-year milestones for NGSOs to ensure operators have appropriate incentives to use spectrum resources in a timely fashion).

[671] *Id.*

[672] 47 CFR § 25.164(f).

[673] 47 CFR § 25.161(a).

compliance structure and incorporate the automatic termination provisions of section 25.161 into section 100.146, with modifications to reflect the adopted benchmarks. Licensees that fail to meet the initial seven-year milestone and fail to deploy any satellites will be subject to automatic termination of the system authorization. Licensees that have deployed at least one functional satellite in orbit but fail to meet the subsequent 10%, 50%, and 100% milestone deadlines will lose authorization for the remaining undeployed satellites as of the date of the missed milestone, excluding replacements.[674]

229. Amazon LEO proposes that the Commission should adopt the ITU's milestone penalty structure as well to complement the ITU milestone deployment requirements.[675] Amazon LEO argues that the ITU's penalty, which staggers the reduced authorized satellite authority based on the number deployed by each milestone, is more administratively efficient.[676] While authorized operators are still subject to the ITU's penalties, we decline to replace the entirety of the Commission's existing termination rules. The rules adopted are a clear and predictable approach to milestone compliance and any potential loss of authorization directly corresponds to the number of satellites deployed. We believe that maintaining the current rules, adjusted to the more flexible milestones, is aligned with the objectives and priorities of this proceeding.

230. *Milestones Applicable to NGSOs in Processing Rounds*. The *NPRM* sought comment on the application of milestone deployment benchmarks to NGSO systems authorized in a processing round and whether any alternative deployment timeframes would better serve the public interest.[677] We asked whether the Commission should retain the current six- and nine-year milestone benchmarks only for those NGSO systems authorized in a processing round, rather than impose the similar ITU milestones.[678] Relatedly, the *NPRM* sought comment on more effective or reformed approaches to compliance with milestone requirements for systems authorized in processing rounds.[679] The *NPRM* specifically asked, if a processing round licensee fails to meet a milestone deployment timeline, should the remaining, undeployed space stations be moved to a subsequent, later processing round.[680] And if so, whether the undeployed space stations should be treated as a new system within that later round, as part of the originally assigned processing round, or whether an alternative method would better ensure that NGSO licensees are still incentivized to deploy while fulfilling their regulatory obligations and ongoing coordination and spectrum sharing agreements.[681]

231. We conclude that NGSO systems authorized in a processing round will be subject to the existing six- and nine-year milestone requirements.[682] NGSO licensees and recipients of a U.S. market access grant authorized under section 100.140 must launch, operate, and deploy 50% of the maximum number of authorized space stations no later than six years from the date of authorization.[683] Licensees that meet the 50% milestone must launch all remaining authorized space stations no later than nine years

[674] Appendix A at 100.146(b)(3).

[675] Amazon Leo Comments at 5-6.

[676] *Id.*, citing ITU Res. 35 (Rev.WRC-19) ("Specifically, authorizations are reduced to 10 times the number deployed for the preliminary milestone, twice the number deployed for the interim milestone, and limited to the number deployed for the final milestone.").

[677] *NPRM* 40 FCC Rcd at 8254-55, para. 173.

[678] *Id.*

[679] *Id.*

[680] *Id.*

[681] *Id.*

[682] Appendix A at § 100.146(d)(1).

[683] Appendix A at § 100.146(d)(1).

from the date of authorization.[684] For processing round licensees that fail to meet the 50% benchmark, these licensees will not be subject to the automatic termination provisions applicable to other systems. Rather, these systems retain authorization for the total number of authorized space stations, including undeployed satellites, but the system will be reassigned to a later processing round, based on the date of the missed milestone. Systems that fail to meet the 100% benchmark will lose authority for the remaining undeployed satellites on the day of the missed milestone, and depending on the number of satellites deployed, may be in default of the surety bond obligation.[685] We discuss each of these requirements in turn.

232. Based on supportive industry feedback, and in connection with the processing round and surety bond frameworks adopted in this *Order*, we believe that retaining the current six- and nine-year milestone requirements will more effectively complement the Commission's processing round and spectrum sharing frameworks and provide necessary certainty for NGSO system operators authorized under the processing round rules. A number of commenters support retaining the milestones as is, arguing that applying the ITU milestones to NGSO systems operating in processing rounds would upset the NGSO sharing rules and undermine the processing round framework.[686] The extended ITU deployment timeframes, as SpaceX contends, would increase the risk of speculative applications and create uncertainty for later-round systems.[687] Logos adds that the six- and nine-year milestones serve core anti-warehousing functions in bands that require more intensive coordination, and Viasat notes that extended NGSO milestones may incentivize operators to inflate the number of space stations included in applications for authorization, which in turn could adversely affect the NGSO sharing environment by requiring operators to accommodate much larger constellations that may never come to fruition and constrain smaller systems.[688] However, SpaceX proposes to apply both the ITU milestones to all NGSO systems and additionally apply the Commission's current six- and nine-year milestones to NGSO systems authorized in a processing round.[689] We decline to adopt SpaceX's proposal to impose two sets of milestones on systems authorized in a processing round. This approach would only impose a third set of milestone obligations and administrative requirements on these operators who are bound by earlier-in-time deployment benchmarks and still need to demonstrate compliance with the ITU.

233. SpaceX additionally proposed that licensees that fail to meet a processing round milestone could be subject to loss of the remainder of the licensee's surety bond and loss of processing round status for any undeployed satellites.[690] This would cause licensee failing to meet a milestone to retain their authorization to deploy remaining satellites, but the satellites would be given the same priority status as if the licensee had not participated in a processing round.[691] Amazon Leo argues that this proposal risks creating destabilized regimes that could discourage investment and could impose additional costs and complexity with little benefit.[692]

234. In reforming the milestone structure, the Commission sought to implement more effective mechanisms to address compliance with deployment deadlines, specifically for systems authorized in a

[684] Appendix A at § 100.146(d)(2).

[685] Appendix A at 100.146(d)(4).

[686] *See* SpaceX Comments at 9-10; TechFreedom Comments at 34; Logos Reply Comments at 6; Viasat Comments at 15.

[687] *See* SpaceX Comments at 10.

[688] *See* Logos Comments at 6. Viasat Comments at 15.

[689] *See* SpaceX Comments at 10.

[690] *Id.* at 10-11.

[691] *Id.*

[692] *See* Amazon Leo Reply Comments at 9-11.

processing round. We therefore have coordinated the adopted processing round, milestone, and surety bond requirements applicable to NGSO systems authorized as part of a processing round with the corresponding penalties and compliance mechanisms to consider the costs and benefits to providers of all sizes. By retaining the current milestone framework for these licensees, we avoid disruption of the spectrum sharing framework and the existing requirements and coordination agreements for NGSO FSS systems already authorized for operation in a previous processing round.

235. For NGSO systems authorized in a processing round that fail to meet the six-year 50% milestone, the system will be moved to the processing round open at the date of the missed milestone.[693] Unlike the milestone framework applicable to NGSO systems authorized under the standard procedures, failure to meet the 50% deployment benchmark will not result in loss of authority for the remainder of the undeployed space stations. Instead, the system's associated priority status, as determined by the processing round in which the application is filed, will be replaced with the priority status attached to the ongoing processing round on the date of the six-year milestone.[694] If an NGSO licensee fails to meet the final milestone deployment benchmark, the system will be capped at the total number of operating space stations at the time of the missed milestone, similar to the requirement under the part 25 rules.[695] We believe that termination of the undeployed satellites by the final milestone, requiring 100% deployment of the maximum number of authorized space stations, is still an appropriate remedy. Additionally, under the surety bond provisions adopted in 100.148, operators do have the option for relief of the 100% milestone without penalty once the surety bond declines fully to $0 at the 90% deployment mark.[696] At that point, operators may decide that at least 90% deployment of the maximum number of authorized space stations is sufficient to successfully operate and achieve the system's intended service goals.

236. As a fundamental principle, the Commission began authorizing NGSO FSS systems in designated, processing round groups as a way to determine the spectrum sharing environment amongst qualified applicants.[697] The Commission's spectrum sharing procedures dictate the default coordination procedures for systems authorized in the same processing round as well as the protections granted to systems authorized in earlier-rounds from those authorized in later rounds.[698] Systems authorized in a processing round are required to protect earlier-round systems for ten years after the first authorization or grant of market access, at which point they are required to spare spectrum with earlier round systems under the default sharing formula.[699] Regardless of processing round status, all NGSO FSS licensees and market access recipients are required to coordinate the use of commonly authorized frequencies in good

[693] Appendix A at § 100.146(h).

[694] For example, a system licensed on July 1, 2027 in the "2027 Ka-band Processing Round" would have a six-year milestone on June 30, 2033. If this milestone is missed, then the system would be placed in the "2033 Ka-band Processing Round" open at the time of the milestone. However, if a "2027 Ka-band Processing Round" system is licensed on February 14, 2028, then missing the six-year milestone would place it in the "2034 Ka-band Processing Round" open at the time of the milestone. In the case that a six-year milestone deployment deadline falls between November 1 and December 31, when annual processing round filing windows are closed, the NGSO system will be reassigned priority status according to the processing round opening January 1 of the following year. For example, if a "2027 Ka-band Processing Round" system is licensed on December 24, 2027 and misses the six-year milestone, then the system would be placed in the "2034 Ka-band Processing Round" because the milestone falls in December of 2033 when a processing round is not open (and the 2033 round has closed).

[695] *See* 47 CFR § 25.161(a).

[696] Appendix A at § 100.147.

[697] *2023 Order* at para 48.

[698] 47 CFR § 25.261(c), (d).

[699] 47 CFR § 25.261(e).

faith.[700]

237. In the case that an NGSO FSS system is reassigned to a later processing round for failure to meet the 50% milestone deployment requirement, the operator will be required to comply with the applicable spectrum sharing requirements with respect to its adjusted priority status. Section 25.261(d) requires that, prior to commencing operations, NGSO FSS licensees or market access recipients authorized in a processing round must either certify completion of coordination with all earlier-round systems, or in the alternative, submit a compatibility showing for Commission approval.[701] For reassigned systems moved to a later processing round, we acknowledge that these systems will have at least one satellite in operation when their priority status changes on the date of the missed milestone, as a fully non-operational system would be subject to automatic termination.[702] Rather than require an operator to temporarily cease operations until coordination with earlier round systems is completed, we instruct that a reassigned system may continue operating and deploying authorized satellites on a non-interference basis until it either certifies that it has completed coordination or submits a compatibility showing to meet the requirements of section 25.261(d), now adopted as section 100.241.[703] With regard to earlier-round systems that become operational after the later-round licensee has commenced operations, including a reassigned system with satellites already in operation, the requirement still applies that these later-round licensees must submit a certificate of coordination or compatibility showing no later than 60-days after the earlier-round licensee commences operations.[704] We clarify that such reassignment will not change the status of the processing round with regard to the operator's originally established ten-year sunset period. In other words, moving to a later processing round does not restart the number of years in which the operator is required to protect earlier-round systems. The operator is only required to protect earlier-round systems under the sunsetting provision for the remainder of the ten-year period since the date of the first license authorization or grant of market access in the original processing round.[705]

238. We reiterate that NGSO FSS operators must coordinate with each other in good faith, regardless of processing round status, and we expect reassigned systems and earlier-round systems to continue operating with the understanding that the realities of interference in shared spectrum should guide both system design and reasonable expectations of operation.[706] The Commission has expressly encouraged operators, and specifically NGSO FSS operators, to design systems for a shared and dynamic operating environment and plan to manage potential interference in such dynamic environment.[707] We encourage the same here. It is our determination that NGSO FSS operators are more technologically capable of coordinating the effective and efficient use of commonly-authorized spectrum than they were when processing rounds were adopted more than two decades ago, and that the Commission's technical frameworks are well crafted to provide the support needed to ensure compatibility and coexistence with minimal interference. It is also our priority to ensure that regulatory frameworks do not impede the deployment of critical and innovative satellite services in frequency bands best suited for NGSO FSS operation. With these considerations in mind, we believe this approach strikes the right balance without disrupting the current operating environment.

239. It is the Commission's determination that this milestone compliance structure takes a

[700] 47 CFR § 25.261(b).

[701] 47 CFR § 25.261(d).

[702] 47 CFR § 25.161(a)(1); Appendix A at § 100.302.

[703] 47 CFR § 25.161(d); Appendix A at §§ 100.146, 100.241.

[704] Appendix A at § 100.146.

[705] *NPRM*, 40 FCC Rcd at 8245, para. 156.

[706] *Second NGSO Sharing Order* at para. 24.

[707] *Id.*

"build-friendly" approach to the 50% milestone deployment benchmark. In some cases, NGSO systems who may determine that reaching the required 50% deployment threshold is unlikely, there may be fewer incentives to continue expending valuable company resources only to be capped at the number of space stations deployed, if that number will not support a viable system or prevent the operator from providing the intended services. In other cases, NGSO operators may be within a close margin of the 50% benchmark, but fail to meet the requirement for a variety of reasons, some of which may be out of the operator's control. Space station operators often experience the most significant delays prior to launch and deployment, rather than when a system is partially deployed. By relieving operators of the termination provisions that the Commission has traditionally imposed for failure to reach 50% deployment, we believe this approach will allow operators to continue building and continue on the path to operation. NGSO systems licensed in a processing round will likely be authorized to operate in frequency bands best suited for NGSO operations, like the Ka-, Ku-, and V-bands, and these workhorse bands enable NGSO operators to provide valuable services to the public. Thus, providing licensees with a framework that supports connectivity and next-generation satellite services, with the necessary applicable guardrails to minimize spectrum warehousing, serves the public interest and furthers the goals of this proceeding.

240. We believe that termination of the undeployed satellites by the final milestone, requiring 100% deployment of the maximum number of authorized space stations, is still an appropriate remedy. Additionally, under the surety bond provisions adopted in section 100.147, operators do have the option for relief of the 100% milestone without penalty once the surety bond declines fully to $0 at the 90% deployment mark.[708] At that point, operators may decide that 90% deployment of the maximum number of authorized space stations is sufficient to successfully operate and achieve the system's intended service goals.

241. *GSOs*. The *NPRM* proposed to eliminate the milestone requirement for GSO space station operators requiring GSO space station licensees to launch, deploy, and operate within five years after grant of the license.[709] We decline to eliminate the singular milestone for GSO system operators, as proposed, and instead retain the current five year milestone deployment requirement.[710]

242. In proposing this change, the Commission asked whether the milestone requirement for GSO operators remains an effective or necessary mechanism in ensuring timely deployment and spectrum use by the end of the GSO license term, in consideration with proposal to extend the license term for GSO satellite systems to the 20 years, and whether any alternative benchmarks or other approaches would be more effective than the existing requirement.[711] Commenters strongly oppose eliminating the milestone requirement for GSO operators and instead encourage the Commission to keep the current five-year milestone benchmark.[712] These commenters, including GSO operators, contend that a milestone requirement for GSO space stations acts as necessary backstop against concerns of spectrum warehousing and inefficient deployment timelines.[713] Astranis and Viasat argue that eliminating the GSO milestone

[708] Appendix A at § 100.147.

[709] *NPRM*, 40 FCC Rcd at 8253-54, para. 170; *see* 47 CFR § 25.164(a) (excluding SDARS space stations).

[710] Appendix A at § 100.146(a).

[711] *NPRM*, 40 FCC Rcd at 8253-54, para. 170.

[712] *See* CSF Comments at 9; SES Comments at 36 (suggesting either the current 5-year milestone or aligning the GSO milestones with those imposed by the ITU); SES Reply Comments at 11; Viasat Comments at 15; Embratel Comments at 4; TechFreedom Comments at 25; AST Reply Comments at 2.

[713] *See* CSF Comments at 9 ("By retaining the current milestone requirement, the Commission would ensure that these valuable resources are efficiently assigned and made available to new entrants if not being utilized."); Comments at 36 (suggesting either retaining the current 5-year milestone or aligning with ITU requirements); Embratel Comments at 4-5.

would undermine the Commission's goal to facilitate rapid deployment and instead hinder competition and services by allowing operators to tie up orbital slots.[714] After review of the record, the Commission will retain the current five-year milestone for GSO operators.[715]

243. *Multi-Orbit Satellite Systems*. The part 25 milestone rules require licensees of systems that include both NGSO and GSO satellites to meet the respective milestone deployment obligations for both types of space stations.[716] We proposed to retain this requirement, and we confirm that licensees of multi-orbit systems, or MOSS as adopted herein, are required to meet the applicable milestone deployment benchmarks for each type of space station authorized in the system.[717] There were no comments on the record addressing this point. We clarify that, in cases where the Commission may authorize or issue more than one authorization for the same system (i.e., a grant for a license modification to increase the number of space stations authorized for operation in a previously-authorized system), the milestone deployment timelines established in the initial grant of authorization will apply to any subsequent approvals or authorizations.[718]

244. *VTSS*. The *NPRM* further proposed to refrain from implementing milestone requirements for recipients of VTSS licenses.[719] The Commission preliminarily concluded that VTSS licenses are less likely to raise significant spectrum warehousing concerns that milestones are designed to address for NGSO and GSO systems.[720] Commenters agree, as VTSS missions are often narrower in scope, requiring shorter, time- and duration-limited mission-specific authorization for radiofrequency use during operations.[721] However, as AIA points out, the Commission's milestone frameworks applicable to NGSO and GSO operators may not provide an effective framework for the more novel mission types and operations of VTSS, and instead advocates for a VTSS-specific milestone structure to ensure that the licensing requirements support these unique mission types, rather than constrain them.[722] We confirm that VTSS-specific milestones are not necessary to implement at this time and accordingly adopt our proposal to refrain from VTSS milestone deployment requirements.

245. *Milestones Applicable to Conditional Grants.* For applicants that receive a conditional grant, we clarify that milestone deployment timelines are established when the conditional grant is issued, not when any subsequent final authorization is granted upon satisfaction of the condition.[723] Although

[714] *See* Astranis Comments at 10; Viasat Comments at 15 (arguing that eliminating the milestone would lead to an increase in speculative applications and anticompetitive gamesmanship by some operators seeking to prevent competitors from using orbital resources).

[715] Appendix A at § 100.146(a). We adopt section 25.165(b) at section 100.147(f), requiring that licensees use an acceptable surety company as determined by the U.S. Treasury under 31 U.S.C. 9304. We incorporate conforming, non-substantive revisions to this rule to reflect updated U.S. Treasury certification procedures. *Id*. at § 100.147(f).

[716] 47 CFR § 25.164(g). "Licensees of satellite systems that include both NGSO satellites and GSO satellites must meet the requirement in paragraph (a) of this section with respect to the GSO satellite(s) and the applicable requirements in paragraph (b) of this section with respect to the NGSO satellites."

[717] Appendix A at § 100.146(c).

[718] Appendix A at § 100.146(f).

[719] *NPRM*, 40 FCC Rcd at 8254, para. 172.

[720] *Id.*

[721] *See* Lockheed Comments at 15; Impulse Comments at 15 ("VTSS missions do not present the same warehousing risks as other mission types"); Blue Origin Comments at 12 (noting that any VTSS oversight should focus on operations during the license term rather than milestone deployments).

[722] AIA Comments at 4-5 ("Applying NGSO or GSO-based benchmarks to missions that are inherently episodic, dependent on third-party readiness, or characterized by evolving operations would risk misaligned incentives and regulatory burdens that do not reflect actual mission risk or performance.").

[723] Appendix A at § 100.146(f).

applicants receiving a conditional grant are still required to submit information relevant to their system before they are permitted to operate as a licensee, a conditional grant allows a licensee with sufficient certainty to proceed in working toward deployment. We believe that this process allows providers a unique benefit in giving extra flexibility to complete coordination or prepare the required orbital debris mitigation showings, but we decline to allow recipients of a conditional grant to receive more time to meet the milestone requirements than fully licensed operators. Establishing milestone deadlines from the date when a conditional grant is issued will discourage operators from abusing the conditional grant process in order to extend their milestone deadlines or compliance obligations with other operational requirements. Once a recipient of a conditional grant receives an authorization to operate the licensed system, the milestone deadlines that will apply to the grant will be those set by the conditional grant date.

4. Surety Bonds

246. The *NPRM* proposed to revise the surety bond formula to shift to a deescalating bond calculation and proposed to limit the applicability of the surety bond requirement to certain authorized NGSO systems, rather than to all authorized space station operators.[724] As discussed below, we adopt the Commission's proposals, with adjustments. We adopt a deescalating bond formula for only those NGSO space station licenses granted as part of a processing round with the amount of the surety bond set at an initial, flat amount that decreases based on the deployment of authorized space stations. Surety bonds are key tools for the Commission to mitigate the potential impact of speculative or "paper" applications within the processing round framework, as well as potential spectrum warehousing which can impose costs on other operators and society.

247. The surety bond requirement has for years been a key tool for the Commission to mitigate the potential impact of speculative or "paper" applications and deter potential spectrum warehousing, which can impose costs on other operators. Under the current part 25 rules, all space station licensees are required to post a surety bond covering the potential payment liability to the U.S. Treasury in the event a licensee surrenders a space station authorization without placing the authorized facility into operation or defaults on a required milestone deadline.[725] Space station licensees generally must post the required bond from thirty days from the date of the license grant, while NGSO systems granted under the section 25.122 and 25.123 small satellite procedures are afforded one year plus thirty days from the date of license grant to post the bond.[726]

248. *Surety Bond Applicability*. The surety bond requirement will apply only to NGSO systems that are authorized under the section 100.140 processing round procedures.[727] The *NPRM* proposed to limit the surety bond requirement applicable to NGSO systems to: (1) licensed NGSO systems with 200 or more authorized space stations in one system, excluding replacements; and (2) NGSO systems authorized in a processing round, regardless of number of authorized space stations.[728] As part of the narrowed application of the surety bond requirement, this criteria would also eliminate the surety bond for GSO space station licensees. We partially adopt the proposed criteria. In alignment with the adopted processing round reforms, we decline to adopt a threshold criteria of 200 space stations or more. Rather, the surety bond requirement will only apply to NGSO systems that are authorized in a processing round, inclusion in which is on a voluntary, by-request basis. Since inclusion in a processing round is optional for NGSO system applicants, the bond is also optional. This approach allows applicants

[724] *NPRM*, 40 FCC Rcd at 8257, para. 178.

[725] *Comprehensive Review of Licensing and Operating Rules for Satellite Services*, IB Docket No. 12-267, Second Report and Order, 30 FCC Rcd 14713, 14742, para. 72 (2015), Report and Order, corrected, 30 FCC Rcd at 14727 (2016).

[726] 47 CFR § 25.165.

[727] Appendix A at § 100.147.

[728] *NPRM*, 40 FCC Rcd at 8256, para. 176.

to evaluate the tradeoffs of seeking status in a processing round compared with the obligation to post the surety bond.

249. A majority of commenters in the record support generally limiting the surety bond requirement to a more tailored class of NGSO operators and support the proposal to only require NGSO system operators with 200 or more space stations to post a surety bond.[729] Similar to our approach to the proposed criteria for processing round eligibility, we believe that this narrowed application of the surety bond requirement appropriately addresses both those in favor of limiting the bond and the concerns from those opposing a numeric application criteria. Industry stakeholders point out that the Commission has other mechanisms, aside from the surety bond, to ensure that applicants are qualified to hold a license under the Commission's rules, and that the application fees and annual regulatory fees impose enough of a financial commitment to discourage speculative applications.[730] Commenters agree with our conclusion that requiring a bond of all licensees is no longer a necessary backstop against spectrum warehousing, with particular regard to smaller operators who may present lower risks of warehousing or market entry concerns.[731] These operators argue that bonds can disproportionately and prohibitively impact the financial viability of smaller and early-stage operators and eliminating the bond would provide needed flexibility to innovate.[732] Some more simply state that surety bonds are not necessary in non-processing round frequency bands without priority.[733] Conversely, commenters opposing a limited applicability of the surety bond express concerns with a criteria based on the number of satellites in a system, rather than on the overall impact of a system, and raise the potential that operators might strategize system designs around a numerical threshold to avoid a bond.[734] We agree with commenters on these concerns, and we also agree that any reforms to the surety bond rules should be cohesive with the processing round framework.[735] Accordingly, we adopt the proposed criteria that only NGSO licensees authorized in a processing round, at the requested inclusion of the applicant, must post a surety bond.[736] We believe that this narrowed application of the surety bond aligns with the support in the record to limit the bond requirement, and further, for NGSO operators seeking to provide service in processing-round eligible frequency bands, allows those operators to determine and elect which path to authorization may provide the most beneficial framework for operation.[737]

250. Blue Origin suggests that if the Commission eliminates bond obligations, it should rely on other forms of financial qualifications, like credible commitments, funding documentation or contracts, for example, to ensure that applicants are capable of constructing and operating systems and to screen out speculative proposals.[738] As mentioned, surety bonds are but one of multiple mechanisms the

[729] CSF Comments at 5; SpaceX Comments at 11; Blue Origin Comments at 18; Spire Comments at 14; Myriota Comments at 1; Muon Comments at 6-7; CCSMA Comments at 9; Reflect Orbital Comments at 3; Lockheed Martin comments at 15; Intuitive Machines Comments at 9-10; Sateliot Comments at 5; Capella Comments at 8; CSF Reply at 6.

[730] *See* Muon Comments at 6; Blue Origin Comments at 18; Capella Comments at 8.

[731] *See* Capella Comments at 8; CSSMA Comments at 9; Myriota at 8.

[732] Kepler Reply Comments at 5-6; Muon Comments at 5-7.

[733] ITIF Comments at 4.

[734] *See, e.g.*, Amazon Leo Comments at 13 (arguing that a 200 or more satellite threshold would incentivize operators to separate large systems into smaller systems to avoid posting a surety bond); Logos Reply Comments at 7 (notes that concerns of spectrum warehousing are not limited to only those systems with 200 or more satellites).

[735] Amazon Leo Comments at 2-12; SpaceX Comments at 10-11.

[736] Appendix A at § 100.147(b).

[737] *See* SpaceX Comments at 11 (limiting surety bond requirements to applicants that opt to participate in a processing round is a "reasonable and balanced approach").

[738] Blue Origin Comments at 18.

Commission has to ensure that applicants are qualified to hold a license.

251. As part of the narrowed application of the surety bond requirement, the proposed criteria would also eliminate the surety bond for GSO space station licensees. Commenters were split on this point.[739] Some GSO operators support eliminating the bond requirement, arguing that it is no longer necessary to deter warehousing given the high costs of GSO deployment and regulatory fees.[740] These operators similarly argue that the surety bond imposes disproportionate capital constraints on new entrants and note that eliminating the bond for GSO operators would correct a regulatory imbalance that disadvantages U.S. operators.[741] However, others oppose eliminating the GSO bond.[742] SES argues that the milestone and bond requirements are needed as a combination to effectively incentivize deployment, and that without a bond, there would be little penalty for a missed milestone which could prevent other operators from deploying at that orbital location.[743] SES further recommends retaining the current escalating bond formula to specifically apply to GSO operators to avoid incentivizing warehousing, but as a less-burdensome alternative, proposes that the Commission could consider regulatory fees accrued into the bond formula and revise the bond calculation downward accordingly.[744]

252. The *NPRM* proposed to refrain from imposing the surety bond requirement on VTSS licensees, tentatively concluding that VTSS licensees will generally raise a lesser concern about spectrum warehousing with respect to the intention of the surety bond obligation.[745] We confirm that VTSS licensees are not subject to the surety bond requirements.[746] Commenters on this point argue that, aside from the demonstrated financial burdens on new entrants, the record makes clear that the Commission should not impose a surety bond on very small systems that deploy rapidly and operate on a shared, non-exclusive basis, as these systems do not prevent future entry or risk creating long-term spectrum constraints.[747] CSF states that the bond requirement was designed to address concerns that are largely inapplicable to small, quickly deployable systems that operate on a shared basis.[748] We agree, and consistent with the frameworks adopted for NGSO systems in this Order, we do not require VTSS licensees to post a surety bond.

253. *Surety Bond Formula.* The *NPRM* proposed a revised, deescalating formula for the calculation of surety bond amounts, shifting from an escalating formula to one that reduces the total bond amount required as deployment occurs.[749] After consideration of the record, we adopt our proposal to shift the surety bond calculation to a deescalating bond formula based on an operator's deployment of

[739] See TechFreedom Comments at 36 (opposing eliminating bond for GSOs).

[740] Astranis Reply Comments at 8; Lockheed Martin Comments at 15.

[741] *See* Astranis Comments at 4-5; Astranis Reply Comments at 8;

[742] *See* TechFreedom Comments at 36; AST Reply Comments at 2 (arguing that GSO systems should be subject to the same bond and milestone requirements as NGSOs as a matter of regulatory parity).

[743] *See* SES Reply Comments at 11.

[744] *See* SES Comments at 38; SES Reply Comments at 11-12.

[745] *NPRM*, 40 FCC Rcd at at 8256, para. 176.

[746] *Id. See* Impulse Comments at 15 (stating that eliminating the surety bond requirement for VTSS operators would remove unnecessary capital constraints); Lockheed Comments at 15 (supporting eliminating the surety bond requirements for both GSO and VTSS operators); AIA Comments at 5 (arguing that any VTSS surety bond requirement should take a mission-specific approach and the current or proposed NGSO bond formulas would not be proportionate to VTSS deployment speed or missions).

[747] *See* Capella Reply Comments at 13; CSF Comments at 6; Intuitive Machine Comments at 9; CCSMA Comments at 10; iSpace Comments at 6.

[748] *See* CSF Comments at 6.

[749] *NPRM*, 40 FCC Rcd at 8257, para. 178.

authorized space stations. We also adopt a uniform, flat initial bond amount which does not vary with the size of the system.

254. The Commission currently calculates the dollar amount that a licensee must maintain on file by calculating the number of days from the date when a license is surrendered.[750] This formula escalates the surety bond amount over time, thereby increasing a licensee's potential payment liability over time in the event of a default.[751] The surety bond requirement and current escalating bond calculation were adopted to create a financial incentive against filing speculative applications or surrendering license authorizations before meeting the associated deployment obligations.[752] The Commission's justification in requiring surety bonds remains rooted in minimizing risks of spectrum warehousing, but to ensure the Commission's rules remain effective mechanisms in doing so, we find that adjusting the regulatory frameworks to fit the satellite marketplace is a necessary course correction.

255. The *NPRM* proposed to apply two different deescalating formula calculations—one applicable to NGSO space stations with 200 or more authorized space station and one applicable to NGSO systems with fewer than 200 space stations but licensed under the processing round rules.[753] Alternatively, the *NPRM* sought comment on whether the Commission should consider a separate bond formula calculation that would apply to operators' authorization in a processing round, and if so, whether the initial surety bond amount should be a flat value applicable to all entities, regardless of system size, and diminish over time based on deployment progress.[754] We asked if an initial flat bond of $20 million would be an appropriate starting point for the surety bond requirement, or if a lower or higher amount would be more appropriate, and how the bond amount should decline to best incentivize deployment in alignment with the objectives of the bond requirement.[755] We sought input from industry stakeholders and operators on other methodologies or proposed calculations for the surety bond formula and more generally as to whether the outlined approach effectively supports the Commission's objectives in deterring warehousing of spectrum and orbital resources.[756]

256. The adopted surety bond calculation in section 100.147(b) applies a flat, initial bond amount of $10 million dollars, regardless of satellite system size, to NGSO licenses granted in a processing round.[757] Where B is the bond amount, A is the number of authorized satellites, and D is the number of deployed satellites, we adopt the following formula: B = $10,000,000 - $10,000,000 *(D/(0.9A)).[758] This formula requires an initial bond of $10,000,000, setting a reasonably high bar for operators to hold such a license but not prohibitively high such that it would prevent truly viable systems from seeking authorization. The formula then reduces the required bond amount based on the percentage

[750] 47 CFR §§ 25.165(a)(1)-(2). NGSO licensees and licensees with both NGSO and GSO space stations operating in the same frequency bands must have a minimum surety bond on file according to the following formula, rounded to the nearest $10,000: A = $1,000,000 + $4,000,000 * D/2192, where A is the amount to be paid and D is the lesser of 2192 or the number of days that elapsed from the date of the license grant until the date when the license was surrendered. GSO licensees must have a minimum surety bond on file equal to the following formula, rounded to the nearest $10,000: A = $1,000,000 + $2,000,000 * D/1827, where A is the amount to be paid and D is the lesser of 1827 or the number of days that elapsed from the date of license grant until the date when the license was surrendered.

[751] *2015 Order* at para. 72.

[752] See *2015 Order* at para. 71.

[753] *NPRM* 40 FCC Rcd at 8215-16, para. 67.

[754] *NPRM* 40 FCC Rcd at 8257-58, para. 180.

[755] *Id.*

[756] *NPRM* 40 FCC Rcd at 8257-59, para. 180-82.

[757] Appendix A at § 100.147(b).

[758] *Id.*

of the total authorized satellites deployed.

257. Since licensees authorized in a processing round are granted a priority status, we conclude that it is reasonable to set an initial flat fee that decreases over time to disincentive applications for speculative systems while promoting more intensive and effective use of scarce spectrum resources. Setting a flat, uniform fee, regardless of system size, will ensure that bond amount will not unnecessarily disincentivize large constellation systems that may be able to deliver considerable benefits to society. An operator should already have an incentive to determine the appropriate size of a constellation based on deployment costs and market factors and we do not wish to distort such decisions by tying the bond to system size. Indeed, commenters supporting incorporating a flat bond amount argue is reflective of the equal rights accorded to licensees within a processing round and should be set an amount to discourage speculative applications.[759] Some commenters support the deescalating approach, however, suggesting imposing a monetary cap to the formula and cautioning against requiring a bond amount set too high that would discourage operators from entering the market at all.[760] For example, Amazon Leo estimates that under the proposed bond calculation, the initial surety bond amount for a system of 15,000 satellites would be $135,000,000, required as an upfront cost to receive a license authorization before beginning operations.[761]

258. The deescalating nature of the bond where it declines based on deployment will create incentives for licensees to build their systems more quickly. In addition to the benefit to the public of systems beginning to deliver services sooner, there is benefit to the coordination process of having it be clear sooner if a system is going to deploy. We also believe that this formula maintains consistency across small systems, avoids discontinuities in regulatory treatment based on the number of space stations in a system, and ensures that the cost of entry remains sufficiently high to preserve the functional separation between priority and non-priority licensing.[762] Commenters supporting a deescalating bond formula agreed that scaling down in alignment with deployment progress creates financial incentives for rapid deployment that directly address warehousing concerns without imposing disproportionate burdens.[763]

259. This deescalating formula is additionally designed to decrease down to zero dollars when the licensee deploys and operates 90% of the total number of space stations authorized in the system. We note that this formula, in effect, relieves a licensee of its bond obligation at the 90% deployment threshold. The Commission finds that by leveling out the bond at this late stage, licensees will have flexibility in deploying the remaining 10% to reach the final milestone without defaulting on the surety bond requirement. The current rules render a licensee in default of the surety bond requirement, whereby the license becomes void and the remaining bond account is paid to the U.S. Treasury, if a license is surrendered before meeting an applicable milestone or for failure to meet any milestone.[764] Licensees are still required to deploy 100% of the authorized space stations under the milestone obligations, and failure to meet the final milestone caps the number of authorized space stations at the number deployed by the

[759] *See, e.g.*, SpaceX Comments at 11-12; CSF Reply Comments at 5; ITIF Comments at 4 ("Since the cost of coordinating multiples with the number of processing round members, the Commission should adopt a bond to ensure only serious applicants enter.").

[760] *See* Eutelsat Comments at 10; Logos Comments at 7; CSF Comments at 5 (arguing the proposed bond formula would arbitrarily punish larger systems even if they use spectrum more efficiently than smaller systems in the same processing round).

[761] *See* Amazon Leo Comments at 12-13.

[762] *NPRM*, 40 FCC Rcd at 8257, para. 178. *See* CSF Reply Comments at 5 ("NGSO bonds should be set at a flat amount to reflect the equal rights afforded by processing round licensees").

[763] *See* Amazon Leo Comments at 3.

[764] 47 CFR § 25.165(c).

milestone date. However, if a licensee deploys 90% of the authorized space stations, the licensee can be relieved of the surety bond. We adopt the proposal to carry over the current rule establishing that licensee will be in default of the surety bond obligation if it surrenders the license, but with a slight modification that a licensee will be in default of the surety bond if it surrenders the license prior to the bond deescalating to zero.[765]

260. We decline to adopt the alternative surety bond calculations proposed in the record. TechFreedom generally supports a linear deescalating bond, but instead proposes a "waterfall bond" approach, where the bond amount would decrease to 50% of the total amount after the licensee deploys 10% of the authorized satellites.[766] From there, the bond amount would then remain at 50% until the licensee reaches 50% deployment, at which point the bond amount would decrease to zero.[767] TechFreedom suggests that these decreases at the 10% and 50% benchmarks could be of particular importance for systems that require a larger deployment percentage to provide a minimum viable service.[768] SES proposes that if the Commission adopts a deescalating bond, it should retain relief of the bond at 50% deployment, arguing that deescalating the bond to $0 at 90% could result in a more punitive structure for operators that do not deploy their full systems.[769] CSF supports setting NGSO processing round bonds at a flat amount to reflect the shared spectrum environment, or in the alternative, a waterfall bond structure.[770] While there are likely multiple reasonable bond formulas which would align with the Commission's incentives in this proceeding, we believe there is benefit in adopting a simple formula. We also, in part based on our experience with the part 25 bond formula, believe that having the bond escalate early in the license term does not encourage surrendering licenses of speculative systems particularly well but it does lower the bar for speculative applications at the beginning of the license term.

5. License Terms, Renewals, and Replacements

261. *License Terms*. We seek to standardize license terms as well as rules for replacement space stations and renewals. We adopt our proposal to impose a default 20-year license term for all space station and earth station licenses, except where a different term is expressly mandated by statute, or otherwise requested by an applicant.[771] As discussed in the *NPRM*, the Commission currently maintains different license terms for different systems, with GSO and NGSO space stations generally authorized for fifteen years, small satellites authorized for six years, earth station license terms determined on a case-by-case basis and no FCC-established term for market access grants.[772] This lack of uniformity has created administrative inefficiencies and uncertainty for operators. We find that establishing a default, uniform 20-year license term will promote regulatory clarity. This standardized term will not apply to services for which Congress has prescribed a specific license duration, such as broadcast services subject to the eight-year statutory limit in 47 U.S.C. § 307(c).[773] Licenses in those services will continue to

[765] *NPRM* 40 FCC Rcd at 8258, para. 181.

[766] TechFreedom Comments at 37-38; TechFreedom White Paper at 6.

[767] *Id.*

[768] TechFreedom Comments at 38. TechFreedom also notes that systems could be "technically viable, but the licensee may struggl[e] to generate sufficient revenue or additional financing to bridge the gap until minimum viable service (MVS) revenues can be achieved."

[769] *See* SES Comments at 37-38 (recommending a proposed formula of B = $10,000 * ((0.5 * A) – D)).

[770] CSF Reply Comments at 5.

[771] *NPRM* at para. 185.

[772] *NPRM* at para. 184.

[773] The Commission has determined that subscriber-based DBS is not "broadcasting" for the purposes of the Communications Act. *See* Subscription Video, GN Docket No. 85-305, Report and Order, 2 FCC Rcd 1001, 1006 at para. 42 (1987) (upheld in *Nat'l Ass'n For Better Broadcasting v. FCC*, 849 F.2d 665, 669 (D.C. Cir. 1988).

adhere to their statutory terms.

262. For all other space and earth station licenses—including GSO, NGSO, and VTSS space stations; earth stations; and U.S. market access grants—we adopt a default 20-year term. Commenters broadly support this.[774] As was proposed in the *NPRM*, applicants may continue to request a shorter license term at the time of application, and the Commission retains discretion to impose a shorter term in the public interest.[775] While some commenters proposed shorter license terms for VTSS missions, by allowing applicants to request and the Commission to establish a shorter term, we provide flexibility for such missions but retain a default, uniform license term for all satellite systems. We also believe the collective operation of our rules will incentivize operators to seek shorter terms or surrender authorizations if no longer needed. Additionally, authorized systems must pay regulatory fees and therefore have incentives to surrender licenses when no longer needed.

263. We disagree with commenters who argue that the license term for GSO satellites should remain at 15 years due to concerns about so-called "zombie sats" that may lead to an increased risk of uncontrolled or non-responsive satellites at end of life.[776] We find these concerns unpersuasive. As noted in the *NPRM*, we have routinely extended the term of GSO satellites to 20 years,[777] finding that doing so was in the public interest. Extending the license term to 20 years reduces the administrative burden of processing extensions. We do, however, in response to these comments and in the interest of uniformity, eliminate the language currently contained in section 25.121(f), and which was proposed in section 100.149, which allows an extension of a GSO license in increments of five years or less upon the provision of certain information.[778] This allowed GSO operators extensions of their 15-year licenses or authorizations to 20 years. This extension provision is no longer needed given the standardized 20-year license term. Finally, we note that establishing a uniform 20-year license term does not prevent operators from retiring satellites earlier based on technical condition or fuel status. Nor does it prevent an operator from requesting a shorter term with the initial application. In practice, operators retire spacecraft based on engineering considerations, not the expiration date of the FCC license, and the continued requirement to pay regulatory fees provides an additional financial incentive for operators to take inoperable spacecraft out of orbit.

264. We also adopt our proposal to commence the license term for space station and earth station licenses and market access grants on the date of grant.[779] This approach ensures consistency, eliminates ambiguity associated with launch and notification-based start dates, and provides licensees with predictability regarding the duration of their authorization.[780] For receive-only earth stations operating on a non-interference basis, the license term will be established for a period of 20 years from the date on which the application was filed, since these applicants do not typically receive a formal license or authorization. We discuss transition for existing licensees in the Transition section below.[781]

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[774] *See* Blue Origin Comments at 13; SXM Comments at 10; Iridium Comments at 17; Lockheed Comments at 15-16; TPA Reply Comments at 1; Iridium Reply Comments at 13

[775] *NPRM*, 40 FCC Rcd at 8199-200, para. 25. Certain commenters seemed to misunderstand that applicants have the option of requesting shorter license terms. *See* AIA Comments at 5, Blue Origin Comments at 12.

[776] TechFreedom Comments at 39. *See also* Astranis Reply Comments at 11-12.

[777] *NPRM*, 40 FCC Rcd at 8259-60, para 185.

[778] 47 CFR § 25.121(f); *NPRM*, Appendix A at § 100.149.

[779] Our current rule states that the license term begins when the operator notifies the Commission the satellite has been placed into orbit with operations in conformance with the authorization or license "terms and conditions." 47 CFR § 25.121(d).

[780] Commenters supported this proposal. *See* Lockheed Martin Comments at 15-16.

[781] *See infra*, section III.G.

265. One commenter argues that current holders of market access authorizations should not be subject to a license term due to concerns about retroactivity.[782] We have not imposed a license term on current holders of market access authorizations and, therefore, we reject this argument.[783] Instead, whenever an operator with a grant of market access files an application for modification or other application, if granted by the Commission in accordance with section 100.142, the grant will be conditioned upon complying with the 20-year license term requirements. This will ensure fair application of the license terms we adopt today for all space and earth station licensees as well as market access grantees.

266. *Replacement satellites.* We add a definition of "replacement satellite" in section 100.3 that largely mirrors the language in section 25.165(e), as proposed.[784] We also edit the definition of "replacement space station" to clarify that replacement space stations must have the same operating parameters as the space stations they are replacing.[785] This definition includes both GSO and NGSO replacements. We replace the language that requires that replacements for NGSO satellites be "technically identical" with our proposal that replacements for NGSO satellites can be made up to the number of authorized satellites provided that any changes to the authorized satellites require the filing of a major modification or a condition on its authorization, as proposed in the *NPRM*.[786] This change will allow NGSO operators more clarity and flexibility regarding replacements. We decline to include VTSS systems in those that are allowed replacement mechanisms at this time given that it is premature given the ongoing development of these systems and our regulatory framework. While some commenters argue that VTSS providers should be allowed to replace surface vehicles such as rovers under a replacement framework in certain scenarios, this change in our proposal is unnecessary, as a VTSS licensee would likely be able to effectuate this type of "swap-out" change under its original authorization. The initial VTSS authorization will allow for operation "up to" a number of assets without the requirement of a new authorization so long as the total number is within the scope of the existing authorization [787]

267. *Replacement and Renewal Expectancy*. As noted in the *NPRM*, the Commission has proceeded on a case-by-case basis on license renewals, with most renewal applications being granted.[788] There have, however, occasionally been protracted disputes regarding renewals.[789] We sought comment in the *NPRM* on the conditions under which renewals should be granted. While we received some comment on the topic, we believe there needs to be more development on this issue before the Commission issues final guidance. We thus discuss this issue in the *FNPRM* accompanying this *Order*.

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[782] *See* Embratel Comments at 7.

[783] We also note that while the Commission's rules have not imposed a uniform term for market access grants previously, many market access grants contain conditions specifying that the authorization shall be valid only so long as the underlying foreign license is valid.

[784] *NPRM,* 40 FCC Rcd at 8283, para. 256.

[785] Appendix A at § 100.3.

[786] *NPRM*, 40 FCC Rcd at 8284, para. 265; Iridium Comments at 17.

[787] Astrolab Comments at 5. Astrolab suggests that for VTSS individual surface assets be replaced for individual surface vehicles within the scope of the original fleet authorization, provided that all of the following remain unchanged: the total number of authorized vehicles is not increased; the replacement vehicle uses the same frequencies and emissions characteristics; the replacement operates within the same selenographic area of operation; no material modification under § 100.142 is triggered *See* Space Exploration Holdings, LLC, Grant Stamp, ICFS File No. SAT-LOA-20241218-00288 (granted May 19, 2025); *see also* Impulse Comments at 15-16 (allow replacements that are not 'technically identical" if they do not increase interference or exceed the mission.).

[788] *NPRM*, 40 FCC Rcd at 8263, para. 191.

[789] *Id.*

6. Reporting on Space Bureau Licensing

268. We adopt our proposal with minor modification to require the Space Bureau to report once a year, in December, on the status of all pending space station and earth station applications.[790] This annual report will be released in a public notice and posted on the Space Bureau website, and will detail the total number of pending applications, the percentage of applications that have been pending for less than 30 days, 31-60 days, 61-90 days, 91-120 days, 121-150 days, 151-180 days, 181-365 days, and more than 365 days. We have expanded the ageing categories beyond our *NPRM* proposal to include 151-180 days and 181-365 days to provide more information. Several commenters have suggested that this report include even more detail, including the frequencies requested for each system and the status of federal coordination.[791] Including the frequencies for each application would require substantial resources that is not warranted for a general time to disposition report. While including information on the timelines for federal coordination may be worthy of further development, we are not including this requirement in the annual report at this time. Similarly, we reject calls for the Space Bureau to provide quarterly reporting on the status of all pending space stations and earth stations applications.[792] While such reporting may be useful for individual applicants for tracking purposes, we believe that staff resources will be better focused on reducing processing times. The rules we put in place to explain why no action has been taken 60 days after public comments will also provide information to particular applicants.

7. Accountability and Transparency Requirements

269. *Removal of Application Requirements.* In the *NPRM*, we sought comment on the possibility of adopting a framework for removing application requirements which are no longer needed to carry out the Commission's review, and whether this function should be undertaken by the Commission or whether it would be more efficient to delegate this function to the Space Bureau.[793] The logic of this proposal was that if over time it becomes apparent certain application requirements are no longer necessary then it is in the public interest to no longer require them. CTIA was the sole commenter on this matter.[794] We delegate rulemaking authority the Space Bureau to remove application requirements in order to maintain the flexibility needed as the process of space and earth station licensing modernization moves forward. The Space Bureau is delegated authority to propose removal of applications requirements, seek comment, and then issue final guidance as to any application portions to remove. This flexibility in removing unnecessary elements will be essential as processes and databases are developed which may facilitate changes to the application requirements and render certain data redundant or unnecessary for new applications. CTIA argues that that there should be no delegation of authority to remove unnecessary elements, and, if delegated the changes should be limited to non-substantive changes, and if authority is delegated it should sunset.[795] We disagree. The Bureau must provide notice and seek comment, specifically describing which application requirements are being proposed to be removed and explain the rationale for doing so. After notice and comment, the Bureau will issue an order addressing its proposals and any comments received on its proposals. These safeguards ensure that the public will have the ability to give input to the Bureau's proposals, while removing unnecessary application requirements without having to wait for full Commission review. Finally, no sunsetting of this provision is warranted since we expect the Bureau to engage in continuous improvement of its application

[790] *NPRM*, 40 FCC Rcd at 8264-65, para. 194.

[791] CSF Comments at 4 (include specific data on federal coordination timelines); CSMMA Comments at 16 (include information on federal coordination); Capella Comments at 23 (include frequencies and information on federal coordination).

[792] Spire Comments at 15.

[793] *NPRM,* 40 FCC Rcd at 8264, para 193.

[794] CTIA Comments at 13.

[795] *Id.*

requirements.

8. Satisfaction of Requirements in Conjunction with Other Agencies

270. To avoid duplicative review between federal agencies, there may be situations where it is in the public interest for the Commission to take into account another federal agency's determination regarding a particular matter relevant to the space or earth station licensing process, such as orbital debris mitigation, rather than subject applicants to separate review by multiple federal agencies. To facilitate this, we establish a framework whereby the Commission may permit an applicant to not provide certain application elements that have or will be reviewed by another federal agency.[796] The Commission therefore delegates authority to the Space Bureau to establish a framework that will explain the circumstances under which the Commission may take into account another federal agency's determination regarding a particular matter and the extent to which that would enable an applicant to avoid providing certain application elements. Specifically, we delegate authority to the Space Bureau to issue one or more public notices, subject to notice and comment procedures, that identify determinations by another federal agency or agencies that the Commission may take into account in deciding whether applicants have satisfied specific application requirements of part 100. For example, if the Commission determines that another federal agency has received, reviewed, and made a determination regarding the orbital debris mitigation strategies for a satellite system prior to deployment and operation, then the Commission could potentially take into account that agency's determination in place of the requirement that an orbital debris mitigation plan be provided as part of an FCC application.[797]

271. We find that this approach has the potential to expedite and streamline the application process for space station deployments and operations where certain information may be reviewed by other agencies in addition to the Commission.[798] This framework may provide flexibility to operators whose in-space deployments and operations may evolve quickly or where the operations will be closely coordinated with another government agency. Under this framework, the Commission will not abdicate or delegate any statutory responsibilities because it will continue to independently review compliance with its rules and will retain the ability to take enforcement action. Instead, we view this framework as a

[796] In the *NPRM*, we asked broadly "how the proposed rules […] support and align with the policy initiatives outlined in the [Enabling Competition in the Commercial Space Industry Executive Order]" and "invited commenters to provide feedback on this intersection and offer additional or alternative proposals that the Commission may consider to create a more cohesive regulatory environment for commercial space and satellite operators." *NPRM,* 40 FCC Rcd at 8285-86, para. 269. No comments were received in response to this question. Since the release of the *NPRM*, the Office of Space Commerce with the Department of Commerce has released its proposal for missions authorizations through a voluntary space commerce certification. *See* OSC Releases Updated Mission Authorization Proposal, available at https://space.commerce.gov/. No part of this rule shall preclude the Office of Space Commerce (OSC) from certifying missions that were not clearly or straightforwardly regulated at the time of the issuance of Executive Order 14335, *Enabling Competition in the Commercial Space Industry*, E.O. 14335. Commission licensing of space stations is not intended to preclude OSC certification or other oversight of such missions. In keeping with E.O. 14335, and to the extent that it is able, the Commission will incorporate such certifications into licenses issued under part 100.

[797] *See, e.g.*, Space Exploration Holdings, LLC, Grant Stamp, SAT-LOA-20241218-00288 (granted May 19, 2026).

[798] The Commission has previously recognized that duplicative review of orbital debris mitigation strategies when such strategies are already subject to review by another agency does not provide an additional benefit to the public interest. *See Mitigation of Orbital Debris*, Second Report and Order, 19 FCC Rcd 11567, 11610, para. 104 (2004) (stating that there is no additional benefit to reviewing the post-mission disposal plans of commercial remote sensing satellite applicants when such plans have been submitted to NOAA and are already subject to effective regulatory review); *Mitigation of Orbital Debris in the New Space Age*, Report and Order and Further Notice of Proposed Rulemaking, 35 FCC Rcd. 4156, para. 143 (2020) (suggesting that applicants could seek waiver of the Commission's orbital debris mitigation disclosure requirements on the basis that the plans are being evaluated by another U.S. government entity).

potential tool to issue authorizations consistent with the Commission's rules more efficiently and expeditiously. Importantly, the Space Bureau must issue a public notice seeking comment on proposed procedures before implementing this framework. As a result, the public will have the opportunity to comment on whether or not the other agency's review is sufficient to meet the Commission's rules.

D. Operational and Technical Requirements

272. We adopt our proposal to create "Subpart C – Operational Requirements" that includes the rules for space and earth station licensees.[799] We believe it will be beneficial for those holding authorizations to have all the operational requirements organized into Subpart C so that it is straightforward to understand which regulations govern operations. We organize these rules in the manner we proposed: (1) general rules applicable to space and earth stations; (2) general space station rules; (3) NGSO frequency specific rules; (4) GSO frequency specific rules; (5) coordination requirements and rules; (6) satellite digital audio radio service rules; (7) general earth station rules; (8) earth station coordination and performance requirements; (9) frequency specific earth station rules; and (10) miscellaneous rules. This reorganization will make it easier for licensees to understand the rules with which they must comply and will make it easier for the Commission to update rules in the future. We have intentionally left gaps in the numbering between rule sections to allow the Commission to add and remove rules in the future while keeping rules that pertain to the same subject together.

273. Most of the rules that we adopt into subpart C of part 100 are carried over from part 25 with no changes, or only minimal, non-substantive edits. For the rules that we adopt or modify, we discuss in more depth below. In the *FNPRM*, we seek comment on ways we might further refine these rules, including by creating clear operational envelopes within which authorized systems are allowed to operate.

1. General Licensee Operations

274. We adopt section 100.200 that contains rules for general licensee operations.[800] In section 100.200(a), we include the requirement that operators must receive approval prior to deploying and operating any satellites.[801] In section 100.200(b), we adopt language that clearly states that licensees may operate within the parameters of their authorization, subject to any Commission action, coordination obligations, and any conditions or constraints placed on a license.[802] We also include a requirement that operations of NGSO satellite systems granted outside of a processing round must be compatible with existing operations in the authorized frequency band(s) and must not materially constrain future space station entrants from using the authorized frequency band.[803] This rule clearly lays out obligations of NGSO satellite systems authorized outside processing rounds and is closely connected to the requirement in section 100.112 that NGSO applicants must show how they will share spectrum with current and future operators.[804]

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[799] *See NPRM*, 40 FCC Rcd at 826, para. 204.

[800] Appendix A at § 100.200.

[801] *See* Appendix A at § 100.200(a). We note that this language was not included in the Appendix in the *NPRM*. This was inadvertently omitted. We take this language from part 25 and modify it slightly. *See* 47 CFR § 25.113(g). It is also logically connected to the requirement in section 100.2 that a station authorization is required.

[802] *See* Appendix A at § 100.200(b). This rule text is nearly identical to the rule proposed in the *NPRM*, but with the addition of "coordination obligations" to ensure licensees operate in a manner that is consistent with any coordination agreements or arrangements.

[803] Appendix A at § 100.200(c). This rule was originally proposed in section100.140(c)(4)(iii) in the exceptions to expedited processing section in the *NPRM*. *See NPRM*, Appendix A at § 100.140(c)(4)(iii). Because we do not adopt the exceptions to expedited processing, we delete that section and move the rule here.

[804] Appendix A at § 100.112(b)(13).

2. Space Station Operations

275. We adopt our proposal to modify several rules in part 25 that outline permissible actions for space station operators.[805] The actions we outline below will provide operators with more freedom to manage their satellite systems while reducing the administrative burdens.

a. Telemetry, Tracking, and Command Authority for Short Term Maneuvers

276. We adopt our proposal to codify authority for space station operators to use already-authorized TT&C frequencies to conduct orbit-raising maneuvers without additional Commission approval with slight modification.[806] Specifically, we expand this limited authority based on commenters' suggestions.[807] We adopt a rule, in section 100.210, for "Telemetry, Tracking, and Command Authority for Short Term Maneuvers" rather than for "Orbit-raising maneuvers" as proposed.[808] In this rule, we authorize space station licensees to transmit in connection with the following: maneuvers directly related to post-launch, orbit-raising operations; orbit-lowering and de-orbit maneuvers; maneuvers directly related to transferring between authorized orbital regimes or locations; and reconfiguration of satellites within the parameters of an authorized constellation. We also condition operations under this rule so that authority is limited to only those TT&C frequencies in which the space stations are already authorized to operate. Space station operators must coordinate in good faith with other operators and space station licensees must accept interference from other lawfully operating stations.

277. Commenters broadly support this proposal.[809] This will allow space station operators to conduct TT&C operations to orbit-raise, deorbit, and otherwise move their satellites within authorized orbital parameters without the need to file for an STA.[810] It will also protect other operators because all operations under this rule must be on an unprotected and non-interference basis and must be coordinated in good faith. We do not include earth stations in the rule because if an earth station is already authorized to communicate with a satellite in specific frequency bands, there is no additional authority needed for the earth station to support the TT&C operations we authorize in this rule.[811] We do not extend this authority to cover operators' transmissions in their service link spectrum.[812] We keep this authority limited to TT&C transmissions for the operations described above to promote administrative efficiency and limit the likelihood of interference.

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[805] *See NPRM*, 40 FCC Rcd at 8268, para. 210.

[806] *See NPRM*, 40 FCC Rcd at 8268, para. 211.

[807] *See* Impulse Space Comments at B-4; CONFERS Comments at 16; Iridium Comments at 19.

[808] *See NPRM* at Appendix A at § 200.210; *see* Appendix A at § 200.210 for the updated rule text.

[809] *See* Impulse Space Comments at B-4; CONFERS Comments at 16; Iridium Comments at 19; SiriusXM Comments at 11; SES Comments at 42-43; Muon Space Comments at 15; SIA Reply Comments at 9; Amazon Leo Comments at 28; Globalstar Comments at 12.

[810] The Commission regularly grants STAs for this type of authority. *See e.g.*, Iridium Constellation LLC, Grant Stamp, SAT-STA-20230613-00139 (July 14, 2023); *see also* Iridium *Ex Parte*.

[811] *See* SES Comments at 42-43 (recommending extending authority to earth stations as well); SiriusXM Comments at 11.

[812] *See* Globalstar Comments at 12. Globalstar requests that the Commission expand this authority to cover "operators' transmissions in their service link spectrum" to allow service link payload testing. *Id.* We decline to do so, to avoid adjudicating issues related to the type of testing that may be allowed under this rule. We focus this rule on TT&C operations that are routinely authorized by STA and that typically pose minimal risk of interference.

b. Operating Provisions for NGSO FSS Space Stations.

278. We adopt our proposal to incorporate sections 25.146 and 25.289 into part 100for "Operating provisions for NGSO FSS space stations" with minor edits to remove the requirement for applicants to certify that they will comply with certain ITU EPFD and PFD limits, and instead simply require operators to comply with those limits.[813] Commenters did not address this proposal. This will reduce the application burden because applicants will no longer need to provide a separate certification that they will meet the EPFD limits. Instead, certifying compliance with the EPFD limits will be covered under the general certification in section 100.112(c)(1). If licensees will not comply, they must request a waiver of section 100.222.[814] This will reduce the need for applicants to make separate certifications while ensuring that licensees know what rules that they must follow.

279. We also make minor edits to rules we proposed in the *NPRM* to reflect recently adopted modifications by the Commission relating to the EPFD limits in section 25.146.[815] We proposed in the *NPRM* to incorporate any part 25 rule changes made in other open Commission proceedings into part 100.[816] We do that here with respect to changes made by the Commission's recent *NGSO-GSO Sharing Order*.[817] In that *NGSO-GSO Sharing Order*, the Commission adopted changes to section 25.146 of the Commission's rules to allow NGSO operators in the United States to exceed the ITU EPFD limits in certain bands.[818] We incorporate those changes into section 100.222.[819] We also slightly revise the language that the Commission adopted in the context of part 25 to remove the reference to providing a certification that an operator will comply with the ITU EPFD limits.[820] This aligns with the change from requiring a certification of compliance with EPFD limits to simply requiring compliance with EPFD limits.[821]

c. Two-Degree Spacing for GSO Space Stations.

280. We decline to adopt our proposal to revise the requirement for two-degree spacing of GSO space stations so that it would only apply to operations to and from the United States.[822] Instead, we maintain the current two-degree spacing requirement under section 25.140 and incorporate this requirement in part 100.[823] We sought comment on whether the two-degree spacing rule remains

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[813] *See NPRM*, 40 FCC Rcd at 8268, para. 212; Appendix A at § 100.222.

[814] We note that the Commission recently adopted rules allowing licensees to exceed the EPFD limits for operations in the United States provided they complete a coordination agreement or submit a compatibility showing to the Commission. *See Spectrum Sharing Report and Order* at para. 35.

[815] *Id.*

[816] *See NPRM*, 40 FCC Rcd at 8282-84, paras. 255-260.

[817] *See Spectrum Sharing Report and Order*.

[818] *Id.* at para. 48.

[819] *See* Appendix at § 100.222.

[820] Specifically, the language the Commission adopted in the *NGSO-GSO Sharing Order* in section 25.146(a)(3) stated in relevant part: "…as an alternative to certifying that it will comply with equivalent power-flux density limits in these bands…" The language we adopt in section 100.222(b) reads: "…as an alternative to compliance with equivalent power-flux density limits in these bands…."

[821] *See* Appendix at § 100.222(a).

[822] *NPRM*, 40 FCC Rcd at 8269-70, para. 213.

[823] *See Licensing of Space Stations in the Domestic Fixed-Satellite Service and Related Revisions of Part 25 of the Rules and Regulations*, CC Docket No. 81-704, Report and Order, 57 Rad. Reg. 2d 577 at 3, para. 4 (1983) ("*Two Degree Spacing Order*"); *see also* Appendix A at §§ 100.230, 100.278, 100.279.

necessary for GSO operators.[824] Commenters largely oppose changing the two-degree spacing requirement rule.[825] In response to the record, we retain the two-degree spacing requirements to provide regulatory clarity for GSO applicants and licensees. We are convinced that retaining the bright-line requirement will protect long-term investments in geostationary orbit while providing new entrants access to the market.

281. We also maintain the +/- 0.05 degree station-keeping requirement associated with the two-degree spacing rule.[826] Specifically, we adopt section 100.215, "Geostationary satellite station-keeping," to codify the rule that GSO satellites must be maintained within 0.05 degrees of their assigned orbital longitude in the east/west direction.[827] We also clarify that for GSO satellite systems comprised of more than one satellite, all satellites must be maintained within +/- 0.05 degree station-keeping box as the rule requires all space stations in geostationary orbit to operate within +/- 0.05 degrees of their assigned orbital location.[828] We agree with commenters that retaining this station-keeping requirement, along with the two-degree spacing requirement, will provide regulatory certainty and clarity for existing and new entrants to the GSO market.

3. Reporting Requirements

282. The *NPRM* proposed tailored revisions to the reporting requirements, seeking to limit the volume of regular reporting required while also identifying information that would be most useful to operators and licensees in ensuring that the Commission is fulfilling its obligations in promoting a safer, more efficient space operating environment.[829] To that end, we organize the incorporated and adopted part 100 reporting requirements in Subpart C which directly support safe space operations and addressing harmful interference.

283. *Space Station Point of Contact Information Reporting Obligations.* We include in section 100.201 the space station point of contact reporting requirements from section 25.171, with specific modifications. The *NPRM* proposed to remove the section 25.171(a) requirement for space station licensees and market access operators to file an annual report with points of contact for interference resolution and emergency response.[830] Section 25.171(b) requires that any updates to this contact information must be filed within 10 days of the change.[831] We eliminate the annual June 30 reporting requirement in 25.171(a) as duplicative, given that we still require operators to provide this contact information prior to operation and promptly report any changes to the information on file.[832] The

[824] *See NPRM*, 40 FCC Rcd at 8269-70, para. 213.

[825] *See* Embratel Comments at 8-10 ("Maintaining the current standard ensures operational stability, preserves the integrity of existing investments, and avoids increased interference and orbital-safety risks that could arise from a more densely packed GSO arc."); CSF Comments at 9 ("Bright line rules such as the two-degree spacing rule for GSO space stations is fundamental to providing new entrants with access to spectrum and orbit resources and further enables the Commission to achieve its goal of fast, assembly line license processing."); Astranis Comments at 6 ("…these bright-line rules provide vital clarity and predictability for all satellite operators regarding the availability of orbital locations.").

[826] *See NPRM*, 40 FCC Rcd at 8269-70, para. 213; 47 CFR § 25.210(j); *see also* Astranis Comments at 6.

[827] *See* Appendix A at § 100.215.

[828] *Id.*

[829] *NPRM*, 40 FCC Rcd at 8270, para. 214.

[830] *NPRM*, 40 FCC Rcd at 8270-71, para. 215; 47 CFR § 25.171(a).

[831] 47 CFR § 25.171(b).

[832] Appendix A at § 100.201(a); 47 CFR §§ 25.271, 25.172(a). *See* Amazon Leo Comments at 29 (agreeing that the annual reporting requirement is duplicative of the requirement to update contact information following any changes); SWF Comments at 3-4.

NPRM also proposed to shorten the timeframe required for filing updated information, moving from 10 days to 48 hours from the effective date of the change.[833] Commenters on this point request that the Commission retain the current 10-day timeframe, noting that more than 48 hours is often necessary to account for "technical and organizational realities."[834] We recognize these commenters' concerns and decline to adopt the proposed 48 hour requirement in favor of retaining the 10-day timeframe. Any changes to the required points of contact information must be updated in ICFS within 10 days from the date of change.[835] We additionally revise this incorporated rule to more clearly include the section 25.172(a)(1) requirement that licensees or market access recipients must file the point of contact information prior to operation of a space station or prior to operation with a U.S. earth station.[836] Although we remove the annual June 30 report, we require all licensees and market access recipients to file point of contact information in ICFS prior to operation, aligning with adopted section 100.201(b).

284. Several parties recommend that the Commission require all operators to provide and maintain a point of contact with 24/7 availability for collision avoidance procedures in the event of high-risk conjunctions.[837] These operators argue that designated a collision avoidance point of contact who is capable of making operational decisions is a critical component of risk management and would promote space sustainability by facilitating coordination and reducing conjunction risks in time-sensitive situations.[838] At the request of these commenters, we accordingly require that an operator's submitted point of contact information must include a point of contact for collision avoidance.[839] Section 25.171(a) states that contact personnel should include those responsible for resolution of short-term, immediate interference problems at the system control center.[840] We believe that requiring a collision avoidance contact is within the intended scope of this rule, which is to create a safer operating environment for all licensees, and a collision avoidance point of contact would provide operators with the necessary information to coordinate and resolve high-risk scenarios as needed. Further, this aligns with the adoption of the ephemeris data sharing requirements and semi-annual space safety reports, as discussed in this section below. This requirement is adopted in section 100.201(a), and we clarify that licensees and market access recipients must similarly update this contact information within 10 days of a change, as is required for interference and emergency response personnel information.[841]

285. Some commenters request that the Commission allow an operator to submit multiple

[833] *NPRM*, 40 FCC Rcd at 8270-71, para. 215.

[834] *See* Iridium Reply Comments at 18-19; SIA Comments at 7 (opposing the 48 hour update requirement because this shortened window does not account for internal company operations or potential IT issues); Embratel Comments at 10 (noting that a two-day window may coincide with weekends or holidays, during which period staff may not be able to process or report updates and could result in unintentional noncompliance with the rule).

[835] Appendix A at § 100.201(a)(1)(iii).

[836] Appendix A at § 100.201(a); 47 CFR § 25.172(a)(1).

[837] NASA Comments at 2 (requesting that space station operators provide and keep a 24/7 contact method for collision risk reduction coordination purposes); SpaceX Comments at 7-8; Blue Origin Comments at 15; Planet Labs Reply Comments at 7; Iridium Reply Comments at 19; CCSMA Reply Comments at 9; Kayhan Space Comments at 5.

[838] SpaceX Comments at 7-8 (recommending that, just as the Commission requires a point of contact for resolving harmful interference, a 24/7 contact for collision avoidance coordination would promote space sustainability by facilitating coordination and resolution of high-risk conjunctions); Blue Origin Comments at 18 ("For time-critical operations, quick resolution through predefined contact points, escalation paths, and temporary operational adjustments is more elaborate than elaborate ex post documentation.").

[839] Appendix A at § 100.201(a)(ii).

[840] 47 CFR § 25.171(a).

[841] Appendix A at § 100.201(a)(1)(iii).

designated contacts and identify the listed individuals as a primary or secondary contact.[842] The rules already allow providers to submit more than one contact personnel responsible for resolution of interference problems and design issues.[843] Operators may report more than one point of contact as the relevant responsible party and designate these individuals as an operator deems necessary. Others suggest requiring a point of contact for NTIA during the federal coordination process, and alternatively, or in addition to, requiring the Commission to provide operators with of an NTIA point of contact.[844] We decline to adopt these proposals, although operators may include a preferred point of contact in the relevant application materials or information reporting specific to matters involving federal coordination.

286. *Ephemeris Data*. As we implement modernized rules for the burgeoning space economy, we also ensure shared access to spacecraft and space station location data as this creates transparency for operators as to the location(s) of authorized space stations. Timely and reliable ephemerides not only reduce collision risks but also support the Commission's core missions of ensuring efficient spectrum use in the public interest and promoting communications. We adopt our proposal, that was widely supported on the record,[845] to require that all space station operators timely file their ephemeris data with a space situational awareness (SSA) provider.[846] We delegate to Space Bureau the authority to regularly review the available SSA providers and, after providing notice and seeking comment, announce SSA providers that can be used to satisfy this requirement.

287. Based on the record, we will initially encourage reporting of ephemerides every eight hours for satellites operating in or passing through low Earth orbit (LEO) (below 2,000 km) and every twenty-four hours for satellites above that.[847] In addition, we encourage satellite operators to specifically make ephemeris and covariance data available to other operators via the SSA, to report non-

[842] *See* Kayhan Space Comments at 5 (recommending primary and secondary points of contact that are capable of making immediate operational decisions during a high-risk conjunction event); Sateliot Comments at 5 (suggesting that the Commission provide a standardized contact template within the application system and permit multiple designated contacts (primary/secondary) to increase resilience).

[843] 47 CFR § 25.171(a).

[844] *See* AWS Comments at 4 (arguing that a federal coordination point of contact would improve the timelines for processing applications and resolve challenges with communication in federally coordinated spectrum); Rivada Comments at A-1; Lockheed Martin Comments at 11-12; CSF Comments at 10 (noting that a federal coordination point of contact would provide heightened assistance to military/classified systems); Blue Origin Comments at 18 ; Blue Origin Reply Comments at 7; Leaf Comments at 12 (proposing that the Commission either automatically provide an NTIA contact when bands are submitted for coordination); Kongsberg Comments at 4; SSC-US (d/b/a USN) Comments at 2; AnySignal Comments at 2.

[845] *See generally, e.g.*, NASA Comments at 7-8; SpaceX Comments at 6-8; NRAO Comments at 4; Manifest Space Comments at 8; Kayhan Comments at 3; SWF Comments at 2-3; Howard and Stilwell Comments at 3; CSF Comments at 8-9; Iridium Comments at 20-21; Viasat Comments at 14; CSF Reply Comments at 4. Indeed, no commenter categorically opposes an ephemeris sharing requirement.

[846] *See NPRM*, 40 FCC Rcd at 8271-72, paras. 216-21. The rules on ephemeris data sharing are located in Appendix A at § 100.201(c).

[847] We note the LEO threshold for 8-hour reporting frequency is generally conservative based on the record and could evolve with further experience. *See, e.g.,* NASA Comments at 7-8 (recommending that the Commission require spacecraft at or below 500 km to provide ephemeris no less than 3 times per day, and spacecraft at higher altitudes to provide ephemeris no less than 1 time per day); SpaceX Comments at 6 (similar recommendation except differentiating at 750 km); CSSMA Reply at 8 (supporting SpaceX's proposal); Planet Reply at 7 (also supporting SpaceX's proposal). *But see, e.g.*, Manifest Space Comments at 3, 7 (proposing a minimum reporting frequency of once per second for all spacecraft operating below 4,000 km altitude, and no less than once every eight hours for spacecraft operating at or above 4,000 km altitude). We anticipate that providing ephemerides every second would prove challenging for some satellite systems operating below 4,000 km and note this proposal is not supported by any other commenter.

maneuverability and collision avoidance outages, and to register with an SSA provider ahead of launch and begin submitting ephemerides within eight hours after deployment.[848] As acknowledged in the *NPRM*, we recognize that the landscape of SSA providers is rapidly changing, along with changes to satellite uses, designs, and capabilities.[849] We delegate authority to the Space Bureau to conduct notice and comment rulemaking revise this requirement, including by establishing cadence of reporting, adding eligible SSA providers, modifying the notifying frequency, and adjusting the required elements and form of submission. We additionally seek further comment on ephemeris data sharing in the *FNPRM*.[850]

288. *Space System Safety Reports*. To improve the Commission's and the public's access to information regarding the safe operation of in-orbit constellations, we adopt our proposal to require semi-annual space system safety reports from NGSO satellite operators.[851] These reports will provide basic information on operational safety (including the number of conjunction events), information on actual satellite reliability (including the number of satellites removed from operation[852] or screened from further deployment), and information on atmospheric re-entries.[853] Such real-world data will complement the orbital debris mitigation plans disclosed in a space station license application and inform the Commission's continued review of orbital uses by non-government satellite systems.[854] At the same time, to ensure these reporting requirements are no more burdensome than necessary, we delegate authority to the Space Bureau to waive or, after conducting notice and comment rulemaking, repeal the requirement for all or portions of these reports if, in the future, other tools (such as SSA systems) develop to the point that such reports are no longer needed or if experience shows that the burden of providing certain information outweighs its benefits.[855] Space System Safety Reports must be submitted in ICFS no later than January 1 and July 1 of each year, covering the preceding six-month period, respectively, from June 1 to November 30 and December 1 to May 30.[856]

289. The *NPRM* asked for comment on other information the Commission should require in

[848] *See* SpaceX Comments at 5-8; CSSMA Reply at 8; Planet Reply Comments at 7. We will exempt from these requirements vehicles located on the surface of a celestial body, such as the Moon. *See* Astrolab Reply at 3-4.

[849] *NPRM*, 40 FCC Rcd at 8271-72, para. 220.

[850] *See infra* section IV.F.

[851] *See NPRM* 40 FCC Rcd at 8272, para. 222; *see also* Appendix A at § 100.200.

[852] We note this will include any derelict traffic contributions and satellites that have become non-maneuverable. *See* CONFERS Comments at 6, 14.

[853] We agree with comments that this requirement should be technology neutral, *see* Reflect Orbital Comments at 4, and decline to adopt differing or more stringent requirements on satellite systems used as non-terrestrial networks (NTN) in connection with mobile networks. *But see* Sateliot Comments at 7. Further, we believe these general requirements appropriately balance reporting burdens and usefulness of information and decline to require more granular information that may be more burdensome to produce. *But see* Kayhan Comments at 4.

[854] We clarify that only maneuvers directly associated with conjunction events and debris mitigation must be reported. *See* SIA Comments at 3-4; Capella Comments at 2 (asking the Commission to clarify the intent of the space-safety report).

[855] *See* Kayhan Comments at 4-5. Thus, while we disagree with arguments that such reports are generally redundant with the ephemeris data sharing requirement we adopt above—for example because a system's current ephemeris data may not clearly indicate which maneuvers are directly associated with conjunction events, which satellites have been screened from further deployment, or provide cumulative re-entry statistics—we allow for the Bureau to reduce burdens associated with these reporting requirements should any elements prove redundant. *See generally* Capella Comments at 22; CSSMA Comments at 15-16. This Bureau delegation may also consider the burdens on satellite operators with constellations of different sizes. *See* Spire Comments at 14. We also note that the Bureau has authority to reduce the frequency of annual reporting, if it deems appropriate. *See* Sateliot Comments at 7.

[856] Appendix A at § 100.201(d).

the Space System Safety Reports that may benefit other operators.[857] NASA supports adopting the safety reports and recommends that the Commission narrowly tailor the required information to better monitor compliance with orbital debris mitigation plans and end of life disposal plans.[858] NASA suggests that the Commission instead collect information specifically related to high-risk events, passivation and end-of-life activities, ephemeris sharing and quality, and debris release, and recommends collecting this information in a more standardized format.[859] Considering the amount of information suggested for collection, NASA acknowledges that this reporting would be a significant increase from current requirements and the Commission could consider exemptions or other limitations.[860] At this time, we do not expand the information collection as we seek to balance the burden of an industry-wide reporting regime against the value of the information. We also seek comment in the *FNPRM* on including new or additional data or information as part of these required reports.[861]

4. Orbital Debris

290. We adopt our proposal to create a section in part 100 that contains the required orbital debris rules and requirements.[862] This section contains some of the orbital debris requirements from part 25 that we modify from certifications and information submission requirements into affirmative obligations in part 100. Along with the orbital debris certifications,[863] these orbital debris requirements in Subpart C in part 100 will make clear to applicants and licensees the information they must provide to the Commission and how they must operate their satellites and space stations.

a. Orbital Debris and End-of-Life Disposal

291. We adopt section 100.260 outlining certain requirements for satellite orbital debris mitigation and end-of-life disposal.[864] In this section, we codify the requirement that space station licensees must operate in accordance with the orbital debris mitigation plans and information that they submit to the Commission.[865] If there are any significant changes to the orbital debris plans, the licensee must notify the Commission within 30 days of the change.[866] Additionally, as proposed in the *NPRM*,[867] we incorporate other provisions related to end-of-life disposal for GSO satellites and low-earth orbit satellites from part 25.[868] Finally, in this section we convert the current requirement under part 25 for

[857] NASA Comments at 9-13.

[858] *Id.* at 9-10.

[859] *Id.*

[860] *Id.*

[861] *See infra* section IV.F.

[862] *See* Appendix A at §§ 100.260, 100.261; *NPRM* 40 FCC Rcd at 8273-74, paras. 223-25.

[863] *See supra*, section III.B.1.h.

[864] *See* Appendix A at § 100.260; *NPRM* 40 FCC Rcd at 8273, para. 224. We note that we have changed the title of this rule section from "Operations and end-of-life disposal" to "Orbital debris and end-of-life disposal" to more accurately describe the regulations therein.

[865] *See* Appendix A at § 100.260(a)(1).

[866] *See* Appendix A at § 100.260(a)(2). We note that any changes that would result in a change to an orbital debris certification would be filed as a modification. *See* Appendix A at § 100.142; *see also supra*, section III.C.2.b.

[867] *See NPRM*, 40 FCC Rcd. 8273, at para. 224.

[868] *See* Appendix A at § 100.260(b)-(e); 47 CFR § 25.283(a)-(e). We make one slight edit to the language in section 100.260(e) to provide for the possibility of a low-earth orbit satellite experiencing a catastrophic failure and not being able to be properly disposed of within the 5 years required by our rules. Specifically, the first sentence now reads, "For spacecraft ending their mission in or passing through the low-Earth orbit region below 2000 km altitude and planning disposal through uncontrolled atmospheric reentry, *barring catastrophic failure of satellite*

(continued….)

applicants to provide a statement that they have "assessed and limited the probability" of accidental explosions and release of liquids that will persist in droplet form into an affirmative obligation for space station operators.[869] This is another step the Commission takes to reduce the application and review burden for applicants and staff while continuing to ensure that space station operators act in a responsible manner to enhance space safety.

b. NGSO Space Safety Rules

292. We adopt our proposal to turn two other information requirements from part 25 into affirmative obligations.[870] Specifically, we adopt a requirement that all NGSO satellites be trackable, with a presumption that each satellite larger than 10 cm in the smallest dimension is trackable.[871] We apply this requirement to VTSS operators authorized to operate in Earth orbit based on commenter suggestions.[872] We also clarify that the presumption of trackability for satellites 10 cm or larger in the smallest dimension applies to satellites operating in or "crossing" low-Earth orbit.[873] This builds slightly upon the requirement in part 25 that applicants submit a statement addressing the trackability of their space station(s).[874] Commenters support this proposal,[875] and we find that requiring all satellites to be trackable will enhance space safety and serve the public interest. Additionally, we do not believe this will be a burden to operators, as most satellites licensed by the Commission are larger than 10 cm and therefore presumed trackable.[876] We do not at this time adopt additional criteria that will result in a satellite being presumptively trackable beyond low-Earth orbit. We note that some commenters recommend a minimum dimension of one meter for a spacecraft in MEO or GEO to be presumed trackable, consistent with common space industry practice.[877] While we do not adopt this metric in section 100.261 at this time, we nevertheless seek comment in the *FNPRM* on whether the Commission should adopt this metric for satellites beyond LEO orbit.[878] We also add to the certifications required under section 100.111 a presumed-acceptable criteria that spacecraft operating above 2000 km are presumed trackable if they are at least one meter in the smallest dimension.[879]

293. Finally, we adopt a requirement that upon receipt of a space situational awareness conjunction warning, operators must take all possible steps to assess and mitigate the collision risk.[880]

(Continued from previous page)
components, disposal must be completed as soon as practicable following end of mission, and no later than five years after the end of the mission." (Emphasis added). This aligns the rule for LEO disposal with the rule for GEO disposal. Appendix A at § 100.260(b).

[869] *See NPRM*, 40 FCC Rcd at 8273-73, para. 224; Appendix A at § 100.260(f).

[870] *See NPRM*, 40 FCC Rcd at 8274, para. 225.

[871] *See* Appendix A at § 100.261(a). As we proposed in the *NPRM*, we will only apply this requirement prospectively, and space stations licensed by the Commission prior to the effective date of these rules will not be subject to this requirement. *See NPRM,* 40 FCC Rcd 8274, n. 447.

[872] *See* Impulse Space Comments at B-4.

[873] Appendix A at § 100.261(a); *see also* NASA Comments at 14.

[874] 47 CFR § 25.114(d)(14)(v).

[875] *See* Impulse Space Comments at B-4; Secure World Foundation Comments at 5; NASA Comments at 14.

[876] We note that these rules do not *require* a satellite or spacecraft to be larger than 10 cm. Instead, applicants requesting authorization for radiofrequency communications for satellites smaller than 10 cm in at least one dimension must provide additional information detailing how they will track the satellites.

[877] *See e.g.*, NASA Comments at 5.

[878] *See supra FNPRM* at section I.

[879] *See* Appendix A at § 100.111(d)(2)(iii).

[880] *See* Appendix A at § 100.261(b).

The Commission has long required operators to certify that they will take such action upon receiving a conjunction warning.[881] This rule simply removes the certification requirement while still requiring operators to take the necessary actions to mitigate the collision risk. We believe that adopting this rule will serve the goals of reducing administrative burden while preserving space safety.

c. Part 5 Orbital Debris Rules

294. We modify 47 CFR § 5.64 to cross-reference to the updated orbital debris rules in part 100. Specifically, we replace the substantive rules in section 5.64(b) with a cross-reference to sections 100.111, 100.260, and 100.261. In doing so, we make it clear that applications for space stations under part 5 must submit the same information as applications for space stations under part 100. We also reduce the risk of inconsistent application requirements in the event that the Commission updates the orbital debris rules in part 100. We note that this does not change the underlying requirement that applicants must disclose the design and operational strategies that its satellite systems will use to mitigate orbital debris.

5. Coordination, Interference, Spectrum Sharing

295. Coordination Requirements with Federal Government Users. We adopt, with minor edits, our proposed rule language in section 100.144 that contains similar language to current section 25.279(b)(1) and adds direction on coordination between the FCC and NTIA regarding commercial operations in shared government/non-government frequency bands.[882] This may serve as a basis for strengthened FCC-NTIA coordination and was supported by commenters.[883] Several parties offered a variety of suggestions for additional text or process changes.[884] While we do not include these proposals in the rules we adopt today, we note that they may inform issues that the Commission and NTIA continue to examine as part of broader process-modification efforts.

296. Procedures to be Followed in the Event of Harmful Interference. The *NPRM* proposed to generally incorporate section 25.274, detailing the required procedures for earth station operators in the event of harmful interference, into part 100.[885] We incorporate these provisions into section 100.202, with modifications.[886] We delete section 25.274(a) from the incorporated provisions, as proposed, which requires an earth station operator whose transmission is suffering harmful interference to first check the earth station equipment to verify that the equipment is functioning properly.[887] This requirement is

[881] *See* 47 CFR § 25.114(d)(14)(iv)(A)(5).

[882] 47 CFR 25.279(b)(1); *see NPRM*, 40 FCC Rcd 8274 at para. 226; Appendix A at § 100.144.

[883] *See* Leaf Space Comments at 11, 25; KSAT Comments at 4.

[884] *See* ALPA Comments at 6 (urging formalized coordination with FAA and Aerospace and Flight Test Radio Coordinating Council for ground stations near aviation and flight-test infrastructure and recommending creation of a single Primary Recipient for telemetry reporting); CSF Comments at 3 (proposing default and special federal protection conditions, increased transparency on non-classified federal systems, and distinct treatment for certain federal/shared bands); AIA Comments at 3 (seeking clarity on interaction between VTSS and any future Department of Commerce mission-authorization framework); Leaf Space Comments at 11 (suggesting that the Commission work with NTIA on aligning Schedule F and NTIA Coordination forms). We note that Vantor's suggestion to replace footnote US258 with a tiered, co-primary priority system for national security missions in the X-band is beyond the scope of this proceeding. *See* Vantor Comments at 5.

[885] *NPRM*, 40 FCC Rcd at 8274, para. 227. We note that the *NPRM* inadvertently omitted the 47 CFR § 25.274 rule text from the Appendix. We incorporate the rule, as modified, in section 100.202(i). *See* Appendix A at § 100.202(i).

[886] Appendix A at § 100.202(i); *see* 47 CFR § 25.274.

[887] 47 CFR § 25.274(a); see *NPRM*, 40 FCC Rcd at 8274, para. 227.

effectively covered in the section 25.274(b), adopted at section 100.202(i)(1), which requires the earth station operator to check the other earth stations in the licensee's network to verify whether the source of the interference is from the operator's own network or from a local terrestrial source.[888] We tentatively concluded that section 25.174(a) is redundant of section 25.274(b) and, with no comments on this proposal, we make this change accordingly.[889] Additionally, we clarify in the adopted rule that these procedures will apply to both space and earth stations. These measures, over the years, have proven to be effective in addressing harmful interference events and they will continue to be under part 100.

297. Additional Coordination Obligations. We decline to adopt our proposal to remove the coordination obligations for non-geostationary and geostationary satellite systems in frequencies allocated to the fixed services.[890] We are persuaded by Iridium who argued that we should retain these rules in part 100 because it puts parties on notice of their coordination responsibilities and that absent these rules the Commission will have to expend resources addressing pleadings related to these disputes.[891] We agree that it is important to put parties on notice of their responsibilities—such notice is the cornerstone of our new "default to yes" licensing framework. Therefore, we incorporate these rules as section 100.275(j).[892]

298. *OOBE Limitations*. In the *NPRM*, the Commission sought comments on whether the out of band emission (OOBE) limits set forth in sections 25.202(f), (h) and (k) of the Commission rules should be updated given advancements in modern communications systems design and technological improvements in both transmitter and receiver. Several commenters suggest that the Commission should avoid modifying the technical rules in this proceeding including these rule sections.[893] In light of the comments, no substantive changes are being made to the sections corresponding to sections 25.202(f), (h) and (k) in the new part 100.[894]

6. Earth Stations

299. *Choice of Sites and Frequencies*. We adopt our proposal to remove the enumerated list of available frequency bands from the Commission's rules and instead rely on the U.S. Table of Frequency Allocations.[895] Some commenters raised concerns with eliminating the enumerated list from the current rules.[896] However, the concerns were raised in the context of identifying which bands permit blanket licensing.[897] We note, that the current list found in section 25.202 of the Commission's rules does not mention which frequencies are available for blanket licensing and which ones are not. Instead that is in section 25.115.[898] Because we propose to shift every frequency band allocated for satellite use to either a blanket license approach or a Nationwide, Non-Site license with a registration, it would not make sense

[888] Appendix A at § 100.202(i).

[889] *NPRM*, 40 FCC Rcd at 8274, para. 227. *See* Appendix A at § 100.202(i)(a).

[890] *NPRM*, 40 FCC Rcd 8275, para. 228. *See* Appendix A at § 100.275(j).

[891] *See* Iridium Comments at 8. *See also* Iridium *Ex Parte* at Attachment B (arguing that maintaining the prior coordination framework from 47 CFR § 25.203 is necessary).

[892] Appendix A at § 100.275(j).

[893] *See* Sirius XM Comments at 3; SIA Comments at 4; CTIA Reply Comments at 6; Verizon Reply Comments at 15; Verizon March 7 *Ex Parte* at 6.

[894] In the proposed Part 100, we inadvertently omitted Sections 25.202(h)(1) and (2), which cover OOBE limitations for SDARS terrestrial repeaters. *See* Sirius SM Comments at 3. These two rule sections have been added to Part 100 at sections 100.251(1)(a) and (b).

[895] *See NPRM*, 40 FCC Rcd at 8275, para. 231.

[896] See CTIA Comments at 21, GCI Reply Comments at 3-4.

[897] *See id.*

[898] 47 CFR § 25.115.

to specifically enumerate all frequencies available for blanket license since only bands available for User Terminals and ESIMs would allow for blanket licensing. We do agree that given the particulars of UMFUS operations and coordination in our rules special dispensation may be warranted.[899] However, given that it would be impossible to both comply with the coordination requirements of section 100.275 and hold a blanket license, we do not believe that expressly stating in a separate section that blanket licensing is prohibited in UMFUS bands is necessary.[900] Instead, we note that the only applications that can receive a blanket license are those not covered by the definitions of Immovable earth station or Nationwide, Non-Site license. [901] In addition, we add to the portion of the UMFUS rules relating to the 27.5-28.35 GHz band that NGSO FSS earth stations cannot be blanket licensed as was previously stated in section 25.115(f)(3), so that UMFUS related rules are in one place.[902]

300. In addition, we reject CTIA's proposal to add language to section 100.276(a) that mirrors section 25.203(a) of the Commission rules that would require earth station operators in shared frequency bands with terrestrial operations to choose sites, to the extent practicable, in areas where it would minimize the possibility of harmful interference between shared services.[903] The language that is proposed is unnecessary because in co-equally shared bands, operators are required to both coordinate and not cause harmful interference to other co-equally shared services. Instead, inclusion of the language would have the potential to restrict site deployment for earth stations counter to the goals of the Commission to expand the use of satellite services.[904] In addition, the language CTIA proposed does not make clear what would meet the "to the extent practicable" threshold or how such a standard could be enforced.[905] For instance, one could reasonably argue that practicability is a sliding scale based on circumstances that could be outside of an applicant's control. Although this language is found already in the existing part 25, we decline to continue such a standard here without a record to support it.

301. *Receive-Only Earth Stations*. We do not adopt our proposal to remove the receive-only rules for earth stations. Instead, we will keep the rules as they are. We believe, and as commenters pointed out, doing so at this juncture would cause confusion,[906] particularly in light of the pending rulemaking on auctioning more portions of the C-band.[907] Accordingly, we will not at this time make substantive changes to the receive-only earth station rules. However, we do take this opportunity to make clearer that if an earth station is receive-only, no license or registration is required if (1) no protection for the earth station is requested and (2) the earth station is not communicating with a satellite that has market access. In addition, we plan to revisit this question in a further notice.

302. *Earth Station Antenna Performance Standards.* We do not adopt our proposal to create envelopes for earth station antenna performance standards. We agree that this is an issue that requires a

[899] *See* CTIA Comments at 21; Verizon Reply Comments at 13.

[900] In addition, part 100.280 also makes clear that individual licenses are required in many of the UMFUS bands.

[901] *See* Appendix A at § 100.3 (definitions of Immovable earth station and Nationwide Non-Site license)

[902] *See* Appendix A at § 100.280 (stating "NGSO FSS Earth Stations cannot be blanket licensed in the 27.5-28.35 GHz band").

[903] *See* CTIA Comments at 9.

[904] As the Chairman stated: "One of the core objectives of the [Commission's] Build America Agenda is boosting America's space economy." (*See* Space Modernization for the 21st Century, SB Docket No. 25-306, Statement of Chaiman Brendan Carr (Oct. 2025)).

[905] *See* CTIA Comments at 9.

[906] *See* CTIA Comments.

[907] *Upper C-band (3.98–4.2 GHz)*, GN Docket No. 25-59, Notice of Proposed Rulemaking, FCC 25-78 (Nov. 21, 2025); Federal Communications Commission, *In the Matter of Upper C-band* (3.98–4.2 GHz), 90 Fed. Reg. 56076 (Dec. 5, 2025).

more fulsome technical record, and as such we plan to revisit this question in any subsequent further notice.[908]

303. In the *NPRM* we proposed to streamline the antenna performance standards for earth station antennas operating in the FSS and transmitting to a GSO satellite, including earth stations providing feeder links for satellite services other than FSS, with a single standard for the co-polarization and a single standard for the cross-polarization antenna gains rather than the amalgamation that currently exists based on frequency bands. Commenters noted that the standard we proposed in the *NPRM* would preclude several antenna types currently operating under the existing rule.[909] Commenters suggest that the Commission not make changes to these technical rules at this time, and that if the Commission does decide to make changes, it should do so in a separate dedicated rulemaking proceeding where a fulsome technical record could be developed.[910] We decline to adopt our proposal at this time and will instead seek comment in the *FNPRM*.

304. *Earth Station Off-Axis EIRP Density Limits.* We do not adopt our proposal to create envelopes for earth station off-axis EIRP density limits. We agree that this is an issue that requires a more fulsome technical record, and as such we plan to revisit this question in any subsequent further notice.[911]

305. In the *NPRM* we proposed to streamline the off-axis eirp density limits with a single mask in the plane tangent to the GSO arc and a single mask in the plane perpendicular to the GSO arc for co-polarize transmissions and for cross-polarize transmissions that covers the C-, Ku-, and Ka-bands, and for both analog and digital transmissions in these bands. SES noted that our proposal in some cases would result in more interference to adjacent GSO satellites while in other cases it would be too restrictive on the operation, and that the Commission one size fits all approach would not work in this case.[912] Commenters further suggest that the Commission not make changes to these technical rules at this time, and that if the Commission does decide to make changes, it should do so in a separate dedicated rulemaking proceedings where a fulsome technical record could be developed on the issue.[913] We decline to adopt our proposal at this time and will instead seek comment in the *FNPRM*.

306. *Period of Construction.* We adopt our proposed changes to the period of construction for earth stations to account for the new class of Immovable earth stations that will be registered under a Nationwide, Non-Site license. No commenter opposed this proposal and, by adopting this proposal, we align our period of construction amongst all earth station types.

307. *Responsibility of Licensee for Blanket Licensed Earth Stations.* We adopt our proposal to make clear that for blanket licensed earth stations we will only require the licensee to be in control of the network and maintain the ability to cease transmissions to or from the device over their network. As noted in the *NPRM*, the proliferation of direct-to-device, user terminals, and SCS makes it functionally

[908] No commenter supported this proposal and many opposed addressing this in this proceeding. *See e.g.*, SIA Comments at 4-6; Telesat Comments at 4-5; SpaceX Comments at 14-15; Amazon Leo Comments at 32-33; CTIA Comments at 23; SES Reply Comments at 9; Verizon Reply Comment at 14.

[909] SES Comments at 44-46.

[910] *See e.g.* SIA Comments at 4-6; SpaceX Comments at 14-15; Amazon Leo Comments at 32-33; Telesat Comments at 4-5; CTIA Comments at 23; SES Reply Comments at 9; Sirius XM Comment at 7.

[911] No commenter supported this proposal, and many opposed addressing it in this rulemaking. *See, e.g.,* SIA Comments at 4-6; Telesat Comments at 4-5; SpaceX Comments at 14-15; Amazon Leo Comments at 32-33; CTIA Comments at 23; SES Reply Comments at 9; Verizon Reply Comments at 14.

[912] SES Comments at 44-46.

[913] No commenter supported this proposal, and many opposed addressing it in this rulemaking. *See e.g.* SIA Comments at 4-6; Telesat Comments at 4-5; SpaceX Comments at 14-15; Amazon Leo Comments at 32-33; CTIA Comments at 23; SES Reply Comments at 9; Verizon Reply Comments at 14.

impossible for a blanket earth station licensee to maintain control over the physical devices themselves.[914] Therefore, we believe that by requiring a licensee to maintain control over the network and have the ability to cease transmissions to or from the device over their network, the licensee will exercise sufficient control over the radio-frequency elements of the device without the need to be in control of each individual device physically.

308. *Radiofrequency Exposure Requirements.* We adopt, and commenters generally support, our proposal to streamline the radiofrequency exposure requirements to remove redundancy between part 100 and part 1 rules and only apply them to ESIMs and User Terminals.[915] However, we reject proposals to only require radiofrequency exposure requirements upon request by the Commission.[916]

309. No commenter opposed our proposal to streamline the rules and rely on the part 1 rules that are applicable to all services, combined with filing requirements and instructions on the forms in ICFS.[917] We therefore adopt our proposal and remove previously proposed section 100.270 "Radiofrequency Exposure Requirements" from part 100, and revise part 100 to instead reference the general part 1 rules.[918] In addition, because we remove the radiofrequency exposure requirements from part 100 and instead relying on the general requirements found in part 1 of the Commission's rules, we decline to adopt SpaceX's proposal as changes to the general radiofrequency exposure requirements of part 1 are outside the scope of this proceeding and require a more fulsome record.[919] We may explore this proposal in a future proceeding.

310. *User Terminals and ESIMs.* We adopt our proposal to combine the rule parts governing Fixed User Terminals and ESIMs. We find that because of the significant overlap in the terminal types used as well as their inherently ubiquitous nature, allowing for a single license for both User Terminals and ESIMs would allow the Commission to streamline its processes and reduce the number of redundant filings applicants have to make.[920] We note, however, that Fixed User Terminals and ESIMs have their own distinct requirements that must be met, and applications will be reviewed in light of those requirements and we add a clarification to our rules to make this clear.[921] In addition, we include certain ESIM rules related operations in the 14.0-14.5 GHz band that were unintentionally omitted from the *NPRM*, but that we did not intend to delete from the rules.[922]

311. We are persuaded that because the Commission does not have a definition for User Terminals, some confusion may arise.[923] The Commission has long granted Fixed Earth Stations such as VSATs and temporary fixed as User Terminals without a definition in our rules.[924] Because what constitutes a User Terminal has changed over time, from large dishes on the sides of homes to small

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[914] *See NPRM*, 40 FCC Rcd at 8277, para. 238. *See also* Iridium Comments at 20-22.

[915] *See* Appendix A at § 100.120. *See* Amazon Leo Comments at 31; SpaceX Comments at 19; Lockheed Martin Comments at 16; SES Reply Comments at 9.

[916] *See* SpaceX Comments at 19.

[917] *See NPRM*, 40 FCC Rcd at 8277-78, para. 239.

[918] *See generally* Appendix A.

[919] *See* 47 CFR §§ 1.1307(b),1.1310.

[920] *See* Amazon Leo Reply Comments.

[921] We do not adopt any changes to these technical requirements at this time. *See* Appendix A at § 100.281(a).

[922] Appendix A at § 100.281(i). *See* CORF-NAS Comments at 5-6; *see also* SES Comments at 46-47.

[923] *See* SES Comments at 17.

[924] *See e.g.,* SES-MOD-20260226-00734; SES-MOD-20260226-00732; SES-MOD-20260227-00738; SES-MOD-20260226-00733; SES-MOD-20260227-00741; SES-MOD-20260227-00740; SES-LIC-20240510-00976; SES-LIC-20240207-00305.

terminals that can fit in a backpack, we are hesitant to establish a definition in our rules today that inadvertently precludes future devices from being considered User Terminals. Therefore, instead of adopting a definition, we clarify in this *Order* that a User Terminal for the purposes of the newly adopted part 100 is an earth station, operating in the fixed services, that does not meet the definition of either an Immovable earth station or an ESIM, that is intended for use by customers and licensed via a blanket license. In addition, to further avoid confusion we add to the our rules clarification that User Terminals, although licensed under the same rule part as ESIMs, must adhere to the applicable fixed earth station requirements in our rules.[925] Further, we plan to seek comment on how User Terminals can be formally defined in our rules in a later proceeding. We believe that this approach will provide sufficient clarity of what a User Terminal is, without hindering advancements in technology, until the Commission adopts a formal definition. In addition, we plan to seek comment on whether User Terminals and ESIMs can be combined under a single definition to further streamline the rules and ease burdens on applicants and the Commission.

312. We are not persuaded by commenters who raised concerns with combining ESIMs and User Terminals under one rule section.[926] As others have pointed out, we allow applicants to seek authority for both Fixed User Terminals and ESIMs in the same application, not to make any substantive modifications to the rules for ESIMs or the bands in which they can operate.[927] We do however recognize that the crafting of section 100.282 of the Commission's rules may have resulted in some confusion and could have been read as requiring new restrictions on user terminals that are typically only meant for ESIMs.[928] Accordingly, we revise section 100.282 to address this potential confusion and we make clear here that the changes we make to include User Terminals and ESIMs under section 100.282 and in section 100.120 allow applicants who plan to operate the same terminals as user terminals and ESIMs to apply under a single application. Operators of both Fixed User Terminals and ESIMs are still required to comply with technical and spectral rules specifically related to the operation of the respective types of terminals.[929]

313. Further, SES asks that we include the specific contact requirements for ESIMs in the rules.[930] We are not persuaded to do so because all earth station applicants are required to provide a 24/7 365 point of contact in the United States and including the language here would be redundant.

314. *Earth Station Coordination Requirements.* We adopt our proposed rule text as it relates to Earth Station Coordination Requirements, with slight modification.[931] We believe that establishing a clear set of coordination guidelines at this time that a light licensing framework can build upon outweighs any potential drag on the process that some commenters have suggested exists from the formal coordination process.[932] We are however, inclined to revisit this issue after the light licensing systems have been established and on a more targeted basis. In addition, as requested by Iridium, to remove any potential ambiguity, we clarify that section 100.275(i) requires earth station applications seeking to operate in frequency bands with co-primary allocations to GSO and NGSO system earth stations to either coordinate with each other prior to filing an earth station application or meet the requirements to

[925] Appendix A at § 100.281(a).

[926] *See* Verizon Comments at 22; SES Reply Comments at 10.

[927] *See* Amazon Leo Reply Comments at 22-23.

[928] *See* SES Comments at 47; *see also* SES Reply Comments at 10.

[929] In addition, Appendix A to the *NPRM* inadvertently omitted the restriction on NGSO FSS ESIM use in the 28.35-28.4 GHz band. We correctly incorporate this rule into part 100.

[930] *See* SES Comments.

[931] *See* Appendix A at § 100.275.

[932] *See* SpaceX Comments at 13.

demonstrate that there will be no unacceptable interference.[933] Finally, to remove any ambiguity, we make clear that an initial nationwide, non-site license application does not have to complete coordination, but registered sites must adhere to all applicable coordination requirements.

E. Benefits and Costs

315. An analysis of the benefits and costs of this proceeding can be found *infra* at section V. Regulatory Impact Analysis.

F. Compliance

316. Part 100 is designed to improve the review process by relying on certifications while also making clear the operational rules to which authorization holders will be held. Key to this framework is the ability for the Commission to credibly address behavior which is in conflict with representations made during the application process or in violation of the operational rules. In the *NPRM* we proposed several approaches along these lines to give the Commission more options to address rule violations. We adopt our proposals, with some modifications, to revise the compliance regime for part 100 licensees to ensure that compliance with the new rules is achieved.[934] We also adopt a requirement that applicants who have a history of anomalous events or other noncompliance with our rules be required to demonstrate that their application is in the public interest instead of applying any presumption that the application is in the public interest even if it conforms with our rules.[935] Finally, we clarify that a licensee whose license was automatically terminated pursuant to section 100.302 must maintain control of the apparatus until it has deorbited, and may petition for reinstatement of their license.[936] As stated in the *NPRM*, in order for the new certification-based approach and "default to yes" framework to be successful, the Commission needs to be able to quickly and effectively address any violations of its rules, requirements, or regulations.[937] Further, space activities present unique challenges, because if a satellite has launched, it may be incredibly difficult, or in some cases, technically impossible for operators to remedy a violation of the Commission's rules or the underlying authorization. This requires the Commission to greater abilities in its enforcement toolbox than just monetary forfeiture or license revocation.

317. Few commenters addressed our proposals to change to the compliance mechanisms available to the Commission.[938] And of those, most were supportive of more aggressive compliance methods.[939] We disagree with those commenters who oppose expanded compliance and enforcement

[933] *See* Appendix A at § 100.275(i).

[934] We also add language to section 100.302 mirroring language in section 100.301(c) that makes clear that if a license is terminated the operator of the space station, spacecraft, or satellite must maintain control of the spacecraft, space station, or satellite until it has deorbited.

[935] No commenter expressly rejected this proposal and one commenter, TechFreedom, fully supported it. *See* TechFreedom Comments at 41.

[936] Appendix A at §§ 100.302, 100.303.

[937] *See NPRM*, 40 FCC Rcd at 8280, para. 248 ("A cornerstone of the Commission's new application and licensing approach relies on ensuring compliance with the Commission's rules after a license is granted, given the
greater reliance on certifications to improve processing efficiency. While we expect applicants to operate in compliance with the Commission's rules and in accordance with license authorizations, it is important that the Commission can effectively and nimbly address violations of its rule").

[938] *See* Sateliot Comments at 8; Airline Pilots Association Comments at 7-8; Howard and Stilwell Comments at 2; Aerospace Industries Association Comments at 1; CTIA Comments at 7; TechFreedom Comments at 41.

[939] *See* TechFreedom Comments at 41 (supporting aggressive compliance methods and allowing the Commission to determine that an application is not in the public interest if that "operator has a history of anomalous events or other noncompliance with our rules, such as unlicensed operations"); CTIA Comments at 7 (supporting the proposal to

(continued….)

measures and ask that we instead distinguish between good faith mistakes and egregious, willful, and repeated violations.[940] We acknowledge that the facts and intent of any violations are essential to determining enforcement, and as such the Commission retains its ability to utilize its discretion when and how it seeks to enforce its rules, aside from the specific instances that would trigger automatic termination of a license or authorization. For the same reasons, we do not adopt proposals to establish tiers of violations or tiered enforcement. However, for particular situations, we also believe that it is important to maintain the ability to automatically terminate a license. In addition, we reject proposals from one commenter to establish periodic reviews to ensure compliance.[941] We believe this would result in unnecessary administrative burdens for licensees and the Commission staff. We also codify that for recipients of market access, automatic termination will result if the space station is no longer in-orbit and operational or if the associated license from another administration is no longer valid, consistent with past practice.

G. Transition to Part 100

318. As part of adopting part 100, we also lay out the processes for the transition from existing part 25 to new part 100. As discussed throughout this *Order*, there are several instances where the Commission has delegated authority to the Space Bureau to effectuate this transition in a smooth and efficient manner.[942] To ensure this transition proceeds in an orderly and efficient fashion, we establish clear guidelines and processes that we discuss further below. We further delegate to the Space Bureau authority to carry out this transition in accordance with the guidelines in this *Order*, including by waiving rules in a limited fashion as necessary. We also direct the Space Bureau to inform the public and licensees as necessary throughout the transition.

319. *Part 100 Effective Date.* For purposes of the transition, we designate the date on which part 100 becomes effective as the "Part 100 Effective Date."[943] We direct the Space Bureau to issue a public notice announcing the date on which part 100 will become effective.

320. *Existing Authorizations.* On the Part 100 Effective Date, all space and earth station licensees and recipients of market access must fully comply with the new part 100 rules, subject to the terms of any and all existing terms and conditions on active licenses and authorizations, unless specified otherwise. Subparts C and D of part 100 govern the operational and compliance rules and requirements for existing authorizations. Nothing in this *Order* nor in the adopted part 100 rules voids, supersedes, or otherwise waives the terms, conditions, or operational and technical parameters of existing or active licenses and authorizations, except where expressly stated or instructed.

321. We recognize that existing license and authorization materials and documents refer to specific rules in part 25. To maintain the intelligibility and enforceability of these references, we direct the Space Bureau to post on a transition webpage on the FCC website the entirety of part 25 as reflected on the Part 100 Effective Date. While the rules in part 25 will be removed from Title 47 of the Code of Federal Regulations, all references in authorization documents issued prior to the Part 100 Effective Date will be taken to refer to the part 25 rules posted on the FCC website by the Space Bureau, unless otherwise specified herein. This will ensure that there are no immediate enforcement gaps or uncertainty

(Continued from previous page)
automatically terminate authorizations under certain circumstances); Howard and Stilwell Comments at 2 (suggesting the Commission do periodic or randomized post-grant verification of application certifications).

[940] *See* SIA Reply Comments at 2.

[941] *See* Howard and Stilwell Comments at 2.

[942] *See, e.g.,* Section III.B.1 at para. 38 (authorizing the Space Bureau to designate the specific application filing system to be used in the electronic submission of applications); Appendix A at §§ 100.100(b), 100.140(b).

[943] In the event that different rules in part 100 become effective on different dates, the Part 100 Effective Date for any specific rule will be the date upon which that rule becomes effective.

as to the requirements of an authorization.

322. In general, entities will be held to the terms of their authorizations, including references to part 25 language or other conditions in the license. Therefore, there may be instances where an authorization issued prior to the Part 100 Effective Date *directly* conflicts with a part 100 requirement. That is, it is possible a term or condition in an authorization cannot be complied with while also complying with part 100. As part of our delegation to the Space Bureau to manage the transition to part 100, we direct the Space Bureau establish procedures to provide current licensees with a limited window in which to identify to the Bureau any specific provisions in a license for which the licensee *cannot* comply while also complying with part 100. The Space Bureau will handle these situations on a case-by-case basis and will establish a grace period for licensees to come into compliance with the new rules.

323. There may also be instances where an existing authorization holder is not able to comply with part 100 due to a technical or operational feature of the authorized system. In this instance, the authorization holder must request a waiver of part 100 according to procedures set by the Space Bureau to manage the transition. For situations, other than those specifically discussed below, in which an authorization holder is able to comply with part 100 but wishes to seek a change due to part 100, the authorization holder will need to seek a modification of its license or authorization.

324. The processes described above will provide clarity to all existing authorization holders while also transitioning most activities under these authorizations to part 100. In order to eventually transition fully to part 100, the Space Bureau will transition authorizations whenever they are considered individually by the Bureau following the Part 100 Effective Date. For example, while processing a modification or renewal of an authorization, the Space Bureau may take the opportunity to also make any necessary changes to transition the authorization fully to part 100. We believe this approach will be much more efficient than if Space Bureau were to seek to reissue all authorizations under part 100 within a specified period of time following the Part 100 Effective Date. This approach both maintains the integrity of existing licenses while creating a clear path for handling conflicts created by the transition.

325. *Milestone and Bond Transition*. The *NPRM* sought comment on the transition processes for any adopted revised frameworks for milestone and surety bond requirements.[944] The Commission proposed to provide an optional approach that would allow operators with active licenses to elect whether to continue under the terms of their granted authority or replace current obligations with those of the newly adopted framework, consistent with the Commission's approach in its previous part 25 reform actions.[945] As a general matter, the Space Bureau is directed to release a public notice detailing the specific transition procedures applicable to milestone and surety bond requirements. Specific to milestone deployment requirements for licensees authorized outside of a processing round, and where the Commission did not waive the processing round rules in granting the license or authorizations, we will generally allow operators who are in compliance with their milestone deadlines the option to elect replacement of the existing milestones established in an authorization with the milestone deployment timelines outlined in section 100.146, once the rules are effective. Licensees authorized in a processing round will retain their existing milestone deadlines, consistent with section 100.146. The Commission retains authority and discretion to review the transition to the new milestone deadlines and may review specific deployment requirements or compliance with the milestone requirements on a case-by-case basis, including for NGSO system authorizations that are conditioned on the opening of a future processing round. The Commission will detail specific milestone transition procedures in a future public notice.

326. Space station licensees and recipients of market access that currently have a surety bond on file, are in compliance with all existing obligations and deployment milestones, and were not authorized under the section 25.157 processing round rules, will be generally relieved of the bond obligation on the Part 100 Effective Date. Operators authorized under the streamlined small satellite

[944] *NPRM*, 40 FCC Rcd at 8259, para. 183.

[945] *Id. See 2015 Order Second Report and Order* at para. 86.

procedures in sections 25.122 and 25.123 will similarly be relieved of the surety bond obligation, subject to the instructed transition procedures and requirements. This will relieve the bond for a large number of operators without the need for any action to be taken by the licensee or the Space Bureau. We additionally permit licensees to replace an existing surety bond with an amount calculated using the adopted deescalating formula once the rules are effective, subject to the procedures adopted in section 100.147 and any transition requirements issued by the Commission. The Space Bureau will detail the specific procedures and guidance on the transition for the surety bond requirements in a future public notice. We note that for both milestone and surety bond requirements, the adoption of the new rules do not apply retroactively and all operators must comply with these obligations until the Part 100 Effective Date.

327. *Processing Rounds.* The revised processing round framework adopted in section 100.140 will not apply retroactively. Licensees that received an initial authorization to operate in a processing round will remain in that processing round, subject to the terms of the authorization and the existing spectrum sharing rules. We reaffirm that operators' existing processing round status will not be impacted. To the extent that any operations in licenses or authorizations for U.S. market access are conditioned on or subject to a future processing round, this *Order* does not take action on any procedures or conditions specific to certain frequency bands, applications, or authorizations. The Space Bureau will detail the instructions, procedures, and guidance for the transition to the adopted processing round rules.

328. *Transition for Market Access via Earth Stations.* For satellites that have availed themselves of the market access via the earth station process, we delegate to the Space Bureau the authority to issue a public notice announcing procedures by which these operators may seek a space station authorization for market access, including the establishment of procedures, a grace period for continued operations, and a timeline for applying for these space station market access authorizations.[946]

329. *Transition of License Terms*. Current licenses and authorizations will retain original the license terms, unless they petition the Commission within one year of the Part 100 Effective Date for an extension to align their license term with the twenty year term from the date of grant, as adopted in part 100. The Commission delegates authority to the Space Bureau to extend these licenses if it finds doing so is in the public interest.

330. Conversions of Authorizations. We generally do not seek to convert licensees under the part 100 rules. For instance, we do not wish that a part 25 licensee who could be classified as a VTSS under part 100 would be allowed to do so, or that earth station licensees would be allowed to roll multiple sites into a Nationwide, Non-site license. Such changes would undoubtedly require significant resources and little benefit in most instances. However, the Space Bureau may choose to allow for situations whereby licensees who were licensed under part 25 may convert their licenses in to part 100. We would only expect this if it can create efficiency gains or address a significant problem created by the transition, and we direct the Space Bureau to make such allowances to classes of licensees rather than handle each on a case-by-case basis.

331. *Pending Part 25 Requests at Time of the Part 100 Effective Date.* Applications filed either before or after the adoption of this *Order* but prior to the Part 100 Effective Date will be acted upon pursuant to the rules that are in place at the time of the action. If a decision is made on an application prior to the Part 100 Effective Date, the application will be reviewed pursuant to the existing part 25 rules. However, after the Part 100 Effective Date, the Space Bureau will seek to apply the review process of part 100 to pending applications filed under part 25, and we delegate the ability to address any inconsistencies this creates. In cases where additional information must be provided pursuant to part 100 by a licensee, we delegate to the Space Bureau to determine the manner in which that information can be provided, if at all.

[946] *See* Eutelsat Comments at 9-10.

332. In cases where applications were filed and remain pending at the time of the Part 100 Effective Date, we delegate authority to the Space Bureau to allow applicants to supplement their applications to meet the requirements of the new part 100. The Space Bureau should provide a grace period for such supplements as well as guidance as to when it may be necessary. This grace period must allow for the inclusion of information that would typically be considered a modification. In this circumstance, an application that has already gone on public notice should not be placed on public notice again solely because the applicant is providing information to conform with part 100 application requirements.

333. However, because of the impracticability of applying our new processing timelines and procedures to pending applications, pending applications will not be subject to the revised processing times and procedures. For example, an earth station application that has gone on public notice but was not granted at the time the part 100 rules become effective may not avail themselves of the provision of our rules that permits operation on a non-interference, unprotected basis while the application is pending. We will however, delegate to the Space Bureau the authority to issue a public notice allowing pending applicants to withdraw and refile their applications pursuant to part 100 after the effective date of the rules in specific circumstances should the Space Bureau determine that doing so makes sense. If the Space Bureau chooses to exercise this delegated authority, applicants that withdraw their pending applications and refile pursuant to part 100 will not be permitted to receive a refund of any fees paid or incurred related to the withdrawal and resubmission of the applications.

334. For applications that are subject to processing rounds at the time the applications were filed, those applications will remain in processing rounds and their status is unaffected by the changes we make in this *Order*. This applies regardless of if the application has been granted or is still pending. We delegate to the Space Bureau the authority to include existing part 25 requirements for processing round protection as conditions to applications subject to processing rounds filed prior to the effective date of this *Order* so long as the effectuation of such condition is not rendered impossible by the new part 100 rules.

335. *New Applications.* All new authorization applications filed after the Part 100 Effective Date must follow the application processes adopted in part 100.

336. *Mapping Part 25 rules into Part 100.* The Commission directs the Space Bureau to issue a public notice with a chart that clearly identifies each rule provision in part 25 and its corresponding rule section in part 100. This chart should indicate the new part 100 rule subsection; describe whether the rule has been carried over from part 25 in its entirety, modified in any way, or eliminated; and clearly identify where in this *Order* a discussion of any changes may be found. This will provide the public with transparency and the necessary information to identify where certain part 25 rules may be found in part 100.

H. Miscellaneous

1. Additional Matters

337. *Basis and Scope*. We adopt our proposal to delete section 25.101(a) that contains a partially out-of-date recitation of authority for part 25.[947] We received no comments on this proposal.

338. *EEO and Public Interest Obligations to Parts 73 and 76*. In the *NPRM*, we tentatively concluded that certain media-related rules in Subparts I and J of Part 25, pertaining to DBS and SDARS licensees, would be better located near parts 73 and 76 of our rules, which concern broadcast and multichannel video programming services.[948] Although sections 25.601, 25.701, and 25.702 of the Commission's rules contain political programming and public interest obligations on DBS and SDARS

[947] *See NPRM*, 40 FCC Rcd at 8284, at para. 61.

[948] *NPRM*, 40 FCC Rcd at 8285, para. 267. We stated that we did not intend to revisit the substantive requirements of these rule sections in this proceeding. *Id.* at n.510.

licensees, as well as equal employment opportunity requirements for FSS, DBS, and 17/24 GHz BSS operators who provide video programming directly to the public on a subscription basis,[949] the Space Bureau does not administer these rules. We sought comment on the best place to relocate them. We did not receive any comments on this specific question and have determined to relocate the rules in whole without substantive modification to a new part 75 of subchapter C of Chapter 1 of Title 47. 47 CFR sections 25.601, 25.701, and 25.702 will be renamed 47 CFR sections 75.601, 75.701, and 75.702, respectively. As media-related rules, we find it makes sense to locate them near parts 73 and 76, which concern broadcast and multichannel video programming services with similar obligations.[950]

339. *Relevancy of Analog Video Provisions*. We received no comments on this topic and therefore adopt our proposal to remove the legacy analog video provisions from our rules as proposed in the *NPRM*.[951]

2. Administrative Matters

340. To effectuate changes from part 25 to new part 100, certain conforming administrative edits need to be made to certain rule sections of 47 CFR. First, we change reference to part 25 to part 100 in part 9 of the CFR, which deals with 911 requirements for SCS (interim 911 requirements for supplemental coverage from space 9.10(t)) and 9.18 (Emergency Call Center service for MSS). In addition, we find that a number of comments submitted by commenters are outside the scope of this proceeding.[952] Finally, the Commission delegates to the Space Bureau the authority to issue a public notice, as necessary, to revise any cross references to part 25 identified in a rule section of 47 CFR to reflect the new part 100 rule.[953]

341. *Closing the ISAM Docket*. In July 2022, the Commission opened IB Docket No. 22-272 for "Facilitating Capabilities for In-Space, Servicing, Assembly, and Manufacturing.[954] The Commission subsequently released a Notice of Inquiry[955] and Notice of Proposed Rulemaking[956] seeking comment on ways to update, clarify, or modify its rules to promote the growth of in-space servicing, assembly, and

[949] 47 CFR §§ 25.601, 25.701, 25.702. *See also* 47 U.S.C. §§ 312(a)(7), 315, 335, 554(h)(1).

[950] *See* attached Rules Appendix at §§ 75.601, 75.701 and 75.702.

[951] *See NPRM*, 40 FCC Rcd at 8285, para. 268.

[952] *See e.g.*, TechFreedom Comments at 28 (discussing NEPA requirements); Intuitive Machines Comments at 14-15 (the Commission should streamline access to federal frequencies for missions under contract with a federal agency); CSSMA Comments at 17-19 (encourages the Commission to fund, staff, and develop a new filing system for updated space station and earth station filings); HawkEye360 Reply Comments (asking the we standardize technical and operating system parameters required to be submitted for ITU, FCC and/or Federal Coordination purposes); CSF Reply Comments at 2 (Asking the Commission to get rid of duplicative Earth Station and Space Station coordination); SIA Reply Comments (asking the Commission to remove duplicative Earth Station and Space Station coordination requirements); AWS Reply Comments at 4 (asking the Commission to remove duplicative coordination requirements); Lunar Post Reply Comments (seeking changes to part 5 of the Commission's rules); Muon Space Reply Comments at 12 (asking the Commission to address regulatory fees); Capella Reply Comments at 7 (encouraging the Commission to adopt standard data formats between the Commission and Federal coordination); iSpace Reply Comments at 12 (asking for a future rulemaking to address lunar issues).

[953] As an editorial matter, we incorporate changes to part 25 recently adopted in other rulemakings to their equivalent sections in part 100. *See e.g., Spectrum Sharing Report and Order*.

[954] *See International Bureau Establishes IB Docket No. 22-271 and IB Docket No. 22-272*, Public Notice, DA 22-767 (July 15, 2022).

[955] *See Facilitating Capabilities for In-Space Servicing, Assembly, and Manufacturing*, Notice of Inquiry, FCC 22-66 (rel. Aug. 8, 2022).

[956] *See Facilitating Capabilities for In-Space Servicing, Assembly, and Manufacturing*, Notice of Proposed Rulemaking, FCC 24-21 (rel. Feb. 16, 2024).

manufacturing. We close this docket. With this *Order*, we comprehensively overhaul the Commission's licensing process, including by introducing the new category of space station licenses, VTSS, and seek further reform in the *FNPRM*. Additionally, the Commission recently released a Notice of Proposed Rulemaking seeking comment on making additional spectrum available for "Weird Space Stuff," which would include many ISAM operations.[957] Considering the rules adopted in this *Order* and ongoing Commission proceedings, a separate docket specifically for ISAM is no longer necessary. We therefore close IB Docket No. 22-272 in the interest of making the most effective use of the Commission's resources.

IV. FURTHER NOTICE OF PROPOSED RULEMAKING

342. Part 100, as adopted, provides a set of rules governing the licensing and operation of space and earth stations. With this framework in place, we now look to additional areas in which we can further modernize the Commission's rules to promote American space dominance in this *FNPRM*.

343. In particular, we seek to refine the operational rules in Subpart C to build "operational envelopes" in which licensees have greater flexibility. Rather than requiring applicants to specify exact technical or operational parameters in their applications which may require multiple modifications or amendments as operations change, operational envelopes would allow applicants to request broader authority and change operations within that envelope without further permission from the Commission. This approach could have considerable benefits by allowing applicants more flexibility in designing and operating their systems without the need for additional authorization from the Commission. Therefore, in addition to other topics, we seek comment in this *FNPRM* on how we might create such operational envelopes. While we primarily seek specific comment on certain specific questions and proposals, we also seek general comment on revising our operational rules to promote flexibility and "operational envelopes."

A. Space-Based Experimental Licensing

344. We propose to create a new type of space and earth station license for developing or experimental technologies. This experimental license would provide companies a clear and predictable pathway to a short-term license for the purpose of testing new technology or providing proof of concept before moving to commercial operations. We believe that this would be beneficial for the American space industry because it would provide a distinct set of rules tailored for space companies from the developmental stage through the commercial and operational stage. It would also increase the Commission's administrative efficiency by applying a consistent licensing framework to all space and earth station licensing. We seek comment on this proposal.

345. As background, the Commission currently bifurcates the application process for certain space station and earth station applications between part 5 and part 25.[958] Part 5 of the Commission's rules contains the regulations pertaining to filing for applications in the experimental radio service.[959] It is limited to stations conducting experiments, technical demonstrations, product development, and market trials.[960] Part 5 is also applicable to all experimental stations, including terrestrial, aeronautical, and

[957] *See Spectrum Abundance for Weird Space Stuff*, Notice of Proposed Rulemaking, SB Docket No. 26-54, FCC 26-13 (rel. Mar. 27, 2026). We note that some commenters take issue with the name "Weird Space Stuff." *See* Redacted Express Comment, SB Docket 26-54, (Apr. 9, 2026) (questioning the "vocabulary" and "professionalism" of Commission staff for using the term "Weird Space Stuff"). The Commission uses the term with the utmost respect for industry and one of the main goals of Modernization is to create a predictable licensing pathway for even the "weirdest" of space stuff.

[958] *See* 47 CFR Part 5, Part 25.

[959] *See* 47 CFR § 5.1(b) ("The rules in this part provide the conditions by which portions of the radio frequency spectrum may be used for the purposes of experimentation, product development, and market trials.").

[960] *See* 47 CFR § 5.3. This section contains a full list of the allowable operations under an experimental license.

nautical, not just space and earth stations.[961] This dual structure often creates confusion for applicants as to whether they should apply under the part 5 or part 25 rules. For example, operations do not always fit neatly within the parameters of a part 5 license because an applicant may be testing a new satellite with new capabilities for a service within which it already has a license to provide commercial service. This often leads to back and forth between the applicant and the Commission to determine the appropriate application filing procedures—part 5 or part 25. By creating a unified application process under a singular set of rules, we believe we can provide clarity to the applicants, alleviate delays, and reduce the administrative burden on limited FCC staff resources.

346. Specifically, we propose to consolidate all space-related experimental applications under a single process.[962] We envision applications that are currently filed in the Experimental Licensing System (ELS) under the part 5 would instead be filed under the same part 100 filing process as space station and earth station applications. We seek comment on this proposal. Would this application process be beneficial for space companies? We believe that keeping this proposed application pathway relatively broad—i.e., experimental licensing would encompass both true experiments of new technology as well as testing technology upgrades and features further along in the developmental process—is a better path to applicants with the freedom to organize their license applications in a way that is most beneficial to their specific needs and priorities. We seek comment on creating a single process for all earth and space station licensing.

347. To implement this new licensing framework, we propose to create a new subpart J in the existing part 5 experimental licensing rules. These rules would be specific to space-related experimental licensing.[963] Under this framework, all experimental license applications would continue to be filed under the provisions of part 5, but initial processing of space and earth station applications would be conducted by the Space Bureau, where staff have specific earth and space station-specific engineering and licensing knowledge.[964] We believe that this approach would ensure that the rules for space-related experimental licenses reside under the Commission's larger experimental radio service framework, but would be sufficiently distinct to meet our goal of providing a unified process for space-related experimental applications to receive streamlined processing and expeditious review. Further, we propose that specific space-related rules would only reside in part 100 with cross-references to those rules in the new part 5, subpart J. For example, the current part 5 rules contain special provisions for satellite licenses.[965] We believe licensees would benefit from a single consolidated rule part for all space-related provisions so that all such licensees have consistent guidelines while also keeping the Commission's overall experimental framework consistent. We seek comment on this approach. Are there alternatives placements for space-related experimental rules, such as in the new part 100? If the new space-related experimental licensing rules are placed in part 100, should applicants have a choice of filing under the new part 100 rules or the existing part 5 rules? If a proposed experiment incorporates both space operations and terrestrial or

[961] Part 5 does contain certain provisions specifically related to satellite systems, but it largely mirrors the orbital debris provisions found in part 25 and adopted part 100. *See* 47 CFR § 5.64.

[962] In this context, the term "space-related" refers to both earth and space stations.

[963] This rule structure would be analogous to part 5 subpart D, which sets forth specific rules and procedures for broadcast experimental licenses that involve direct review and processing by the Media Bureau. *See* Promoting Expanded Opportunities for Radio Experimentation and Market Trials under Part 5 of the Commission's Rules and Streamlining Other Related Rules, ET Docket 10-236; *Report and Order*, 28 FCC Rcd 758, at 845-49 (2013) (creating subpart D in part 5 for broadcast experimental licenses).

[964] In addition to developing internal processes to ensure that Space Bureau will receive and be able to evaluate such applications in a timely manner, we anticipate that the application process would be readily accessible for and available to parties regardless of whether they choose to engage through Space Bureau (e.g., ICFS) or Office of Engineering and Technology (e.g., Experimental Licensing System) entry points.

[965] 47 CFR § 5.64. These rules primarily relate to orbital debris and are largely similar to the orbital debris rules in part 25.

aeronautical operations, would an applicant need to obtain experimental licenses under both part 5 and part 100? Or would applicants be required to obtain two experimental licenses—one for space-related operations and one for all other operations? If the new space experimental licensing rules are placed in part 5, should we cross-reference in part 100 to the experimental rules in part 5? If we create a new subpart in part 5, are there any modifications to other portions of part 5 that we would need to make? Are there any other changes we should make to part 5 to accommodate these new space experimental licenses?

348. Related to this proposal to maintain the space-related experimental licensing rules under part 5, we also propose that such licenses would fall under the general part 5 rule provisions applicable to all experimental licensing. This includes section 5.71, which provides for a two-year license term, but allows up to five years with sufficient justification.[966] Similarly, space-related experimental operations would also be subject to section 5.84, which permits experimental operation to only be conducted on an unprotected and non-interference basis.[967] If applicants seek interference protection for their operations, they would need to file a part 100 application. We seek comment on this proposal. In keeping with this approach, we propose that space-related experimental applications and operations comply generally with the application and licensing provisions in part 5, subpart B.[968] In addition to the provisions already noted, this includes, *inter alia*, requirements to notify the National Radio Astronomy Observatory when operating in certain locations, cancellation provisions, and procedures for informal objections. Are there portions of subpart B that should not apply to space-related experimental operations? Do certain provisions in subpart B need to be specifically modified for space-related operations? We similarly propose to update other rules in part 5 to either reference part 100 rules or incorporate provisions specific to space-related experimental operations. Specifically, commenters should review part 5, subparts A (General), B (Application and Licensing), and C (Technical Standards and Operating Requirements), as well as subpart H (Product Development and Market Trials), and provide their view on the applicability or changes needed for each of those rules. Are there additional provisions or restrictions that we should incorporate into the new rules?

349. Because experimental licenses are issued on an unprotected and non-interference basis and for limited duration, they are not placed on public notice for comment prior to grant. Consistent with this practice, we propose to not place space-based experimental license applications on public notice, although these license applications will be publicly accessible for review. We seek comment on this proposal. Is there a need for some sort of public notice for these proposed types of applications? We also propose to require applicants to submit all information required to adequately describe the specific type of system they seek to operate, i.e., an earth station, an NGSO satellite system, a GSO satellite system, or a VTSS. Again, this is similar to the current process for a part 5 application where applicants must provide location, frequencies, power, and emissions information, as well as, for space stations, additional satellite specific information regarding orbital debris mitigation.[969] We seek comment on this proposal. Is there additional information that applicants should be required to submit? Should applicants only be required to submit a subset of information required for a regular part 100 license because their operations would be for a short duration and on an unprotected and non-interference basis?

350. We propose to require applicants to certify that the operations under the license will only be for the purpose of testing, experimentation, demonstration, or validation consistent with the part 5 rules, including the provisions permitting product development and market trials.[970] We seek comment

[966] *See* 47 CFR § 5.71(a)(1).

[967] *See* 47 CFR § 5.84.

[968] *See* 47 CFR part 5, subpart B.

[969] *See* 47 CFR §§ 5.55(c)(1), 5.64.

[970] *See* 47 CFR § 5.3 and part 5, subpart H.

on this proposed criteria for qualifying for a license. We seek comment on whether the provisions for development and market trials need to be modified to accommodate space-based experimental operations. Specifically, we note that those rules require that "trial devices are either rendered inoperable or retrieved by them from trial participants at the conclusion of the trial. Licensees are required to notify trial participants in advance that operation of the trial device is subject to this condition."[971] Is this practical for a satellite or an earth station? Are there other criteria that would better accommodate the needs of space-based experiments?[972] Often, space and earth station applicants under part 5 are under contract with the federal government.[973] Should we specifically include experiments under contract with the U.S. government as within the new license type?

351. We also propose to create a process by which an experimental license may be converted to a regular part 100 license upon request by the licensee and action by the Commission. We believe that this would solve the problem that currently exists where a part 5 space station licensee desires to provide commercial service under part 25 rules and either must file a completely new license application or the Commission must incorporate the part 5 licensed satellites into a part 25 license.[974] Licensees who test and validate their satellites or earth stations and wish to operate longer than the initial limited license term would be able to submit a request to the Commission to convert to a part 100 authorization. We anticipate treating these requests as an application for major modification and placing them on public notice so that interested parties can comment. The application would then proceed along the same review process as we will use for regular part 100 applications. We expect that applications to convert an experimental license to a regular part 100 license that do not seek additional interference protection could be granted quickly, based on successful operations under the existing experimental license. We seek comment on this proposal. Should we create a specific process for converting an existing experimental license into a regular part 100 license? Or should we treat it as a major modification? Are there other conversion-related considerations for which we should account?[975]

352. We seek comment on our proposals generally and also seek comment on whether alternate approaches would better suit space-based experimental licenses. Parties should address the relative costs and benefits of any particular approach for where and how we codify the new rules.

353. We tentatively conclude that the proposal to have the Space Bureau conduct initial processing of experimental space and earth stations would save approximately $66,000 per year in review costs for Commission staff by offering substantial administrative and operational efficiencies that would allow us to streamline the licensing process for space and earth stations.[976] We seek comment on this

[971] *See* 47 CFR § 5.602(e).

[972] We note that the Commission adopted different provisions for Spectrum Horizons Experimental Licenses operating above 95 GHz where equipment must still be rendered inoperable or retrieved at the end of a trial, but expressly permits marketing during the duration of the license. *See* 47 CFR § 5.704.

[973] *See* 47 CFR § 5.63(c)(2) (requiring applicants to provide a narrative statement describing the project, name of the contracting agency, and contract number if their experimental license will be used for the purpose of fulfilling a contract with the federal government).

[974] *See e.g.*, *Kuiper Systems LLC, Request for Modification of the Authorization for the Kuiper NGSO Satellite System, Order and Authorization*, DA 24-224 at paras. 8-9 (SB rel. Mar. 8, 2024) (*Kuiper Orbital Parameters Modification Order*) (adding two satellites authorized under a part 5 experimental license to a part 25 commercial license).

[975] We do not make any proposals specific to regulatory fees in this proceeding, although we expect that regulatory fees could be one difference between a space experimental license and a part 100 license.

[976] Based on staff analysis of internal part 5 filing data for the years 2024-2025, we estimate that we would receive approximately 60 part 100 experimental license applications per year. In aggregate, Commission staff spend approximately 30 aggregate hours reviewing an application, with Space Bureau staff time comprising approximately two-thirds of the review time. We suppose that the review is conducted by a GS-12, Step 5 employee in the Washington-DC-Baltimore locality compensated at $114,923. After adjusting to account for overhead and fringe

(continued….)

estimate. Additionally, we believe that adopting a consolidated application pathway that expedites Space Bureau review would provide a more easily understandable process for applicants that minimizes processing-related delays, thereby lowering the administrative burden. We seek comment on this assessment and on additional benefits and costs that may be associated with this proposal.

B. NGSO Call Sign Merging

354. The *NPRM* proposed to allow NGSO satellite system operators to combine authorized satellites currently operating under multiple call signs into one NGSO satellite system under one call sign.[977] Commenters broadly supported this proposal.[978] We believe that this could help applicants decrease the number of licenses that must be maintained, providing greater flexibility and modularization. We seek further comment on this proposal. What are the benefits to applicants of maintaining fewer licenses? We encourage commenters to provide specific examples as well as any estimates of administrative time that may be saved due to improved flexibility or reduced administrative burden. Additionally, should we require applicants to submit a request with the Commission asking that multiple current NGSO satellite systems under separate call signs be merged into a single NGSO satellite system with a single call sign?[979] Should we delegate to the Space Bureau authority to define the parameters of such a request and the necessary information that licensees must provide? We believe that this would allow the Commission to keep track of current licenses as well as handle all administrative requirements. It would also allow the Commission to handle unique cases individually and consider factors such as milestones and bonds that may apply to some licenses but not others. We seek comment on this.

355. Some commenters were concerned that a single call sign per NGSO satellite system could cause confusion with existing license holders.[980] In the *Order*, we adopt a new definition of NGSO satellite system that is applicable on a prospective basis.[981] Current licenses that contain multiple call signs for a single NGSO satellite system would not be affected. But in this *FNPRM*, we seek comment on whether we should give licensees the option to request that the Commission consolidate the call signs so that there is only one call sign for the NGSO satellite system. This would give current license holders the assurance that their license terms would not be affected unless they requested a change but also would give them the flexibility to consolidate under a single call sign. We seek comment on this proposal and these assumptions. Are there any potential costs or other harms from allowing applicants to consolidate call signs? In addition to pre-existing licenses prior to the adoption of part 100, should we allow licensees that receive licenses after the adoption of part 100 to consolidate call signs in the future? Should we adopt a standard process for NGSO satellite system licensees to consolidate multiple NGSO satellite systems under a single call sign? If so, is it sufficient to allow applicants to request a merger and let the Space Bureau decide whether the separate NGSO satellite systems should qualify as a single NGSO satellite system?

(Continued from previous page)
benefits, we estimate the full annual compensation for such an employee to be approximately $229,846. U.S. Department of Health and Human Services, Guidelines for Regulatory Impact Analysis 2016 at 30, https://aspe.hhs.gov/sites/default/files/migrated_legacy_files//171981/HHS_RIAGuidance.pdf. If the proposed rules were to be adopted, we believe that review time would fall to approximately 20 hours. Therefore, the proposed rule would save approximately $66,000 per year (~ 60 applications × $229,846 × (10 / 40 hours per week) / 52 weeks).

[977] *See NPRM,* 40 FCC Rcd at 8249, para. 158.

[978] *See* Tomorrow Comments at 4; Capella Comments at 22.

[979] *See* Capella Comments at 22 (supporting proposal to merge systems under one call sign with only notification and no prior approval).

[980] *See* Myriota Comments at 12-13 (describing Myriota's 26-satellite system that is subject to two Commission call signs).

[981] *See supra*, section III.B.1.c.

C. Earth Stations

356. In the *NPRM*, we sought comment on various changes to the way the Commission licenses earth stations. Commenters provided an extensive record. Based on that record, we seek further comment on ways in which we can update and revise the licensing process for earth stations. In particular, we seek to further identify whether to define operational envelopes in which operators can have greater flexibility without requiring additional permissions or modifications. We generally seek comment on this issue.

357. Currently, the Commission's rules do not include a specific definition for "site" as it relates to earth stations. Although we anticipate that sites will be registered on an antenna by antenna basis for Immovable Earth Stations, the rules vary in how a site can be defined.[982] Accordingly, should we establish a single uniform definition of "site" as it relates to earth stations? If so, how would that impact coordination with other users of spectrum? Should this definition also apply to blanket licensed earth stations such as ESIMs or User Terminals and if so, how?

358. Further, as discussed in the Order, the Commission's rules do not include a definition of "User Terminal.". Therefore, we seek comment on establishing a definition in our rules for User Terminals that matches what we stated in the *Order*.[983] Alternatively, given we are now regulating ESIMs and User Terminals under the same rule part, should we instead create a new class of earth station that encompasses both ESIMs and User Terminals under a single definition? Specifically, should we create a "Nomadic Terminals" definition?[984] This definition would include ESIMs and User Terminals and the terminals under this definition would be regulated based on how they are used. For instance we envision there would be different requirements for when the Nomadic Terminal is in motion or on a plane or on a vessel versus when it is fixed. Should we adopt this alternative approach? If so, should we include other earth station types under this definition such as all earth stations that can be blanket licensed or those that can be licensed by rule under the SCS framework? Are there any pitfalls or concerns with this alternative approach? We tentatively conclude that combining ESIMs and User Terminals under a single definition would reduce the confusion and the redundancy that applicants face when applying for licenses and we seek comment on this tentative conclusion.

359. At the same time, we think that the definitions related to ESIMs warrant a more robust change to reflect the new technology that did not exist when the ESIM rules were established. For instance, the definition of an ESIM could be read to include cellular phones operating on FSS to communicate with a satellite if used from an ESV, VMES, or ESAA. Alternatively, the definition of VMES is tied to a motor, which could imply that persons who require the use of a motorized wheelchair must comply with the VMES specific rules if they choose to operate a cell phone that communicates with a satellite or a terminal providing service to a laptop that they are using while moving. Accordingly, we think the time is ripe to revisit ESIMs generally. Therefore, we seek comment on how we should revise the ESIM definitions to better account for today's technologies. Does the adoption of a new "nomadic terminals" definition solve much of the issues around ESIMs? If so, how should we account for things like ESAAs or ESVs that are also subject to international treaties? Would establishing envelopes for

[982] *See supra* III.A.1.o. (expressing that given the impracticality of registering a site greater than an antenna by antenna basis we believe that sites will be registered per antenna); *see also* Appendix A at § 100.137 (stating that an amendment is required for any change in earth station location greater than 10 seconds); *id.* at § 100.275 (classifying as a single earth station site for the purposes of coordination multiple antennas in an NGSO FSS gateway earth station complex located within an area bounded by one second of latitude and one second of longitude).

[983] *See supra* III.D.6. at para. 316 ("Therefore, instead of adopting a definition, we clarify in this *Order* that a User Terminal for the purposes of the newly adopted part 100 is an earth station, operating in the fixed services, that does not meet the definition of either an Immovable earth station or an ESIM, that is intended for use by customers and licensed via a blanket license.").

[984] Commenters are encouraged to suggest alternative names for this new class of earth station.

technical rules, similar to what we propose for off-axis e.i.r.p and antenna gain be necessary if we update these definitions? [985] Are there specific treaty or international factors that must be accounted in relation to ESIMs? For instance, vessels and airplanes are subject to international treaties. How might that interact with ESIMs revisions?

360. We also seek comment on if the technical rules and limitations that apply to ESIMs warrant revisions. Are the rules currently applicable to ESIMs too restrictive? How can we revise them to make them more permissive and adaptable to new technologies? Should we revise them at all?

361. We also recognize that the number of different types of earth stations in the Commission's rules can create confusion as to which earth station type applies to a specific application. This in turn creates confusion as to which technical rules apply. As earth station types continue to converge, such as in the direct to device context or the User Terminal and ESIM context, we foresee this issue amplifying. Therefore, we seek general comment on if there are ways in which we can condense and streamline the number of different types of earth stations that exist in our rules. If so, which definitions could be combined or removed? Any proposal to combine or remove definitions should provide an explanation of how the Commission should address associated technical rules. In addition, we seek comment on whether the definitions in the Commission's rules cause confusion with how certain terms are used internationally? Does this cause confusion among regulatees as to what we are regulating when we classify earth stations in a more specific manner than the international community? We seek comment on these questions and welcome proposals for other suggestions where we can streamline or condense the Commission's rules and definitions as it relates to earth station subgroups.

362. As it relates to earth station radiofrequency exposure reports and associated technical showings, SpaceX suggests that we align the Commission's rules for earth stations with the part 2 rules.[986] We do not make that change in the *Order* because it would require changes to part 1 of the rules and because the record on this issue is not sufficiently developed.[987] We now seek comment on SpaceX's suggestion. Should we align the coordination rules and the associated technical showings with the part 2 rules and only require that an applicant certify to compliance with the part 2 limits in the application but require that technical showings be provided upon request by the Commission? If so, why should we adopt this approach? If not, what are the issues with adopting this approach and the impact it has on giving the public sufficient information about an earth station? Is providing this information redundant with other processes that earth station applicants already do? We seek comment on these questions and welcome other comments related to this proposal.

363. In the *Order*, we eliminate the ability for applicants to receive U.S. market access via earth station, although we allow STAs for certain categories of short-term uses including brief, non-recurring activities such as LEOP, in-orbit testing, and orbit changes.[988] Some commenters suggested that there be an expedited mechanism for a grant of market access via earth station for specific operations, including for communications that would involve TT&C only, earth stations aboard aircraft that do not have a U.S. space station license, or data-only downlinks, generally or for earth observation.[989] Other commenters suggested we establish streamlined market access entry to enable the ground station as a service business, in order to promote U.S. leadership in this new business model.[990] We seek comment on

[985] *NPRM* at paras. 234-236.

[986] *See* SpaceX Comments at 19-20 ("Part 2 rules require applicants to certify compliance with the limits in the application and provide a technical showing only upon request, the earth station rules require the technical showing to be submitted in the application by default.").

[987] *See* Appendix A at § 100.120(e).

[988] *See supra* III.B.1.l, para. 101.

[989] *See* SES Comments at 16-17; *NPRM*, 40 FCC Rcd at 8219, para. 79.

[990] *See* CSSMA Comments at 1-4.

these proposals, specifically on an expedited mechanism or other streamlined process for market access via earth station. We ask for comment on how such processes might work, what classes of communications should be included, and how to ensure that any such framework would not compromise national security or otherwise affect the interference and orbital environment.[991] We also seek comment on whether a specific streamlined process or exemption is needed for satellites or space stations that do not communicate with the Contiguous United States (CONUS) but with a limited subset of teleports, for example, in the Pacific Islands, including Hawaii or Guam. Is a streamlined process needed for earth stations communicating with non-U.S. space agency satellites? Commenters are encouraged to include examples from other administrations, and whether reciprocity from the satellite licensing administration should be a condition of receiving U.S. market access via this regime.

364. Further, we revisit the discussion from the *NPRM* and again ask whether we should retain the rules relating to receive-only earth stations.[992] We elect not to remove the rules in this *Order*, largely due to the ongoing C-band auction proceeding.[993] In light of the C-band auction likely coming to a close in the near future, we seek comment on whether we should remove the receive-only rules from our part 100 rules.[994] Specifically, given that the Commission determined that it was unnecessary to license receive-only earth stations communicating with U.S.-authorized space stations, and instead only register them if requested, is this rule part necessary? Should the rule be kept for operations with non-U.S.-licensed space stations that either do or do not have market access? If so, we invite commenters to provide details as to how and why. In addition, we invite comment on how we should treat existing rule parts that limit the receive-only protections available to those already registered, such as in C-band. To avoid confusion, we do not invite comment on the requirement that a receive-only earth station receive a license before receiving from a non-U.S. licensed space station.

365. Finally, regarding the Nationwide, Non-site license we adopt in this *Order*, many commenters proposed that we allow for Nationwide, Non-site licenses in cases where a waiver is requested. We elected not to do so in the *Order*, as we believe that a determination of what waivers, if any, should be allowed for this license requires further discussion. Accordingly, we seek comment on whether we should allow applicants who request a waiver to apply for a Nationwide, Non-Site license and if so, which waivers should we allow? For instance, are there waivers that pose little risk that could be applied across the nation without special review being necessary? We note that some commenters suggested that routine waivers be permitted. What would constitute a routine waiver given that waivers are meant to be reviewed on a case-by-case basis? What are the costs and benefits of adopting this approach? We seek comment on these questions generally. We ask that commenters provide specific examples of waivers we have granted in the past that could fit within the scope of the questions we ask here.

D. Modifications

366. We seek comment on whether we should allow space station licensees to change or add radiofrequency (RF) sensing capabilities through a minor modification or notification process instead of requiring a major modification application. HawkEye 360 requested that the Commission include adding or changing RF sensing capabilities as a modification that could be made via notification only, arguing that there is no possibility of interference from these activities.[995] We elected not to adopt this proposal in

[991] *See* Astranis Reply Comments at 18 (the Commission should address spectrum rights for foreign satellites that utilize U.S. earth stations for TT&C without a formal grant of market access and clarify what protections from harmful interference they receive and whether they will be entered into the approved satellite station list.).

[992] *See NPRM*, at para. 233.

[993] *See One Big Beautiful Bill Act,* Pub. L. No. 119-21, 139 Stat. 72. § 40002(b)(2) (mandating the auction of at least 100 megahertz of Upper C-band spectrum).

[994] *See* Appendix A, § 100.272.

[995] *See* HawkEye 360 Inc. Comments at 2-3.

the *Order* because we believe it requires a more extensive record given the possibility of these sensors experiencing interference and accordingly seek comment on this idea. Are there any concerns with adopting this approach given the claim that there is no chance of interference from these activities, recognizing that these sensors could be interfered with? What are the benefits or drawbacks of adopting this proposal? We seek comment on these questions. Commenters are encouraged to provide recommended rule text in response to these questions

367. We also seek comment more broadly on the list of major and minor modifications that we adopt in this *Order*.[996] Could the list of major modifications be streamlined to give more flexibility to operators? If so, which specific major modifications should be removed? Are there ways to move one or more categories of major modifications to the minor modifications, such that the changes could be made either after notifying the Commission or prior to notifying the Commission? Are there other general types of modifications that the Commission should specify may be made without prior authorization? Commenters are encouraged to provide possible regulatory text in response to these questions.

E. Hosted Space Stations

368. In the *Order* we adopt changes to our rules related to hosted space stations.[997] The changes are limited to U.S.-licensed hosted space stations onboard U.S.-licensed host space stations and do not extend to non-US licensed hosted space stations. We seek comment on whether to extend this framework to non-U.S.-licensed hosted and host space stations. Specifically, should we allow U.S. space station licensees to add a non-U.S.-licensed hosted space station to their authorization via the notification process we adopt in the *Order*?[998] Would this be giving non-U.S.-licensed operators a means to avoid the market access process? Or could we allow the equivalent of the hosted space station license for market access? Should we allow this for non-U.S.-licensed hosted space stations that do not seek to communicate with any earth stations located in the United States? Should we allow U.S. market access recipients to add a U.S.-licensed hosted space station via the notification process? Should we allow U.S. space station operators to obtain a hosted space station license for operations on a foreign-licensed spacecraft without market access? If so, should we require the U.S.-licensed hosted space station applicant to show that the foreign-licensed host spacecraft complies with the Commission's orbital debris rules? What requirements, if any, that differ from what we adopted in the *Order* would be necessary to allow these different license arrangements? We seek comment on these questions and any other benefits, concerns, or issues that this proposal may present.

369. We also seek comment on whether the rule we adopt for hosted space stations could support situations that differ from the traditional hosted space station model.[999] For example, could this rule be used to promote software-defined payloads? Specifically, could this rule, or a modified version, allow situations enabled by software-defined payloads where the FCC-licensee of a spacecraft permits another licensee to operate on frequencies using a single antenna on the host's spacecraft?[1000] Given

[996] *See* Appendix A at § 100.142.

[997] *See supra* III.B.1.j.

[998] For example, Spire proposes in its comments the following framework for minor modifications: "Where a U.S. licensee seeks to host a non-U.S. licensed hosted payload, the licensee should be required to file a minor modification including a description of the payload, the name of the payload owner and license holder, the licensing administration and ITU filings, and a certification that the spacecraft including the hosted space station does not increase any orbital debris risk beyond that permitted in the licensee's authorization." (*See* Spire Comments at 9-10).

[999] *See* Appendix A at § 100.110(e)

[1000] For example, we can imagine the following scenario: A U.S.-licensed space station or spacecraft operated by Company A has antennas that are capable of operating across a range of frequency bands. The licensee may or may not be licensed to operate on all or any of the frequencies. Company A would be able to enter an agreement with another operator, Company B, who would seek a license from the Commission for use of specific frequencies using the equipment on the spacecraft. In this way, it differs from a capacity leasing arrangement, because the underlying (continued….)

developments in software-defined radio technology, providing this flexibility could allow hosts to facilitate frequency use by one or more clients on the same space station equipment. Could the Commission issue a license to the underlying operator of the spacecraft with the software-defined antenna and then issue a separate license to another entity that will be using some of the frequency bands in which the antenna is capable of operating? Would it be beneficial for the Commission to allow for this arrangement? What information might the Commission need to assess potential harmful interference resulting from these types of operations? Should the licensee of the space station that is in control of the physical operations of the satellite(s) be the one ultimately responsible for any harmful interference? Would it be better to only issue a single license for the software-defined payload, or the satellite system that is comprised of many satellites with these antennas, to the satellite operator—i.e., the one with physical control of the satellites—and then the operator is able to lease capacity or establish whatever business arrangements it finds to be in its interest? Because the Commission's licensing is apparatus-based,[1001] can the Commission issue separate licenses for a single space station that cover only certain frequencies in which the space station is capable of operating?

F. Ephemeris Data Sharing and Reporting

370. The need for precise and frequent reporting of ephemeris data for satellites operating in LEO is critical to enable more productive and safe use of space. In the Order, we take a meaningful step towards enhancing space safety by requiring licensees and market access grantees to share their ephemeris data.[1002] This was based on extensive commenter feedback. Commenters were largely supportive of the proposal to require operators to share ephemeris data.[1003] Commenters also suggested or proposed additional requirements regarding ephemeris data sharing, including recommended cadence of reporting, required data transmission format, and tailoring reporting requirements to specific orbital regimes.[1004] We seek comment now on potential future requirements for ephemeris sharing to enhance space safety. Should we require updated information to be shared more frequently than the eight hour timeframe we encourage in this *Order*?[1005] If so, how frequently? Should we require operators engaged in certain activities, like Rendezvous and Proximity Operations (RPO) or servicing, to share ephemeris data more frequently than other operators? If so, how frequently? Additionally, should we require

(Continued from previous page)
space station or spacecraft would not necessarily be licensed for the spectrum that Company B seeks to use. And because Company B wants a license to operate in only certain frequencies that the antennas on the spacecraft are able to operate in, and does not seek to control the spacecraft, the Company B could apply for a hosted space station license even though the space station would not technically be different than the space station licensed by Company A.

[1001] *See e.g.* 47 CFR § 25.102(a); *see also* Appendix A at § 100.2 ("No person shall use or operate apparatus for the transmission of energy or communications or signals by space or earth stations except under, and in accordance with, an appropriate authorization granted by the Federal Communications Commission.").

[1002] *See infra* Appendix A at § 100.201(c).

[1003] *See e.g.*, Manifest Space Comments at 6-8; Kayhan Comments at 3; NASA Comments at 7-8; SWF Comments at 2-3; CSF Comments at 9; SpaceX Comments at 5-8.

[1004] *See e.g.*, SWF Comments at 2-3 (recommending tailoring reporting requirements to nature of activities and requiring servicing spacecraft with frequent maneuvers to provide more frequent ephemeris updates); SpaceX Comments at 7 (suggesting requirement that operators register with an SSA provider ahead of launch and submit ephemeris data within 8 hours after deployment); CONFERS Comments at 4-5 (recommending method of sharing ephemeris that preserves secrecy if operators are servicing government spacecraft); Iridium Comments at 20-21 (recommending requirement that ephemeris data be shared at no cost to other operators); NASA Comments at 4 (suggesting that NGSO applicants should be required to submit estimated COLA Gap values for proposed space station operations as part of the presumed acceptable criteria for new system applications, and with subsequent required reporting of the actual measured COLA Gap values in the semi-annual space safety reports).

[1005] *See* Order, para. 270;

operators engaged in RPO to provide notice to the Commission a specific amount of time prior to beginning the RPO?[1006] Are there technical limitations that might make it more difficult for certain satellite operators to share ephemeris data more frequently? Should we phase in more frequent reporting requirements over a period of time?

371. We also seek comment on creating a process whereby the Space Bureau could certify qualified, private ephemeris tracking systems as sufficient for the purpose of complying with our rules on ephemeris sharing. We believe this could allow the space situational awareness business to develop independently while ensuring that operators licensed by the Commission are sharing ephemeris information in an appropriate manner to advance space safety. This would also provide flexibility for operators so that they have several options for complying with the Commission's rules. They can then choose which of the SSA providers or ephemeris tracking systems best serves their needs rather than being forced to submit information to one specific provider chosen by the Commission. Would this promote space safety? Would it be better for the Commission to specify one single provider or site for operators to share their ephemeris data? Would specifying a single provider make it easier for new entrants or less sophisticated operators? If the Commission does let the Space Bureau certify qualified ephemeris tracking systems, what criteria should the Bureau consider in the certification process? Should the Commission require any certified private ephemeris tracking systems to make ephemeris information freely available to all satellites operators so that there is not an additional technical burden for operators and conjunction screening services? We believe this certification process could provide clarity for operators so they know how to satisfy the requirements in the Commission's rules and would offer an "official" list of credible tracking systems that operators can rely upon. We seek comment on this assumption and these general questions.

G. Inter-satellite Service Links (ISLs) between U.S.-Licensed and non-U.S.-Licensed satellites

372. Currently, the Commission does not have rules for the licensing of communications via inter-satellite service links between U.S.-licensed and non-U.S.-licensed space stations or spacecraft. We recognize that these types of operations could pose security risks. We therefore seek comment on the types of issues that the Commission should be concerned with and how to address them. We also seek comment on the most appropriate mechanism for licensing these inter-satellite links. Should we require a market access grant for any non-U.S.-licensed satellite system that will operate inter-satellite links with a U.S.-licensed satellite system, even though the non-U.S.-licensed system will not be communicating with any earth station within the United States? Alternatively, for U.S.-licensed satellite systems that seek to operate inter-satellite links with a non-U.S.-licensed satellite system, should we require a modification application that outlines the ownership and operations of the non-U.S.-licensed system? If the U.S.-licensed satellite system is already authorized to operate in the frequency bands with which it seeks to communicate via inter-satellite links with a non-U.S.-licensed system, should we allow the U.S.-licensed system to simply file a notification prior to beginning operations that identifies the foreign satellite system? Should there be a restriction of systems that U.S.-licensed systems may communicate with based on the country where the foreign system is licensed?

H. Frequency Reuse

373. Section 100.211(d) requires all space stations in the FSS operating in any portion of the 3600-4200 MHz, 5091-5250 MHz, 5850-7025 MHz, 10.7-12.7 GHz, 12.75-13.25 GHz, 13.75-14.5 GHz, 15.43-15.63 GHz, 17.3-17.8 GHz, 18.3-20.2 GHz, 24.75-25.25 GHz, or 27.5-30.0 GHz bands, including feeder links for other space services, and in the BSS in the 17.3-17.8 GHz band (space-to-Earth), to employ state-of-the-art full frequency reuse, either through the use of orthogonal polarizations within the same beam and/or the use of spatially independent beams.[1007] Given the growth in the use of spectrum by

[1006] *See* Appendix A at § 100.111(f).

[1007] *See* Appendix A at § 100.211(d); 47 CFR § 25.210(f).

the FSS and BSS, we seek comment on requiring full frequency reuse for all FSS and BSS operations in bands allocated to FSS and BSS as a general rule, instead of in the bands listed in section 100.211(d). This also includes feeder links for other space services.[1008] Are there any frequency bands where the technical limitations make this challenging? Are there specific benefits to not requiring frequency reuse across all FSS and BSS operations?

I. Orbital Debris Mitigation

374. *LEO*. Spacecraft monitoring and collision avoidance is important for a safe operating environment, not just during mission operation but also after end-of-mission. NASA notes that it is preferable for spacecraft to retain collision risk reduction capabilities including during de-orbit phase.[1009] We seek comment on a potential certification or requirement for spacecraft monitoring and collision avoidance capabilities for each spacecraft throughout its orbital lifetime, including end-of-mission, until re-entry.

375. *Beyond LEO*. Section 100.111(d)(2)(iii) requires NGSO satellites to be 10 cm or larger in the smallest dimension in order to be presumed trackable.[1010] NASA notes that object trackability is a function of many factors, but most notably of orbital altitude, and that the 10 cm minimum is insufficient to ensure trackability for spacecraft at altitudes above LEO, or 2000 km.[1011] NASA further notes that for spacecraft above LEO, such as in MEO or GEO, a 1 meter minimum measurement should be the standard for spacecraft operating at these altitudes to be presumed trackable.[1012] We propose to adopt a presumption into section 100.261(a) that for satellites operating in MEO or GEO will be presumed trackable if each individual satellite is 1 meter or larger in its smallest dimension, excluding deployable components. We seek comment on this proposal. Should we require operators whose spacecraft will operate in highly elliptical orbit (HEO), cislunar space, or beyond the moon to certify that their spacecraft will be trackable? If so, should we adopt a different measurement other than 1 meter for a spacecraft to be presumed as trackable?

376. *Collision risk reduction during de-orbit*. We seek comment on potential information requirements or presumed acceptable bright-line criteria for satellite operations specifically during the de-orbit phase.[1013] Should the Commission require satellite operators to provide information about whether the system will maintain conjunction mitigation capabilities during the de-orbit phase? If so, what information should the Commission collect from operators and at which point should the Commission assess this data, for example, until the satellite(s) reach a specific altitude or at a certain time before demise? Alternatively, should the Commission adopt a presumed acceptable criteria requiring a certification that satellite operators will maintain conjunction mitigation capabilities until a specified altitude or time before demise? Should de-orbit requirements or criteria apply to all satellite systems or only to satellite constellations of a certain size?

J. Two-Degree GSO Spacing Requirements

377. *FSS Earth Station Performance Standards.* In the *NPRM*, we proposed to streamline the

[1008] This requirement would not apply to TT&C operations.

[1009] NASA Comments at 2.

[1010] *See* Appendix A at § 100.111(d)(2)(iii). This 10 cm minimum is a safe harbor for applications under section 100.111, meaning that space station applicants who certify to this minimum measurement presumptively meet the trackability requirement. This presumption is also included in the orbital debris operational rules in section 100.261(a).

[1011] NASA Comment at 5.

[1012] *Id.*

[1013] *See* NASA Comments at 2-3.

requirements in section 25.209 regarding earth station antenna performance standards.[1014] Commenters were broadly opposed and noted that it was premature to make substantive changes to the earth station antenna performance standards without establishing the necessary technical record.[1015] We now take the first step towards developing that technical record. We seek comment on whether any updates to these standards are necessary, including whether the current rule covers all current and possible future antenna types, frequency bands, and any other pertinent addition or clarification to bring the rule up to date.[1016] Are these rules overly limiting or out of date? Do they sufficiently cover all antenna types and/or operations? We seek comment on these questions and on the rule more broadly.

378. For commenters that suggest new bands or new antenna types to be added to the rule, we ask that they provide associated co-polarization and cross-polarization antenna gain in both the plane perpendicular to the GSO arc and the plane tangent to the GSO arc for various off-axis angles in the same format in which the rule is currently written.[1017]

379. *FSS Transmitting Earth Station Off-Axis EIRP.* In the *NPRM*, we also proposed to streamline the off-axis EIRP density limits for earth stations.[1018] Commenters were broadly opposed and noted that it was premature to make substantive changes to the off-axis EIRP density limits without establishing the necessary technical record.[1019] In light of these comments, in this *FNPRM*, we seek comment on whether updates are needed to the current rule to accommodate current and future sharing of the GSO arc, whether additional bands need to be included, and any other pertinent addition or clarification necessary to the rule.[1020] The response to these questions will guide the Commission in determining whether the Commission should initiate a separate technical dedicated rulemaking proceeding to address this and other technical issues.

380. For any new bands to be included or added to the rule, we request that commenters provide the off-axis EIRP density limits in the plane tangent to the GSO arc and in the plane perpendicular to the GSO arc for co-polarize transmissions and for cross-polarize transmissions for the various off-axis angles in the same format in which the rule is written.

K. Secondary Markets

381. In the Order, we adopt a new framework for processing rounds.[1021] This framework will result in clearly defined status for NGSO satellite systems, and that processing round status can have a quantifiable impact on operations. Therefore, we seek comment on the possibility of licensees or market access holders exchanging processing round status via a secondary market. Once a system is licensed in a processing round, are there ways that processing round status could be shared or exchanged with other systems in processing rounds or systems licensed outside of a processing round? While coordination already allows for operator-to-operator agreements which may incorporate market activity, exchange of a single operator's priority status would mean the status of other operators in the same processing round would change with respect to a processing round licensee who shares or exchanges their status. How

[1014] *See NPRM* at paras. 234-235.

[1015] *See e.g.* SIA Comments at 4-6; Telesat Comments at 4-5; SpaceX Comments at 14-15; Amazon Leo Comments at 32-33; CTIA Comments at 23; SES Reply Comments at 9; Verizon Reply Comment at 14.

[1016] The current rule is now in section 100.278.

[1017] *See* Appendix A, § 100.278.

[1018] *See NPRM*, at para. 236.

[1019] *See e.g.* SIA Comments at 4-6; Telesat Comments at 4-5; SpaceX Comments at 14-15; Amazon Leo Comments at 32-33; CTIA Comments at 23; SES Reply Comments at 9; Verizon Reply Comments at 14.

[1020] The current rule is in section 100.279.

[1021] *See supra* III.B.5, paras. 93-115.

might the Commission make such arrangements feasible? Would this allow for spectrum to be used more efficiently and put to higher and better uses? What might be the benefits or drawbacks to this approach? What impact would this have on the processing round framework in general? We would expect, in order to prevent spectrum warehousing and speculative applications, that any ability to exchange or transfer priority would depend on the entity having deployed a system. Would it be possible to allow a licensee in a processing round to share or exchange their position in that round without requiring the other party to the transaction to launch and operate the exact same system so as to avoid interference concerns from a major modification? We seek comment on these questions generally.

L. Renewal and Replacement Expectancies and Reassignment

382. In this *FNPRM*, we seek to build on the record developed in response to the proposals in the *NPRM* regarding renewal and replacement expectancies for space stations and earth stations. The *NPRM* proposed to include a definition of "replacement space station" within part 100[1022] and sought comment on whether to establish guidance on how to consider renewal expectancy for all types of space and earth stations.[1023] The *NPRM* observed that although the vast majority of renewal applications are granted, the Commission has generally reviewed applications for renewals on a case-by-case basis, which has occasionally led to protracted disputes over whether a renewal is warranted.[1024] In the accompanying Order, we adopt a definition of a replacement satellite in part 100 for both GSO and NGSO space stations, which largely mirrors the definition of replacement satellite that was contained in section 25.165(e).[1025] The record in response to the *NPRM*, however, was insufficient to adopt rules or guidance regarding renewal and replacement expectancies.[1026] Accordingly, we seek further comment on whether, and how, the Commission should adopt more structured renewal and replacement expectancy frameworks for space and earth station authorizations.

383. There are significant differences between GSO and NGSO space stations that affect renewal and replacement expectancies. NGSO space stations are most often licensed as part of a constellation of many individual space stations under a single call sign. Thus, one or more individual satellites may be replaced during the 20-year license term for the constellation without negatively affecting the ability of the authorized system as a whole to provide service to the public and to utilize orbital and spectrum resources. This reality is reflected in our rules regarding replacement satellites under part 100, which allow for a licensee of an NGSO satellite system to replace individual satellites in a constellation without additional approvals, so long the replacements do not constitute a major modification.[1027] In contrast, GSO space stations have historically only been licensed as single space station with authority to utilize spectrum resources at a specific location on the GSO arc.[1028] Thus, the

[1022] *NPRM,* 40 FCC Rcd at 8259-60, para. 185.

[1023] *Id.* As stated in the *NPRM*, operators of, and investors in, satellite systems and earth stations need sufficient time to recoup the substantial financial investment and effort in establishing and operating their ever-more complex systems, and therefore an expectation that a license will be renewed at the end of its term can add to the stability of the satellite and earth station business environment. *Id.* at para. 191.

[1024] *Id.*

[1025] *See supra* section III.B.5. The definition adopted in part 100, however, no longer requires that replacements for NGSO satellites be "technically identical." *Id.* The new definition adopts the proposal that replacements for NGSO satellites can be made up to the number of authorized satellites in the NGSO constellation, provided that any changes to the authorized satellites requires the filing of a major modification or a condition on the NGSO constellation license. *Id.*

[1026] *Id.*

[1027] Appendix A at § 100.148(c)(iii).

[1028] As discussed below, we note that under the rules adopted in this Order, it is now possible for more than one GSO space station to be authorized under a single license at an orbital location. We seek comment below on how this change may affect renewal expectancy for GSO space stations.

removal of a GSO space station from its assigned orbital location, either through removal from the GSO arc as part of an end-of-life disposal or through relocation to another location on the GSO arc through a modification of the license, ceases use of spectrum by the space station at the assigned orbital location. That orbital location and spectrum is effectively "warehoused" unless the licensed satellite is already replaced with a new satellite prior to the disposal or relocation. We seek comment on these differences between GSO and NGSO space stations, particularly as they may affect replacement expectancies.

384. The differences also extend to renewals of GSO and NGSO space stations. Because NGSO space stations are most often licensed as part of a constellation, and the 20-year license term is for the constellation as a whole, rather than for any particular satellite in the constellation, there is logic in renewing the license for the constellation as a whole for another full 20 years at the end of license term. The constellation will have been refreshed by new satellites, given the fact that individual satellites in the constellation generally will have operational lifetimes much shorter than 20 years. GSO space stations, on the other hand, have not been operated or licensed as constellations, and as a result a single satellite operates for the entirety of the license term.[1029] It is highly unlikely that the same GSO satellite would be able to operate for another full 20 years in orbit, given the state of current satellite technology. Accordingly, GSO space station operators currently do not have a renewal expectancy, but rather a replacement expectancy, as well as the ability to extend the license term through a modification of the license. We seek comment on the differences between GSO and NGSO space stations, particularly as they may affect renewal expectancies.

385. In light of the differences between GSO and NGSO space station operations and licenses observed above, we seek additional comment on whether it is possible to establish a unified rule for renewals of space and earth station licenses. Particularly, does it make sense to have a single rule for renewals of NGSO and GSO space station licenses and grants of market access? What about VTSS?[1030] Although it is not currently expected that a GSO satellite is capable of continuing to operate for an additional full 20-year license term given existing satellite technology, do changes in regulation and technology affect this expectation? We note that under the rules adopted in the Order, it is now possible for more than one GSO space station to be authorized under a single license at an orbital location.[1031] Does this licensing change make a GSO authorization more akin to an NGSO authorization for a constellation? We seek comment on how this change could affect the renewal or replacement expectancy for GSO space stations. In addition, technology is now available to extend the operational lifetime of GSO space stations through servicing spacecraft that provide station keeping for the GSO space station beyond its license term.[1032] It is also foreseeable that in-orbit refueling of GSO space stations will become feasible in the near future.[1033] Both of these technologies could extend the operational lifetime of a single GSO satellite well beyond the initial 20-year license term and could make renewal of a GSO satellite license feasible. We seek comment whether either of these technological developments support renewals of GSO space station licenses for a full additional 20-year license term. Or would it make more

[1029] We note that the license term for GSO satellites was 15 years prior to the Order, where it has changed to 20 years.

[1030] We acknowledge that VTSS is a new concept adopted into the Commission's rules in this Order and therefore the Commission does not have experience issuing renewals or replacements for VTSS licensees. Commenters are encouraged to consider how replacements and renewals may be modified for VTSS licensees as well.

[1031] *See supra* section III.B.1.c.

[1032] As an example, Space Logistics was authorized in 2019 to dock with the Intelsat 901 satellite in order to extend its operational lifetime by providing station keeping and propulsion capabilities. *Space Logistics LLC*, ICFS File No. SAT-LOA-20170224-00021, SAT-AMD-20190207-00008 (granted June 20, 2019).

[1033] *See, e.g.,* Space News, *GEO Satellite Refueling a Priority for National Security, Commercial Markets, New Analysis Finds* (Dec. 10, 2025) (https://spacenews.com/geo-satellite-refueling-a-priority-for-national-security-commercial-markets-new-analysis-finds/) (citing a study that found that key technologies for satellite refueling are already in hand).

sense to allow renewals for a shorter term?

386. To promote simplification and consistency across services, we propose to establish rules of general applicability on renewals that apply to all satellites and earth stations. A single standard that applies to different services would also allow for clear and consistent review of requests for renewal of licenses, including more efficient review of multi-orbit systems. As part of such single standard, we propose that applications for renewals of space and earth station licenses include several certifications that the licensee must make, including: the licensee is continuing to use the orbital and/spectrum resources that it is currently authorized to use; the licensee is continuing to comply with the terms of its authorization; and the licensee has not operated in a manner that would cause automatic termination pursuant to section 100.302.[1034] We seek comment on this specific proposal and whether it should be expanded to include other criteria. Are the proposed certifications sufficient to ensure the most efficient use of licensed radiofrequency spectrum? If we allow renewals for GSO satellite systems, should we require the same certifications for GSO renewals as for NGSO renewals? If not, what different certifications should we require? Additionally, should there be different certifications for earth station renewals? We also seek comment on whether we should extend this standard to grants of U.S. market access for non-U.S. licensed space station in light of establishing terms for these grants in this Order.[1035]

387. We also seek comment on how to clarify and potentially codify our replacement expectancy for GSO space stations. There is currently regulatory uncertainty that arises when a GSO space station licensee disposes or relocates an in-orbit satellite and does not immediately surrender the license or place another satellite into the vacated orbital location that uses all the spectrum resources that were licensed for use by the satellite that was disposed or relocated.[1036] In such a situation, it is unclear whether these "abandoned" orbital locations or spectrum can immediately be applied for and put to use by another entity that wishes to utilize them, or whether the Commission must first issue a public notice announcing that the orbital location and frequencies are available for reassignment and establishing a future time at which the Commission will accept applications for the orbital location and frequencies.[1037] In order to remove this uncertainty, we propose a rule that would automatically make the orbital and spectrum resources available for reassignment unless the licensee has already put into place a new replacement satellite at the location, or within a year of the date of the disposal or relocation has relocated another in-orbit satellite to utilize all frequencies that we authorized for use by the disposed or relocated

[1034] *See* Appendix A at § 100.302.

[1035] *See supra* section III.B.1.l.

[1036] This uncertainty is not new. The Commission released an Notice of Inquiry in 2013 that sought comment on a range of issues related to "gaps in service" and in-orbit warehousing that arose from the Commission replacement expectancy policy. *Issues Related to Allegations of Warehousing and Vertical Foreclosure in the Satellite Space Segment*, Notice of Inquiry, 28 FCC Rcd 8571 (2013) (*Notice of Inquiry*). The *Notice of Inquiry* provides a more complete description of the issues arising from uncertainty of when other entities may apply for and be granted use of orbital and spectrum resources that are not being used, but were previously used, and may be used again, by the current space station licensee. Although the Commission ultimately determined that the record in response to the *Notice of Inquiry* did not provide a basis for taken further action, it did not preclude re-examination of these issues at a future date. *Issues Related to Allegations of Warehousing and Vertical Foreclosure in the Satellite Space Segment*, Order, 29 FCC Rcd 4209 (2014)

[1037] In 2003, the Commission addressed the procedure for filing a new application to use orbital and spectrum resources when a GSO orbital location becomes "available." *See Amendment of the Commission's Space Station Licensing Rules and Policies*, First Report and Order, 18 FCC Rcd 10760, 10806, para. 113 (2003) (*First Space Station Reform Order*). It said that it would consider an orbital location "available" at the time an order is adopted revoking a license or upon release of a public NPRM announcing that a licensee has surrendered its license. *Id.* at para. 113 and n.261(noting that the Commission would also give new applicants the option of assuming the previous licensee's ITU filing or submitting a new filing). Neither of these circumstances, however, clearly addresses the situation where a licensee disposes a satellite before the end of the satellite's license term or relocates the satellite without surrendering its license.

satellite at the orbital location. If neither condition is met, we propose that the Space Bureau will release a public notice making the orbital location and any unused frequencies available for reassignment and establishing a date and time that new applications will be accepted.[1038] We seek comment on this proposal in general, as well as on the specific mechanisms and time periods proposed. We also seek comment on whether and how this proposal could be applied to grants of U.S. market access by non-U.S. licensed GSO space stations.

388. This proposal intends to provide clarity to our GSO replacement expectancy policy and make it easier and faster for orbital and spectrum resources to be used to serve the public. It is also intended to prevent orbital and spectrum resources being held to the exclusion of others for an extended period of time, while providing flexibility for in-fleet redeployments and preserving the continuity of service to existing customers served by a satellite operator at a particular orbital location. It also takes into account that the ITU filing under which a GSO space station operates may be suspended, or even eventually suppressed, if spectrum resources are not used at an orbital location for a long-period of time.[1039] Clarifying that GSO licensees will have no longer than one year to bring back into use fallow orbital and spectrum resources will provide a clear path to allowing another operator to apply for and use those orbital resources in order to preserve the status of the ITU filing at the GSO location.[1040] We seek comment on these intended purposes and whether the balancing of interests of the proposed rule is appropriate.

389. We also seek comment on any alternatives to the definition of replacement satellites established in this Order. For example, should the Commission adopt a rule that expressly limits the GSO replacement to situations where a satellite has unexpectedly failed while in-orbit,[1041] or the situation where a licensee has been granted a license for a replacement satellite at the location or has already positioned another in-orbit satellite at a location licensed for use by another space station and the in-orbit satellite is capable of operating using all the licensed frequencies prior to the disposal or relocation of the licensed space station? This alternative would still permit operators to use in-orbit satellites to replace satellites that are disposed or relocated, but it would eliminate any period where the orbital location and associated spectrum resources would be unused, except in exceptional circumstances where a satellite unexpectedly fails while in orbit. The alternative could provide even greater certainty and speed in making sure that scarce orbital and spectrum resources are utilized to provide service to the public. We seek comment on this specific alternative, as well as any other alternatives.

M. Miscellaneous

390. *U.S.--Based Control Point*: We also seek comment on whether we should require that all space stations licensed by the Commission have a US based control point. We tentatively conclude that

[1038] We note that a licensee may ask the Commission to waive its rules and allow more than a year to replace a satellite that has been disposed or relocated. 47 CFR § 1.3.

[1039] In the event that a GSO orbital location is vacated by an operator or there are frequencies that cannot be used on a satellite at a particular location (e.g., an onboard transmitter failure), the ITU rules permit a three-year suspension of the ITU's usage requirements. ITU Radio Regulations Articles 11.48 and 11.49. If service is not restored at the orbital location by the end of the three-year period, the ITU rules permit the underlying ITU filing of the administration to be suppressed (that is, the administration will no longer be able to assert priority rights for operations at the orbital location). *Id.* *See* Astranis April 30 *Ex Parte* at 3 (FCC must decline to apply ITU suspension rules to domestic licensing; that would allow legacy operators to block new entrant for three years).

[1040] *See* Astranis April 30 *Ex Parte* at 3 ("the FCC must maintain fungibility of U.S. GSO orbital slots so that their use can be reassigned and thus preserve valuable U.S. spectrum resources").

[1041] The Commission already allows "emergency" replacement satellites, which permit an operator to retain a replacement expectancy to operate another satellite at the same orbital location and in the same frequency bands without being subject to competing applications, despite the gap in service. This policy was codified in section 25.113(g)(3) of our rules, 47 CFR § 25.113(g)(3), and now is reflected in 100.141(b).

we should and we seek comment on this tentative conclusion. We recognize that the current rules require that an operator provide the contact information for a 24/7 point of contact with the authority and capability to cease transmissions, but currently that point of contact does not themselves need to be the control point for the operations of the entire satellite system.[1042] We believe that by requiring a U.S.-based control point, we will enable licensees to be better situated to communicate with one another and respond quickly to potentially hazardous events. Given the proliferation of space activities, faster response times may be necessary to avoid catastrophe. What drawbacks or potential burdens does this requirement place on operators? Could those burdens be relieved by third-party control points that have agreements with operators? What benefits are there to this proposal both in terms of impact on space safety and operations, and the impact to the space economy generally? Is there any reason why the Commission would not be able to adopt this proposal, either because of international agreements or limits found in the governing statutes? We tentatively conclude that there are not, but seek comment on this conclusion.

391. *Transfers of Control and Assignments*. As we continue to create efficiencies in our approval processes we recognize that any market-based approach must establish clear rules regarding transfers of control and assignments of licenses or authorizations. Therefore, we seek comment on ways to make this process more efficient while still ensuring proper oversight of licensees. We note that the Commission already has an immediate approval process for certain wireless licenses and a deemed-granted process for certain *pro forma* transactions licensed under part 100.[1043] Although we have deemed granted procedures for certain *pro forma* applications,[1044] should we adopt a similar procedure for a broader class of licenses and authorizations, and if so, what category or categories should be included? If so, what restrictions or limitations should we establish to ensure proper oversight? We envision that this process would not be available for any transactions with greater than 10%foreign ownership or that request a waiver of the rules but seek comment on this. Should the rules be modeled after the wireless rules, where specific criteria must be satisfied for an immediate grant? We invite comment on any alternatives to help ease the burdens associated with Commission approval of transfers of control and assignments that would still ensure the Commission maintains effective oversight of who holds or controls a license or authorization.

392. *Removing Application Cross References.* In the Order, we adopt rules for application materials which require earth station and space station requests in certain circumstances to submit additional information. Contained in sections 100.112(d)(3) and 100.120(e), these application requirements cross reference in most instances to subpart C. And in subpart C, the rules discuss what applicants must do or submit as part of the application process. Given that subpart C should ideally contain only operational rules and not application rules, we seek comment on revising the rules to remove these cross references. Given our certification-based approach in which applicants must certify whether they will comply with the Commission's rules, we propose to convert the application requirements referenced in subpart C into operational rules rather than requiring as part of the application materials all of the showings in these sections in subpart C. Doing this would also allow us to remove all or part of sections 100.112(d)(3) and 100.120(e) and more fully separate subparts B and C as application- and operation-focused, respectively. We seek comment on such changes. Are there particular sections where we should not make this change? While we may seek comment separately on substantive changes to the

[1042] *See* Appendix A at § 100.201(b)(3) (requiring as part of the earth station application that the "[n]ame, address, email, and telephone number of the person(s) or entity with the authority and capability to cease transmissions of any service for which the application seeks authorization and who must be available 24/7 365 days a year and located within the United States" be provided).

[1043] *See* 47 CFR § 1.948(j)(2) (allowing for immediate approval procedures for wireless license transfers of control or assignments under specific circumstances); *see also* Appendix A at 100.145(c) (allowing for deemed grant the next business day for certain pro forma transactions).

[1044] Appendix A at § 100.145(c)

relevant rules in subpart C, here we only seek comment on this organizational question. We specifically request comments on the organization of the new part 100 rules so that it is clear to seasoned applicants and newcomers alike which rules they must follow and what information they must provide as part of an application.

393. *Closing Additional Rulemaking Dockets*. Given the sweeping overhaul of the Commission's space and earth station licensing rules that we adopt in this Order, as well as the broad set of topics on which we seek comment in this FNPRM, we tentatively conclude that it would be administratively efficient and prudent to close additional dockets related to satellite and earth station rulemakings that are moot or otherwise unnecessary. Are there additional open dockets related to space and earth station licensing that the Commission should close? There may be dockets where no further action was proposed, where the docket is largely superseded by this Order, or where the issues remaining in the docket are better addressed in this proceeding. For example, we believe the Commission's docket on orbital debris should be closed because those issues are better addressed in this FNPRM, and therefore we propose to close it.[1045] We also propose, given the overhaul of our rules in part 100, to close the various dockets related to streamlining the Commission's space and earth station rules.[1046] We seek comment broadly on any other open Commission dockets that the Space Bureau could close.[1047] We encourage commenters to identify open Commission dockets that they believe should be closed, with specific reasons. We also encourage commenters to identify open Commission dockets related to space and earth station licensing that they believe should be kept open, with specific reasons for doing so.

394. *Processing Rounds*. We propose to modify the date on which a processing round's priority status begins under the NGSO spectrum sharing framework.[1048] Specifically, we propose to standardize the priority start date so that the ten-year priority period associated with a processing round begins on January 1st of the following year.[1049] This more uniform approach aims to help NGSO satellite systems authorized in different processing rounds more clearly understand the time periods during which they are protected from later-round systems and must protect earlier-round systems. As an example, the priority status for all NGSO satellite systems authorized to operate in a 2027 processing round would begin on January 1, 2028 and these systems would have priority over systems authorized subsequent processing rounds until January 1, 2038. We seek comment on this proposal. Does this approach provide more clarity on the sunset periods for priority status afforded through the processing round procedures? Should we instead begin the sunset period on a different date? We seek comment on any alternative suggestions to similarly improve and refine the rules within these frameworks.

395. *Export Control Compliance*. We seek comment on whether and how our part 100 rules should expressly address obligations under U.S. export control laws, including, as applicable, the Export Administration Regulations (EAR) and the International Traffic in Arms Regulations (ITAR), in

[1045] *See* IB Docket No. 18-313, Mitigation of Orbital Debris in the New Space Age.

[1046] *See* IB Docket No. 22-411, Expediting Initial Processing of Satellite and Earth Station Applications; IB Docket No. 18-314, Further Streamlining Part 25 Rules Governing Satellite Services; IB Docket No. 18-86, In the Matter of Streamlining Licensing Procedures for Small Satellites.

[1047] *See e.g.*, IB Docket No. 97-95; IB Docket No. 01-185; IB Docket No. 06-123; IB Docket No. 06-160; IB Docket No. 13-213; IB Docket No. 15-256; IB Docket No. 16-408; IB Docket No. 17-172; IB Docket No. 20-330; IB Docket No. 21-456; and IB Docket No. 22-273.

[1048] 47 CFR § 25.261; Appendix A at § 100.241.

[1049] Under the current rule in section 100.241(e), the ten year sunset period during which a later round system must protect earlier round systems begins on the date on which the first system in the later round is granted authority. ("Ten years after the first authorization or grant of market access in a processing round, the systems approved in that processing round will no longer be required to protect earlier-rounds systems under paragraph (d) of this section, and instead will be required to share spectrum with earlier-round systems under paragraph (c) of this section.")

connection with space station and earth station licensing.[1050] Should we require applicants to certify, as part of their applications, that they are aware of and will comply with all applicable export control requirements in the design, manufacture, launch, operation, and control of their systems and in any transfers of hardware, software, technical data, or services to foreign persons? We also seek comment on whether we should require licensees to maintain, and upon request make available to the Commission, records sufficient to demonstrate compliance with applicable export control laws as they relate to Commission-authorized operations.

396. We further seek comment on whether we should adopt specific rules governing the interaction between export control requirements and the Commission's licensing processes, including for transfers of control and assignments of space and earth station authorizations. For example, should we require applicants seeking Commission consent to assignments or transfers of control that involve foreign ownership to disclose whether the proposed transaction will require approval from other federal entities with export control or national security responsibilities, and if so, the status of any such reviews? Should we condition grants of certain authorizations or transfers of control on an applicant's representation that it has obtained, or will obtain prior to implementation, any necessary export control licenses or other governmental approvals?

397. We also seek comment on whether any additional safeguards are needed in light of export control considerations for U.S.-based control points and third-party control arrangements discussed above. For instance, should we require that entities operating a U.S.-based control point or providing third-party control services have policies and procedures reasonably designed to ensure compliance with applicable export controls when providing access to foreign persons, including access to command-and-control systems or related technical data? Would such requirements impose significant burdens on operators or control service providers, and if so, how might those burdens be minimized while still ensuring appropriate oversight? Commenters are invited to address any potential overlap with existing statutory or regulatory regimes, to identify any risk of duplication or inconsistency, and to explain whether explicit Commission rules in this area would improve clarity and compliance for licensees, authorized holders of U.S. market access and other stakeholders.

398. Best practices for Coexistence with Radio Astronomy. We seek comment on incorporating into our rules bright-line criteria and best practices for coordination with U.S. radio astronomy sites. In addition to required protection limits identified elsewhere, such rules might include specified operational limits and information sharing requirements for earth and space station operators to protect and coordinate with U.S. radio astronomy sites. This would facilitate the space and earth station application process by having all radio astronomy requirements in one section. Specifically, we seek comment on using detailed contours in different frequency bands that contain the PFD limits to be achieved in specific geographic areas around U.S. radio astronomy sites. Outside of the locations specified in these contours, space station and earth station operators could operate in accordance with other relevant technical rules without causing interference to radio astronomy cites. If applicants plan to place any earth stations inside of the locations specified in these contours, the operator would be required to coordinate. Such a bright-line approach could streamline coordination with the National Science Foundation and U.S. radio astronomy sites by limiting the area where coordination is normally required to very small geographic areas and help avoid inadvertent, harmful interference. Additionally, we seek comment on a list of best practices regarding unwanted radio frequency emissions at U.S. radio astronomy sites. Specifically, we seek comment on whether to include a recommendation that space station applicants include a characterization (via modeling or measurements) of their emissions in the 50-200 MHz range from all sources which can impact cosmic microwave background radiation. We also seek comment on whether to require applicants to submit a summary of any other mitigation steps taken to reduce potential interference from space-to-Earth satellite transmissions. We note that there has been an extensive track record of successful implementation of mitigation techniques including the use of

[1050] *See* 22 CFR §§ 120 – 130; 15 CFR §§ 730-774. .

operational data sharing to avoid boresight encounters at radio astronomy telescopes, or the provision of high-precision ephemerides and other orbital information for radio telescopes to utilize in their scheduling algorithms to avoid the satellites. We seek comments on these approaches. Should we adopt bright-line criteria regarding mitigation efforts to protect radio astronomy? Or should we consider information requirements for applicants to facilitate coordination with radio astronomers? Are there specific mitigation techniques that we should adopt as bright-line criteria that can receive the public interest presumption?

V. PROCEDURAL MATTERS

399. *Comment Filing Procedures*. Pursuant to sections 1.415 and 1.419 of the Commission's rules, 47 CFR §§ 1.415, 1.419, interested parties may file comments and reply comments on or before the dates indicated on the first page of this document. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS).

- *Electronic Filers*: Comments may be filed electronically using the Internet by accessing the ECFS: http://apps.fcc.gov/ecfs.[1051]
- *Paper Filers*: Parties who choose to file by paper must file an original and one copy of each filing.
    - Filings can be sent by hand or messenger delivery, by commercial courier, or by the U.S. Postal Service. **All filings must be addressed to the Secretary, Federal Communications Commission.**
    - Hand-delivered or messenger-delivered paper filings for the Commission's Secretary are accepted between 8:00 a.m. and 4:00 p.m. by the FCC's mailing contractor at 9050 Junction Drive, Annapolis Junction, MD 20701. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes and boxes must be disposed of before entering the building.
    - Commercial courier deliveries (any deliveries not by the U.S. Postal Service) must be sent to 9050 Junction Drive, Annapolis Junction, MD 20701.
    - Filings sent by U.S. Postal Service First-Class Mail, Priority Mail, and Priority Mail Express must be sent to 45 L Street NE, Washington, DC 20554.

400. *People with Disabilities*: To request materials in accessible formats for people with disabilities (Braille, large print, electronic files, audio format), send an email to fcc504@fcc.gov or call the Consumer & Governmental Affairs Bureau at 202-418-0530.

401. *Availability of Documents*. Comments, reply comments, and *ex parte* submissions will be publicly available online via ECFS. Documents will be available electronically in ASCII, Microsoft Word, and/or Adobe Acrobat.

402. *Ex Parte Presentations—Permit-but-Disclose.* This proceeding shall be treated as a "permit-but-disclose" proceeding in accordance with the Commission's *ex parte* rules.[1052] Persons making *ex parte* presentations must file a copy of any written presentation or a memorandum summarizing any oral presentation within two business days after the presentation (unless a different deadline applicable to the Sunshine period applies). Persons making oral *ex parte* presentations are reminded that memoranda summarizing the presentation must (1) list all persons attending or otherwise participating in the meeting at which the ex parte presentation was made, and (2) summarize all data presented and arguments made during the presentation. If the presentation consistent in whole or in part of the presentation of data or arguments already reflected in the presenter's written comments,

[1051] *See Electronic Filing of Documents in Rulemaking Proceedings*, 63 Fed. Reg. 24121 (1998).

[1052] 47 CFR § 1.1200 *et seq*.

memoranda or other filings in the proceeding, the presenter may provide citations to such data or arguments in his or her prior comments, memoranda, or other filings (specifying the relevant page and/or paragraph numbers where such data or arguments can be found) in lieu of summarizing them in the memorandum. Documents shown or given to Commission staff during *ex parte* meetings are deemed to be written *ex parte* presentations and must be filed consistent with rule 1.1206(b). In proceedings governed by rule 1.49(f) or for which the Commission has made available a method of electronic filing, written *ex parte* presentations and memoranda summarizing oral *ex parte* presentations, and all attachments thereto, must be filed through the electronic comment filing system available for that proceeding, and must be filed in their native format (e.g., .doc, .xml, .ppt, searchable. pdf). Participants in this proceeding should familiarize themselves with the Commission's *ex parte* rules.

403. *Regulatory Flexibility Act.* The Regulatory Flexibility Act of 1980, as amended (RFA),[1053] 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."[1054] Accordingly, the Commission has prepared a Final Regulatory Flexibility Analysis (FRFA) concerning the possible impact of the rule and policy changes contained in this Notice on small entities. The FRFA is set forth in Appendix B.

404. The Commission has also prepared an Initial Regulatory Flexibility Analysis (IRFA) concerning the potential impact of rule and policy change proposals on small entities in the *FNPRM.* The IRFA is set forth in Appendix C. The Commission invites the general public, in particular small businesses, to comment on the IRFA. Comments must be filed by the deadlines for comments on the *FNPRM* indicated on the first page of this document and must have a separate and distinct heading designating them as responses to the IRFA.

405. *Paperwork Reduction Act Analysis.* The Order contains modified information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13. It will be submitted to the Office of Management and Budget (OMB) for review under Section 3507(d) of the PRA. OMB, other Federal agencies, and the general public are invited to comment on the modified information collection requirements contained in this document. In addition, we note that pursuant to the Small Business Paperwork Relief Act of 2002, Public Law 107-198, *see* 44 U.S.C. § 3506(c)(4), we previously sought specific comment on how the Commission might further reduce the information collection burden for small business concerns with fewer than 25 employees.

406. In this Order, we have assessed the effects of revising our space and earth station licensing rules and find that they will have a small impact on small business concerns. Due to the significant costs involved in earth station and space station development and deployment, we anticipate that few entities impacted by this rulemaking would qualify as small businesses.

407. Additionally, the Order may contain non-substantive modifications to approved information collections. Any such modifications will be submitted to OMB for review pursuant to OMB's non-substantive modification process.

408. The *FNPRM* may contain new or proposed modified information collections. The Commission, as part of its continuing effort to reduce paperwork burdens, invites the general public and the Office of Management and Budget (OMB) to comment on any information collections contained in this document, as required by the Paperwork Reduction Act of 1995, 44 U.S.C. §§ 3501-3521. In addition, pursuant to the Small Business Paperwork Relief Act of 2002, 44 U.S.C. § 3506(c)(4), we seek specific comment on how we might further reduce the information collection burden for small business concerns with fewer than 25 employees.

[1053] 5 U.S.C. § 603. The RFA, 5 U.S.C. §§ 601-612, was amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

[1054] 5 U.S.C. § 605(b).

409. *Congressional Review Act.* The Commission has determined, and the Administrator of the Office of Information and Regulatory Affairs, Office of Management and Budget, concurs that this rule is "major" under the Congressional Review Act, 5 U.S.C. § 804(2). The Commission will send a copy of this 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).

410. *OPEN Government Data Act*. The OPEN Government Data Act[1055] requires agencies to make "public data assets" available under an open license and as "open Government data assets," i.e., in machine readable, open format, unencumbered by use restrictions other than intellectual property rights, and based on an open standard that is maintained by a standards organization.[1056] This requirement is to be implemented "in accordance with guidance by the Director" of the OMB.[1057] The term "public data asset" means "a data asset, or part thereof, maintained by the federal government that has been, or may be, released to the public, including any data asset, or part thereof, subject to disclosure under the Freedom of Information Act (FOIA)."[1058] A "data asset" is "a collection of data elements or data sets that may be grouped together,"[1059] and "data" is "recorded information, regardless of form or the media on which the data is recorded."[1060]

411. *Providing Accountability Through Transparency Act*. The Providing Accountability Through Transparency Act requires each agency, in providing notice of a rulemaking, to post online a brief plain-language summary of the proposed rule.[1061] Accordingly, the Commission will publish the required summary of this Notice on https://www.fcc.gov/proposed-rulemakings.

412. *Additional Information.* For additional information on this proceeding, contact Carolyn Mahoney, Acting Division Chief, Satellite Programs and Policy Division, at carolyn.mahoney@FCC.gov or 202-418-7168 or Brandon Padgett, Acting Associate Division Chief, Satellite Programs and Policy Division, at brandon.padgett@fcc.gov or 202-418-1377.

VI. ORDERING CLAUSES

413. IT IS ORDERED, pursuant to sections 4(i), 4(j), 7(a), 301, 303, 307, 308, 309, 310, 312, 316, 332 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 154(j), 157(a), 301, 303, 307, 308, 309, 310, 312, 316, 332, that this Report and Order and Further Notice of Proposed Rulemaking ARE ADOPTED.[1062]

414. IT IS FURTHER ORDERED that this Report and Order SHALL BE effective 60 days after publication in the Federal Register, except that sections 9.10, 9.18, and 100.1 through 100.305, which may contain new or modified information collection requirements, will not become effective until the Office of Management and Budget completes review of any information collection requirements that the Space Bureau determines is required under the Paperwork Reduction Act. The Commission directs

[1055] Congress enacted the OPEN Government Data Act as Title II of the Foundations for Evidence-Based Policymaking Act of 2018, Pub. L. No. 115-435 (2019), §§ 201-202.

[1056] 44 U.S.C. §§ 3502(20), (22) (definitions of "open Government data asset" and "public data asset"), 3506(b)(6)(B) (public availability).

[1057] OMB has not yet issued final guidance.

[1058] 44 U.S.C. § 3502(22).

[1059] 44 U.S.C. § 3502(17).

[1060] 44 U.S.C. § 3502(16).

[1061] 5 U.S.C. § 553(b)(4). The Providing Accountability Through Transparency Act, Pub. L. No. 118-9 (2023), amended section 553(b) of the Administrative Procedure Act.

[1062] Pursuant to Executive Order 14215, 90 Fed. Reg. 10447 (Feb. 20, 2025), this regulatory action has been determined to be not significant under Executive Order 12866, 58 Fed. Reg. 68708 (Dec. 28, 1993).

the Space Bureau to announce the effective date for sections 9.10, 9.18, and 100.1 through 100.305, by publication of a document in the Federal Register.

415. IT IS FURTHER ORDERED that if no petitions for reconsideration or applications for review are timely filed, the proceedings in IB Docket 22-272 shall be TERMINATED and the dockets will be CLOSED.

416. IT IS FURTHER ORDERED that the Office of the Secretary, SHALL SEND a copy of this Report and Order and Further Notice of Proposed Rulemaking, including the Final Regulatory Flexibility Act Analysis and Initial Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration, in accordance with Section 603(a) of the Regulatory Flexibility Act.

417. IT IS FURTHER ORDERED that the Commission's Office of the Managing Director, Performance Program Management, SHALL SEND a copy of this Report and Order in a report to be sent to Congress and the Government Accountability Office pursuant to the Congressional Review Act, *see* 5 U.S.C. § 801(a)(1)(A).

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

Final Rules

For the reasons discussed, the Federal Communications Commission amends title 47 of the Code of Federal Regulations to modify part 5 and part 9, remove part 25, and add parts 75 and 100, as follows:

1. Amend part 5 as follows:

PART 5 – EXPERIMENTAL RADIO SERVICE

2. Section 5.64(b) is amended to read as follows:

Except where the satellite system has already been authorized by the FCC, applicants for an experimental authorization involving a satellite system must submit the required information in section 100.111 and comply with the rules in sections 100.260 and 100.261 of the Commission's rules.

3. Amend part 9 to read as follows:

PART 9 – 911 REQUIREMENTS

4. Amend § 9.10 by revising paragraph (t)(1) to read as follows:

§ 9.10 911 Service.

(t) *Interim 911 requirements for supplemental coverage from space -*

(1) *Supplemental coverage from space.* For purposes of this paragraph (t), *supplemental coverage from space (SCS)* has the same meaning as in part 100, subpart A, of this chapter; *SCS 911 calls* are 911 calls (as defined in § 9.3) that are carried over satellite facilities pursuant to a CMRS provider's SCS arrangement; and an *SCS 911 text message* is a 911 text message (as defined in paragraph (q)(9) of this section) that is carried over satellite facilities pursuant to a CMRS provider's SCS arrangement.

5. Amend § 9.18 by revising paragraph (a) read as follows:

§ 9.18 Emergency Call Center Service.

(a) Providers of Mobile-Satellite Service to end-user customers (47 CFR part 100, subparts A through D) must provide Emergency Call Center service to the extent that they offer real-time, two way switched voice service that is interconnected with the public switched network and use an in-network switching facility which enables the provider to reuse frequencies and/or accomplish seamless hand-offs of subscriber calls. Emergency Call Center personnel must determine the emergency caller's phone number and location and then transfer or otherwise redirect the call to an appropriate public safety answering point. Providers of Mobile-Satellite Services that use earth terminals that are not capable of use while in motion are exempt from providing Emergency Call Center service for such terminals.

6. Remove part 25.

PART 25 – [REMOVED]

7. Add part 75 to read as follows:

PART 75 – SATELLITE COMMUNICATIONS VIDEO AND AUDIO PROGRAMMING OBLIGATIONS

Sec.

75.601 Equal employment opportunities.

75.701 Other DBS Public interest obligations

75.702 Other SDARS Public interest obligations.

AUTHORITY: 47 U.S.C. 154, 301, 302, 303, 307, 309, 310, 319, 332, 605, and 721, unless otherwise noted.

§ **75.601 Equal employment opportunities.**

Notwithstanding other EEO provisions within these rules, an entity that uses an owned or leased Fixed-Satellite Service or Direct Broadcast Satellite Service or 17/24 GHz Broadcasting-Satellite Service facility (operating under this part) to provide video programming directly to the public on a subscription basis must comply with the equal employment opportunity requirements set forth in part 76, subpart E, of this chapter, if such entity exercises control (as defined in part 76, subpart E, of this chapter) over the video programming it distributes. Notwithstanding other EEO provisions within these rules, a licensee or permittee of a direct broadcast satellite station operating as a broadcaster, and a licensee or permittee in the satellite DARS service, must comply with the equal employment opportunity requirements set forth in 47 CFR part 73.

§ 75.701 Other DBS Public interest obligations.

(a) DBS providers are subject to the public interest obligations set forth in paragraphs (b), (c), (d), (e) and (f) of this section. As used in this section, DBS providers are any of the following:

(1) Entities licensed to operate satellites in the 12.2 to 12.7 GHz DBS frequency bands; or

(2) Entities licensed to operate satellites in the Ku band Fixed-Satellite Service and that sell or lease capacity to a video programming distributor that offers service directly to consumers providing a sufficient number of channels so that four percent of the total applicable programming channels yields a set aside of at least one channel of non commercial programming pursuant to paragraph (e) of this section, or

(3) Non U.S. licensed satellite operators in the Ku band that offer video programming directly to consumers in the United States pursuant to an earth station license issued under part 100 of this title and that offer a sufficient number of channels to consumers so that four percent of the total applicable programming channels yields a set aside of one channel of noncommercial programming pursuant to paragraph (e) of this section, or

(4) Entities licensed to operate satellites in the 17/24 GHz BSS that offer video programming directly to consumers or that sell or lease capacity to a video programming distributor that offers service directly to consumers providing a sufficient number of channels so that four percent of the total applicable programming channels yields a set aside of at least one channel of noncommercial programming pursuant to paragraph (e) of this section, or

(5) Non U.S. licensed satellite operators in the 17/24 GHz BSS that offer video programming directly to consumers in the United States or that sell or lease capacity to a video programming distributor that offers service directly to consumers in the United States pursuant to an earth station license issued under part 100 of this title and that offer a sufficient number of channels to consumers so that four percent of the total applicable programming channels yields a set aside of one channel of noncommercial programming pursuant to paragraph (e) of this section.

(b) Political broadcasting requirements—

(1) Legally qualified candidates for public office for purposes of this section are as defined in § 73.1940 of this chapter.

(2) DBS origination programming is defined as programming (exclusive of broadcast signals) carried on a DBS facility over one or more channels and subject to the exclusive control of the DBS provider.

(3) ***Reasonable access.***

(i) DBS providers must comply with section 312(a)(7) of the Communications Act of 1934, as amended, by allowing reasonable access to, or permitting purchase of reasonable amounts of time for, the use of their facilities by a legally qualified candidate for federal elective office on behalf of his or her candidacy.

(ii) ***Weekend access.*** For purposes of providing reasonable access, DBS providers shall make facilities available for use by federal candidates on the weekend before the election if the DBS provider has provided similar access to commercial advertisers during the year preceding the relevant election period. DBS providers shall not discriminate between candidates with regard to weekend access.

(4) ***Use of facilities; equal opportunities.*** DBS providers must comply with section 315 of the Communications Act of 1934, as amended, by providing equal opportunities to legally qualified candidates for DBS origination programming.

(i) ***General requirements.*** Except as otherwise indicated in § 75.701(b)(3), no DBS provider is required to permit the use of its facilities by any legally qualified candidate for public office, but if a DBS provider shall permit any such candidate to use its facilities, it shall afford equal opportunities to all other candidates for that office to use such facilities. Such DBS provider shall have no power of censorship over the material broadcast by any such candidate. Appearance by a legally qualified candidate on any:

(A) Bona fide newscast;

(B) Bona fide news interview;

(C) Bona fide news documentary (if the appearance of the candidate is incidental to the presentation of the subject or subjects covered by the news documentary); or

(D) On the spot coverage of bona fide news events (including, but not limited to political conventions and activities incidental thereto) shall not be deemed to be use of a DBS provider's facility. (Section 315(a) of the Communications Act.)

(ii) ***Uses.*** As used in this section and § 75.701(c), the term “use” means a candidate appearance (including by voice or picture) that is not exempt under paragraphs (b)(3)(i)(A) through (b)(3)(i)(D) of this section.

(iii) ***Timing of request.*** A request for equal opportunities must be submitted to the DBS provider within 1 week of the day on which the first prior use giving rise to the right of equal opportunities occurred: Provided, however, That where the person was not a candidate at the time of such first prior use, he or she shall submit his or her request within 1 week of the first subsequent use after he or she has become a legally qualified candidate for the office in question.

(iv) ***Burden of proof.*** A candidate requesting equal opportunities of the DBS provider or complaining of noncompliance to the Commission shall have the burden of proving that he or she and his or her opponent are legally qualified candidates for the same public office.

(v) ***Discrimination between candidates.*** In making time available to candidates for public office, no DBS provider shall make any discrimination between candidates in practices, regulations, facilities, or services for or in connection with the service rendered pursuant to this part, or make or give any preference to any candidate for public office or subject any such candidate to any prejudice or disadvantage; nor shall any DBS provider make any contract or other agreement that shall have the effect of permitting any legally qualified candidate for any public office to use DBS origination programming to the exclusion of other legally qualified candidates for the same public office.

(c) ***Candidate rates*** —

(1) ***Charges for use of DBS facilities.*** The charges, if any, made for the use of any DBS facility by

any person who is a legally qualified candidate for any public office in connection with his or her campaign for nomination for election, or election, to such office shall not exceed:

(i) During the 45 days preceding the date of a primary or primary runoff election and during the 60 days preceding the date of a general or special election in which such person is a candidate, the lowest unit charge of the DBS provider for the same class and amount of time for the same period.

(A) A candidate shall be charged no more per unit than the DBS provider charges its most favored commercial advertisers for the same classes and amounts of time for the same periods. Any facility practices offered to commercial advertisers that enhance the value of advertising spots must be disclosed and made available to candidates upon equal terms. Such practices include but are not limited to any discount privileges that affect the value of advertising, such as bonus spots, time sensitive make goods, preemption priorities, or any other factors that enhance the value of the announcement.

(B) The Commission recognizes non preemptible, preemptible with notice, immediately preemptible and run of schedule as distinct classes of time.

(C) DBS providers may establish and define their own reasonable classes of immediately preemptible time so long as the differences between such classes are based on one or more demonstrable benefits associated with each class and are not based solely upon price or identity of the advertiser. Such demonstrable benefits include, but are not limited to, varying levels of preemption protection, scheduling flexibility, or associated privileges, such as guaranteed time sensitive make goods. DBS providers may not use class distinctions to defeat the purpose of the lowest unit charge requirement. All classes must be fully disclosed and made available to candidates.

(D) DBS providers may establish reasonable classes of preemptible with notice time so long as they clearly define all such classes, fully disclose them and make them available to candidates.

(E) DBS providers may treat non preemptible and fixed position as distinct classes of time provided that they articulate clearly the differences between such classes, fully disclose them, and make them available to candidates.

(F) DBS providers shall not establish a separate, premium priced class of time sold only to candidates. DBS providers may sell higher priced non preemptible or fixed time to candidates if such a class of time is made available on a bona fide basis to both candidates and commercial advertisers, and provided such class is not functionally equivalent to any lower priced class of time sold to commercial advertisers.

(G) [Reserved]

(H) Lowest unit charge may be calculated on a weekly basis with respect to time that is sold on a weekly basis, such as rotations through particular programs or dayparts. DBS providers electing to calculate the lowest unit charge by such a method must include in that calculation all rates for all announcements scheduled in the rotation, including announcements aired under long term advertising contracts. DBS providers may implement rate increases during election periods only to the extent that such increases constitute “ordinary business practices,” such as seasonal program changes or changes in audience ratings.

(I) DBS providers shall review their advertising records periodically throughout the election period to determine whether compliance with this section requires that candidates receive rebates or credits. Where necessary, DBS providers shall issue such rebates or credits promptly.

(J) Unit rates charged as part of any package, whether individually negotiated or generally available to all advertisers, must be included in the lowest unit charge calculation for the same class and length of time in the same time period. A candidate cannot be required to purchase advertising in every program or daypart in a package as a condition for obtaining package unit rates.

(K) DBS providers are not required to include non-cash promotional merchandising incentives in lowest unit charge calculations; provided, however, that all such incentives must be offered

to candidates as part of any purchases permitted by the system. Bonus spots, however, must be included in the calculation of the lowest unit charge calculation.

(L) Make goods, defined as the rescheduling of preempted advertising, shall be provided to candidates prior to election day if a DBS provider has provided a time sensitive make good during the year preceding the pre-election periods, respectively set forth in paragraph (c)(1)(i) of this section, to any commercial advertiser who purchased time in the same class.

(M) DBS providers must disclose and make available to candidates any make good policies provided to commercial advertisers. If a DBS provider places a make good for any commercial advertiser or other candidate in a more valuable program or daypart, the value of such make good must be included in the calculation of the lowest unit charge for that program or daypart.

(ii) At any time other than the respective periods set forth in paragraph (c)(1)(i) of this section, DBS providers may charge legally qualified candidates for public office no more than the charges made for comparable use of the facility by commercial advertisers. The rates, if any, charged all such candidates for the same office shall be uniform and shall not be rebated by any means, direct or indirect. A candidate shall be charged no more than the rate the DBS provider would charge for comparable commercial advertising. All discount privileges otherwise offered by a DBS provider to commercial advertisers must be disclosed and made available upon equal terms to all candidates for public office.

(2) If a DBS provider permits a candidate to use its facilities, it shall make all discount privileges offered to commercial advertisers, including the lowest unit charges for each class and length of time in the same time period and all corresponding discount privileges, available on equal terms to all candidates. This duty includes an affirmative duty to disclose to candidates information about rates, terms, conditions and all value enhancing discount privileges offered to commercial advertisers, as provided herein. DBS providers may use reasonable discretion in making the disclosure; provided, however, that the disclosure includes, at a minimum, the following information:

(i) A description and definition of each class of time available to commercial advertisers sufficiently complete enough to allow candidates to identify and understand what specific attributes differentiate each class;

(ii) A description of the lowest unit charge and related privileges (such as priorities against preemption and make goods prior to specific deadlines) for each class of time offered to commercial advertisers;

(iii) A description of the DBS provider's method of selling preemptible time based upon advertiser demand, commonly known as the “current selling level,” with the stipulation that candidates will be able to purchase at these demand generated rates in the same manner as commercial advertisers;

(iv) An approximation of the likelihood of preemption for each kind of preemptible time; and

(v) An explanation of the DBS provider's sales practices, if any, that are based on audience delivery, with the stipulation that candidates will be able to purchase this kind of time, if available to commercial advertisers.

(3) Once disclosure is made, DBS providers shall negotiate in good faith to actually sell time to candidates in accordance with the disclosure.

(d) ***Political file.***

(1) Each DBS operator engaged in origination programming shall maintain, and make available for public inspection, a complete record of a request to purchase adverting time that:

(i) Is made by or on behalf of a legally qualified candidate for public office; or

(ii) Communicates a message relating to any political matter of national importance, including:

(A) A legally qualified candidate;

(B) Any election to Federal office; or

(C) A national legislative issue of public importance.

(2) A record maintained under this paragraph shall contain information regarding:

(i) Whether the request to purchase advertising time is accepted or rejected by the DBS operator;

(ii) The rate charged for the advertising time;

(iii) The date and time on which the communication is aired;

(iv) The class of time that is purchased;

(v) The name of the candidate to which the communication refers and the office to which the candidate is seeking election, the election to which the communication refers, or the issue to which the communication refers (as applicable);

(vi) In the case of a request made by, or on behalf of, a candidate, the name of the candidate, the authorized committee of the candidate, and the treasurer of such committee; and

(vii) In the case of any other request, the name of the person purchasing the time, the name, address, and phone number of a contact person for such person, and a list of the chief executive officers or members of the executive committee or of the board of directors of such person.

(3) When free time is provided for use by or on behalf of candidates, a record of the free time provided shall be placed in the political file.

(4) All records required by this paragraph shall be placed in the online public file hosted by the Commission as soon as possible and shall be retained for a period of two years. As soon as possible means immediately absent unusual circumstances.

(e) ***Commercial limits in children's programs.***

(1) No DBS provider shall air more than 10.5 minutes of commercial matter per hour during children's programming on weekends, or more that 12 minutes of commercial matter per hour on week days.

(2) This rule shall not apply to programs aired on a broadcast television channel which the DBS provider passively carries, or to channels over which the DBS provider may not exercise editorial control, pursuant to 47 U.S.C. 335(b)(3).

(3) DBS providers airing children's programming must maintain in the online file hosted by the Commission records sufficient to verify compliance with this rule. Such records must be maintained for a period sufficient to cover the limitations period specified in 47 U.S.C. 503(b)(6)(B).

(4) *Commercial matter* means airtime sold for purposes of selling a product or service.

(5) For purposes of this section, children's programming refers to programs originally produced and broadcast primarily for an audience of children 12 years old and younger.

(f) Carriage obligation for noncommercial programming—

(1) ***Reservation requirement.*** DBS providers shall reserve four percent of their channel capacity exclusively for use by qualified programmers for noncommercial programming of an educational or informational nature. Channel capacity shall be determined annually by calculating, based on measurements taken on a quarterly basis, the average number of channels available for video programming on all satellites licensed to the provider during the previous year. DBS providers may use this reserved capacity for any purpose until such time as it is used for noncommercial educational or informational programming.

(2) ***Qualified programmer.*** For purposes of these rules, a qualified programmer is:

(i) A noncommercial educational broadcast station as defined in section 397(6) of the Communications Act of 1934, as amended,

(ii) A public telecommunications entity as defined in section 397(12) of the Communications Act of 1934, as amended,

(iii) An accredited nonprofit educational institution or a governmental organization engaged in the formal education of enrolled students (A publicly supported educational institution must be accredited by the appropriate state department of education; a privately controlled educational institution must be accredited by the appropriate state department of education or the recognized regional and national accrediting organizations), or

(iv) A nonprofit organization whose purposes are educational and include providing educational and instructional television material to such accredited institutions and governmental organizations.

(v) Other noncommercial entities with an educational mission.

(3) ***Editorial control.***

(i) A DBS operator will be required to make capacity available only to qualified programmers and may select among such programmers when demand exceeds the capacity of their reserved channels.

(ii) A DBS operator may not require the programmers it selects to include particular programming on its channels.

(iii) A DBS operator may not alter or censor the content of the programming provided by the qualified programmer using the channels reserved pursuant to this section.

(4) Non-commercial channel limitation. A DBS operator cannot initially select a qualified programmer to fill more than one of its reserved channels except that, after all qualified entities that have sought access have been offered access on at least one channel, a provider may allocate additional channels to qualified programmers without having to make additional efforts to secure other qualified programmers.

(5) ***Rates, terms and conditions.***

(i) In making the required reserved capacity available, DBS providers cannot charge rates that exceed costs that are directly related to making the capacity available to qualified programmers. Direct costs include only the cost of transmitting the signal to the uplink facility and uplinking the signal to the satellite.

(ii) Rates for capacity reserved under paragraph (a) of this section shall not exceed 50 percent of the direct costs as defined in this section.

(iii) Nothing in this section shall be construed to prohibit DBS providers from negotiating rates with qualified programmers that are less than 50 percent of direct costs or from paying qualified programmers for the use of their programming.

(iv) DBS providers shall reserve discrete channels and offer these to qualifying programmers at consistent times to fulfill the reservation requirement described in these rules.

(6) ***Public file.***

(i) In addition to the political file requirements in § 75.701, each DBS provider shall maintain in the online file hosted by the Commission a complete and orderly record of:

(A) Quarterly measurements of channel capacity and yearly average calculations on which it bases its four percent reservation, as well as its response to any capacity changes;

(B) A record of entities to whom noncommercial capacity is being provided, the amount of capacity being provided to each entity, the conditions under which it is being provided and the rates, if any, being paid by the entity;

(C) A record of entities that have requested capacity, disposition of those requests and reasons for the disposition.

(D) Each satellite carrier shall provide an up-to-date email address for carriage election notice submissions and an up-to-date phone number for carriage-related questions. Each satellite carrier is responsible for the continuing accuracy and completeness of the information furnished. It must respond to questions from broadcasters as soon as is reasonably possible.

(ii) All records required by paragraph (i) of this paragraph shall be placed in the online file hosted by the Commission as soon as possible and shall be retained for a period of two years.

(iii) Each DBS provider must also place in the online file hosted by the Commission the records required to be placed in the public inspection file by § 75.701(e) (commercial limits in children's programs) and by § 75.601 and 47 CFR part 76, subpart E (equal employment opportunity requirements) and retain those records for the period required by those rules.

(iv) Each DBS provider must provide a link to the online public inspection file hosted on the Commission's Web site from the home page of its own Web site, if the provider has a Web site, and provide on its Web site contact information for a representative who can assist any person with disabilities with issues related to the content of the public files. Each DBS provider also must include in the online public file hosted by the Commission the address of the provider's local public file, if the provider retains documents in the local public file that are not available in the Commission's online file, and the name, phone number, and email address of the provider's designated contact for questions about the public file.

(7) ***Effective date.*** DBS providers are required to make channel capacity available pursuant to this section upon the effective date. Programming provided pursuant to this rule must be available to the public no later than six months after the effective date.

§ 75.702 Other SDARS Public interest obligations.

(a) Political broadcasting requirements. The following political broadcasting rules shall apply to all SDARS licensees: 47 CFR 73.1940 (Legally qualified candidates for public office), 73.1941 (Equal opportunities), 73.1942 (Candidate rates), and 73.1944 (Reasonable access).

(b) Political file.

(1) Each SDARS licensee engaged in origination programming shall maintain, and make available for public inspection, a complete record of a request to purchase broadcast time that:

(i) Is made by or on behalf of a legally qualified candidate for public office; or

(ii) Communicates a message relating to any political matter of national importance, including:

(A) A legally qualified candidate;

(B) Any election to Federal office; or

(C) A national legislative issue of public importance.

(2) A record maintained under this paragraph shall contain information regarding:

(i) Whether the request to purchase broadcast time is accepted or rejected by the licensee;

(ii) The rate charged for the broadcast time;

(iii) The date and time on which the communication is aired;

(iv) The class of time that is purchased;

(v) The name of the candidate to which the communication refers and the office to which the candidate is seeking election, the election to which the communication refers, or the issue to which the communication refers (as applicable);

(vi) In the case of a request made by, or on behalf of, a candidate, the name of the candidate, the authorized committee of the candidate, and the treasurer of such committee; and

(vii) n the case of any other request, the name of the person purchasing the time, the name, address, and phone number of a contact person for such person, and a list of the chief executive officers or members of the executive committee or of the board of directors of such person.

(3) When free time is provided for use by or on behalf of candidates, a record of the free time provided shall be placed in the political file.

(4) All records required by this paragraph shall be placed in the online public file hosted by the Commission as soon as possible and shall be retained for a period of two years. As soon as possible means immediately absent unusual circumstances.

(c) Public inspection file.

(1) Each SDARS applicant or licensee must also place in the online public file hosted by the Commission the records required to be placed in the public inspection file by 47 CFR 75.601 and 73.2080 (equal employment opportunities (EEO)) and retain those records for the period required by those rules.

(2) Each SDARS licensee must provide a link to the public inspection file hosted on the Commission's Web site from the home page of its own Web site, if the licensee has a Web site, and provide on its Web site contact information for a representative who can assist any person with disabilities with issues related to the content of the public files. Each SDARS licensee also must include in the online public file the address of the licensee's local public file, if the licensee retains documents in the local public file that are not available in the Commission's online file, and the name, phone number, and email address of the licensee's designated contact for questions about the public file.

8. Add part 100 to read as follows:

PART 100 – SPACE AND EARTH STATION SERVICES

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AUTHORITY: 47 U.S.C. 154, 301, 302, 303, 307, 309, 310, 319, 332, 605, and 721, unless otherwise noted.

Subpart A – General

§ 100.1 Basis and Scope.

The rules and regulations in this part are in addition to and supplement the rules and regulations contained in or to be added to, other parts of this chapter currently in force, or which may subsequently be promulgated, and which are applicable to matters relating to communications by space stations and earth stations.

§ 100.2 Station Authorization Required.

No person shall use or operate apparatus for the transmission of energy or communications or signals by space or earth stations except under, and in accordance with, an appropriate authorization granted by the Federal Communications Commission.

§ 100.3 Definitions.

1.5/1.6 GHz Mobile-Satellite Service. Mobile-Satellite Service that operates in the 1525-1559 MHz space-to-Earth band and the 1626.5-1660.5 MHz Earth-to-space band, or any portion thereof.

1.6/2.4 GHz Mobile-Satellite Service. A Mobile-Satellite Service that operates in the 1610-1626.5 MHz and 2483.5-2500 MHz bands, or in any portion thereof.

2 GHz Mobile-Satellite Service. A Mobile-Satellite Service that operates in the 2000-2020 MHz and 2180-2200 MHz bands, or in any portion thereof.

17/24 GHz Broadcasting-Satellite Service (17/24 GHz BSS). A radiocommunication service involving transmission from one or more feeder-link earth stations to other earth stations via geostationary satellites, in the 17.3-17.7 GHz (space-to-Earth) (domestic allocation), 17.3-17.8 GHz (space-to-Earth) (international allocation) and 24.75-25.25 GHz (Earth-to-space) bands. For purposes of the application processing provisions of this part, the 17/24 GHz BSS is a GSO-like service. Unless specifically stated otherwise, 17/24 GHz BSS systems are subject to the rules in this part applicable to Fixed-Satellite Service.

Ancillary Terrestrial Component (ATC). A terrestrial communications network used in conjunction with a qualifying satellite network system authorized pursuant to these rules and the conditions established in the Orders issued in IB Docket No. 01-185, *Flexibility for Delivery of Communications by Mobile-Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Band.*

Ancillary Terrestrial Component (ATC) base station. A terrestrial fixed facility used to transmit communications to or receive communications from one or more ancillary terrestrial component mobile terminals.

Ancillary Terrestrial Component (ATC) mobile terminal. A terrestrial mobile facility used to transmit communications to or receive communications from an ancillary terrestrial component base station or a space station.

Blanket license. A blanket license is a license for:

(a) Multiple earth stations, that do not meet the definition of an Immovable earth station, in the FSS or MSS, or for SDARS terrestrial repeaters, that may be operated anywhere within a geographic area authorized in the license;

(b) Multiple space stations in non-geostationary-orbit; or

(c) Multiple space stations in geostationary-orbit at a single orbital location.

Contiguous United States (CONUS). For purposes of subparts B and C of this part, the contiguous United States consists of the contiguous 48 states and the District of Columbia as defined by Partial Economic Areas Nos. 1-41, 43-211, 213-263, 265-297, 299-359, and 361-411, which includes areas within 12 nautical miles of the U.S. Gulf coastline. In this context, the rest of the United States includes the Honolulu, Anchorage, Kodiak, Fairbanks, Juneau, Puerto Rico, Guam-Northern Mariana Islands, U.S.

Virgin Islands, American Samoa, and the Gulf of America PEAs (Nos. 42, 212, 264, 298, 360, 412-416). *See* § 27.6(m) of this chapter.

CONUS Arc. Orbital locations in the GSO orbit from 53° W.L. to 141° W.L. from which geostationary satellites can provide service to CONUS with a minimum elevation angle of 5°.

Conventional C-band. The 3700-4200 MHz (space-to-Earth) and 5925-6425 MHz (Earth-to-space) FSS frequency bands.

Conventional Ka-band. The 18.3-18.8 GHz (space-to-Earth), 19.7-20.2 GHz (space-to-Earth), 28.35-28.6 GHz (Earth-to-space), and 29.25-30.0 GHz (Earth-to-space) frequency bands, which the Commission has designated as primary for GSO FSS operation.

Conventional Ku-band. The 11.7-12.2 GHz (space-to-Earth) and 14.0-14.5 GHz (Earth-to-space) FSS frequency bands.

Direct Broadcast Satellite (DBS) Service. A radiocommunication service in which signals transmitted or retransmitted by Broadcasting-Satellite Service space stations in the 12.2-12.7 GHz band are intended for direct reception by subscribers or the general public. For the purposes of this definition, the term direct reception includes individual reception and community reception.

Earth Station Aboard Aircraft (ESAA). An earth station operating aboard an aircraft that receives from and transmits to Fixed-Satellite Service space stations.

Earth Station in Motion (ESIM). A term that collectively designates ESV, VMES and ESAA earth stations, as defined in this section.

Earth Station on Vessel (ESV). An earth station onboard a craft designed for traveling on water, receiving from and transmitting to Fixed-Satellite Service space stations.

Equivalent diameter. When circular aperture reflector antennas are employed, the size of the antenna is generally expressed as the diameter of the antenna's main reflector. When non-reflector or non-circular-aperture antennas are employed, the equivalent diameter is the diameter of a hypothetical circular-aperture antenna with the same aperture area as the actual antenna. For example, an elliptical aperture antenna with major axis a and minor axis b will have an equivalent diameter of $[a \times b]^{1/2}$. A rectangular aperture antenna with length l and width w will have an equivalent diameter of $[4(l \times w)/\pi]^{1/2}$.

Equivalent Power Flux Density (EPFD). The sum of the power flux densities produced at a geostationary-satellite receive station in the geostationary orbit or receiving earth station on the Earth's surface, as appropriate, by all the transmit stations within a non-geostationary-orbit Fixed-Satellite Service system, taking into account the off-axis discrimination of a reference receiving antenna assumed to be pointing in its nominal direction.

The equivalent power flux density, in $dB(W/m^2)$ in the reference bandwidth, is calculated using the following formula:

Where:

N_a is the number of transmit stations in the non-geostationary orbit system that are visible from the GSO receive station considered on the Earth's surface or in the geostationary orbit, as appropriate;

i is the index of the transmit station considered in the non-geostationary orbit system;

P_i is the RF power at the input of the antenna of the transmit station, considered in the non-geostationary orbit system in dBW in the reference bandwidth;

θ_i is the off-axis angle between the boresight of the transmit station considered in the non-geostationary orbit system and the direction of the GSO receive station;

$G_t(\theta_i)$ is the transmit antenna gain (as a ratio) of the station considered in the non-geostationary orbit

system in the direction of the GSO receive station;

d_i is the distance in meters between the transmit station considered in the non-geostationary orbit system and the GSO receive station;

φ_i is the off-axis angle between the boresight of the antenna of the GSO receive station and the direction of the *i*th transmit station considered in the non-geostationary orbit system;

$G_r(\theta_i)$ is the receive antenna gain (as a ratio) of the GSO receive station in the direction of the *i*th transmit station considered in the non-geostationary orbit system;

$G_{r,max}$ is the maximum gain (as a ratio) of the antenna of the GSO receive station.

Extended C-band. The 3600-3700 MHz (space-to-Earth), 5850-5925 MHz (Earth-to-space), and 6425-6725 MHz (Earth-to-space) FSS frequency bands.

Extended Ka-band. The 17.3-18.3 GHz (space-to-Earth), 18.8-19.4 GHz (space-to-Earth), 19.6-19.7 GHz (space-to-Earth), 27.5-28.35 GHz (Earth-to-space), and 28.6-29.1 GHz (Earth-to-space) FSS frequency bands.

Extended Ku-band. The 10.95-11.2 GHz (space-to-Earth), 11.45-11.7 GHz (space-to-Earth), and 13.75-14.0 GHz bands (Earth-to-space) FSS frequency bands.

Fixed earth station. An earth station intended to be used at a fixed position. The position may be a specified fixed point or any fixed point within a specified area.

Geographically independent area (GIA). Any of the following six areas:

(1) CONUS;

(2) Alaska;

(3) Hawaii;

(4) American Samoa;

(5) Puerto Rico/U.S. Virgin Islands; and

(6) Guam/Northern Mariana Islands.

Geostationary-orbit (GSO) satellite. A geosynchronous satellite whose circular and direct orbit lies in the plane of the Earth's equator and which thus remains fixed relative to the Earth; by extension, a geosynchronous satellite which remains approximately fixed relative to the Earth.

GSO satellite system. A system composed of one or more geostationary-orbit satellites operating together at a single orbital location and under a single space station call sign.

Hosted space station. A space station onboard a spacecraft that may be licensed independently of the hosting spacecraft.

Immovable earth station. An earth station, other than ESIM, VSAT, SCS, MES, or user terminal, registered pursuant to a Nationwide, Non-Site license or licensed as an individual location authorization that is located at a single fixed location.

Multi-orbit Satellite System. A system of two or more types of satellite system(s) operating together under one call sign.

Nationwide, Non-Site license. A single license for one or more Immovable Earth Stations which may locate and operate anywhere within the United States and its territories, subject to completion of any site-based registration and coordination procedures.

Network Control and Monitoring Center (NCMC). As used in part 100, a facility that has the capability to remotely control earth stations operating as part of a satellite network or system.

NGSO. Non-geostationary orbit.

NGSO FSS gateway earth station. An earth station or complex of multiple earth station antennas that supports the routing and switching functions of an NGSO FSS system and that does not originate or terminate communication traffic. An NGSO FSS gateway earth station may also be used for telemetry, tracking, and command transmissions.

NGSO satellite system. A system of one or more non-geostationary orbit satellites operating together under one call sign and that is not a Variable Trajectory Spacecraft System.

Non-Voice, Non-Geostationary (NVNG) Mobile-Satellite Service. A Mobile-Satellite Service reserved for use by non-geostationary satellites in the provision of non-voice communications in the 137-138 MHz (space-to-Earth), 148-150.05 MHz (Earth-to-space), 399.9-400.05 MHz (Earth-to-space), and 400.15-401 MHz (space-to-Earth) bands, which may include satellite links between land earth stations at fixed locations.

Permitted Space Station List. A list of all U.S.-licensed geostationary-orbit space stations providing Fixed-Satellite Service in the extended or conventional C-band, the extended or conventional Ku-band, the conventional Ka-band, or the 24.75-25.25 GHz band, as well as non-U.S.-licensed geostationary-orbit space stations approved for U.S. market access to provide Fixed-Satellite Service in the conventional C-band, conventional Ku-band, or 18.3-18.8 GHz, 19.7-20.2 GHz, 28.35-28.6 GHz, and 29.25-30.0 GHz bands.

Plane perpendicular to the GSO arc. The plane that is perpendicular to the "plane tangent to the GSO arc," as defined below, and includes a line between the earth station in question and the GSO space station that it is communicating with.

Plane tangent to the GSO arc. The plane defined by the location of an earth station's transmitting antenna and a line in the equatorial plane that is tangent to the GSO arc at the location of the GSO space station that the earth station is communicating with.

Power flux density (PFD). The amount of power flow through a unit area within a unit bandwidth. The units of power flux density are those of power spectral density per unit area, namely watts per hertz per square meter. These units are generally expressed in decibel form as dB(W/Hz/m^2), dB(W/m^2) in a 4 kHz band, or dB(W/m^2) in a 1 MHz band.

Power Spectral Density (PSD). The amount of an emission's transmitted carrier power applied at the antenna input falling within the stated bandwidth. The units of power spectral density are watts per hertz and are generally expressed in decibel form as dB(W/Hz) when measured in a 1 Hz bandwidth, dB(W/4kHz) when measured in a 4 kHz bandwidth, or dB(W/MHz) when measured in a 1 MHz bandwidth.

Protection areas. The geographic region within which a system (either satellite or terrestrial) is forbidden from transmitting signals to or from in order to avoid causing interference to protected systems in the area. Examples of protected systems include U.S. Department of War meteorological satellite systems or National Oceanic and Atmospheric Administration meteorological satellite systems, or both such systems, receiving signals from low earth orbiting satellites.

Replacement space station. A space station that is authorized to operate in the same frequency bands, with same coverage area, and with same operating parameters as the space station to be replaced, at an orbital location within 0.15° of the assigned location of a GSO space station to be replaced or in the authorized orbit of an existing NGSO space station to be replaced, and that is scheduled to be launched so that it will be brought into use at approximately the same time as, but no later than, the existing space station is retired.

Satellite Digital Audio Radio Service (SDARS). A radiocommunication service in which audio programming is digitally transmitted by one or more space stations directly to fixed, mobile, and/or portable stations, and which may involve complementary repeating terrestrial transmitters and telemetry, tracking and command facilities.

SCS earth stations. Any earth station used for the provision of supplemental coverage from space that requires a spectrum leasing arrangement.

Selected assignment. A spectrum assignment voluntarily identified by a 2 GHz MSS licensee at the time that the licensee's first 2 GHz Mobile-Satellite Service satellite reaches its intended orbit.

Shapeable antenna beam. A satellite transmit or receive antenna beam, the gain pattern of which can be modified at any time without physically repositioning a satellite antenna reflector.

Skew angle. The angle between the minor axis of an axially asymmetric antenna beam and the plane tangent to the GSO arc.

Spacecraft. A man-made vehicle which is intended to go beyond the major portion of the Earth's atmosphere.

Space station. A station located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the Earth's atmosphere.

Supplemental coverage from space (SCS). The provision of coverage to terrestrial wireless subscribers through an arrangement or agreement (see § 1.9047 of this chapter) between one or more NGSO or GSO operator(s) and one or more terrestrial wireless licensee(s), involving transmissions between space stations and SCS earth stations. NGSO and GSO operators and terrestrial wireless service licensees seeking to provide SCS must be authorized in compliance with § 100.113.

Two-degree spacing. Two-degree spacing refers to the angular separation in the GSO orbit, measured from the center of the earth, between adjacent co-frequency space stations. Under the Commission two-degree spacing requirements (see § 100.230 of this chapter), an earth station meeting the requirements of §§ 100.178 and 100.179 of this chapter communicating with a space station in the GSO orbit is presumed to be compatible with an adjacent space station that is two degrees away operating on the same frequencies.

Two-degree-compliant space station. A space station in the conventional or extended C-bands, the conventional or extended Ku-bands, the 24.75-25.25 GHz band, or the conventional or extended Ka-bands operating within the limits of the downlink EIRP density and/or PFD specified in § 100.230 and communicating with earth stations operating in conformance with the parameters specified in §§ 100.278 (Earth station antenna performance standards) and 100.279 (Earth station off-axis EIRP density).

Vehicle-Mounted Earth Station (VMES). An earth station, operating from a motorized vehicle that travels primarily on land, that receives from and transmits to Fixed-Satellite Service space stations and operates within the United States.

Variable Trajectory Space Station (VTSS) system. A system of one or more space stations either operating beyond the geosynchronous orbit or operating without fixed or predictable orbital patterns over the course of its lifetime and operating under one space station call sign. Variable Trajectory Space Station systems may include, but are not limited to, space stations on orbital transfer vehicles, rendezvous and proximity operations platforms, in-space servicing systems, and missions involving transit to, orbiting of, or operations on the moon or other celestial bodies.

§ 100.4 Incorporation by reference.

(a) Certain material is incorporated by reference into this part with the approval of the Director of the Federal Register under 5 U.S.C. 552(a) and 1 CFR part 51. All approved incorporation by reference (IBR) material is available for inspection at the FCC and the National Archives and Records Administration (NARA).

(b) International Telecommunication Union (ITU), Place des Nations, 1211 Geneva 20 Switzerland; *www.itu.int;* Voice: +41 22 730 5111; Fax: +41 22 733 7256; email: *itumail@itu.int*.

(1) ITU Radio Regulations, Volume 1: Articles, Article 21, "Terrestrial and space services sharing frequency bands above 1 GHz," Section V, "Limits of power flux-density from space stations," Edition of 2024, copyright 2024, *https://www.itu.int/pub/R-REG-RR-2024*. Incorporation by reference approved for § 100.222(a).

(2) ITU Radio Regulations, Volume 1: Articles, Article 22, "Space services," Section II, "Control of interference to geostationary-satellite systems," Edition of 2024, copyright 2024, *https://www.itu.int/pub/R-REG-RR-2024*. Incorporation by reference approved for §§ 100.222(a), 100.240(a).

(3) ITU Radio Regulations, Volume 2: Appendices, Appendix 5, Annex 1 "Coordination thresholds for sharing between MSS (space-to-Earth) and terrestrial services in the same frequency bands and between non-GSO MSS feeder links (space-to-Earth) and terrestrial services in the same frequency bands and between RDSS (space-to-Earth) and terrestrial services in the same frequency bands" Edition of 2024, copyright 2024, *https://www.itu.int/pub/R-REG-RR-2024*. Incorporation by reference approved for § 100.212.

(4) ITU Radio Regulations, Volume 2: Appendices, Appendix 30, "Provisions for all services and associated Plans and List for the broadcasting-satellite service in the frequency bands 11.7-12.2 GHz (in Region 3), 11.7-12.5 GHz (in Region 1) and 12.2-12.7 GHz (in Region 2)," Edition of 2024, copyright 2024, *https://www.itu.int/pub/R-REG-RR-2024*. Incorporation by reference approved for §§ 100.100, 100.142, 100.230, and 100.231.

(5) ITU Radio Regulations, Volume 2: Appendices, Appendix 30A, "Provisions and associated Plans and List for feeder links for the broadcasting-satellite service (11.7-12.5 GHz in Region 1, 12.2-12.7 GHz in Region 2 and 11.7-12.2 GHz in Region 3) in the frequency bands 14.5-14.8 GHz and 17.3-18.1 GHz in Regions 1 and 3, and 17.3-17.8 GHz in Region 2," Edition of 2024, copyright 2024, *https://www.itu.int/pub/R-REG-RR-2024*. Incorporation by reference approved for §§ 100.100, 100.142, 100.230, and 100.231.

(6) ITU Radio Regulations, Volume 2: Appendices, Appendix 30B, "Provisions and associated Plan for the fixed-satellite service in the frequency bands 4 500-4 800 MHz, 6 725-7 025 MHz, 10.70-10.95 GHz, 11.2-11.45 GHz and 12.75-13.25 GHz," Edition of 2024, copyright 2024, https://www.itu.int/pub/R-REG-RR-2024. Incorporation by reference approved for §§ 100.100 and 100.230

(7) ITU Radio Regulations, Volume 3: Resolutions and Recommendations, Resolution 76 (Rev.WRC-15), "Protection of geostationary fixed-satellite service and geostationary broadcasting-satellite service networks from the maximum aggregate equivalent power flux-density produced by multiple non-geostationary fixed-satellite service systems in frequency bands where equivalent power flux-density limits have been adopted," Edition of 2024, copyright 2024, *https://www.itu.int/pub/R-REG-RR-2024*. Incorporation by reference approved for § 100.222(a).

(8) ITU Radio Regulations, Volume 3: Resolutions and Recommendations, Resolution 85 (WRC-03), "Application of Article 22 of the Radio Regulations to the protection of geostationary fixed-satellite service and broadcasting-satellite service networks from non-geostationary fixed-satellite service systems," Edition of 2024, copyright 2024, *https://www.itu.int/pub/R-REG-RR-2024*. Incorporation by reference approved for § 100.222(b).

(9) Recommendation ITU-R M.1186-1 "Technical Considerations for the Coordination Between Mobile Satellite Service (MSS) Networks Utilizing Code Division Multiple Access (CDMA) and Other Spread Spectrum Techniques in the 1-3 GHz Band" (2006). Incorporation by reference approved for § 100.284.

(c) Radio Technical Commission for Maritime Services (RTCM). 2200 Wilson Blvd, Suite 102-109, Arlington, VA 22201; email: *info@rtcm.org*; website: *www.rtcm.org*.

(1) RTCM 12800.0, "Satellite Emergency Notification Devices (SENDs)," dated August 1, 2011. Incorporation by reference approved for § 100.2901.

§ 100.5 Cross-reference.

(a) Space and SCS earth stations providing SCS are subject to technical rules in parts 2, 22, 24, and 27 of

this chapter where applicable.

(b) Space and earth stations in the Experimental Radio Service may be subject to licensing under part 5 of this chapter.

(c) Space and earth stations in the 3700-4200 MHz band may be subject to transition rules in part 27 of this chapter.

(d) Ship earth stations in the Maritime Mobile-Satellite Service transmitting in the 1626.5-1646.5 MHz band are subject to licensing under part 80 of this chapter.

(e) Earth stations in the Aeronautical Mobile-Satellite (Route) Service are subject to licensing under part 87 of this chapter.

(f) Space and earth stations in the Amateur Satellite Service are licensed under part 97 of this chapter.

§ 100.6 Preemption of local zoning of earth stations.

(a) Any state or local zoning, land-use, building, or similar regulation that materially limits transmission or reception by satellite earth station antennas or imposes more than minimal costs on users of such antennas, is preempted unless the promulgating authority can demonstrate that such regulation is reasonable, except that nonfederal regulation of radio frequency emissions is not preempted by this section. For purposes of this paragraph (a), reasonable means that the local regulation:

(1) Has a clearly defined health, safety, or aesthetic objective that is stated in the text of the regulation itself; and

(2) Furthers the stated health, safety or aesthetic objective without unnecessarily burdening the federal interests in ensuring access to satellite services and in promoting fair and effective competition among competing communications service providers.

(b)

(1) Any state or local zoning, land-use, building, or similar regulation that affects the installation, maintenance, or use of a satellite earth station antenna that is two meters or less in diameter and is located or proposed to be located in any area where commercial or industrial uses are generally permitted by non-federal land-use regulation shall be presumed unreasonable and is therefore preempted subject to paragraph (b)(2) of this section. No civil, criminal, administrative, or other legal action of any kind shall be taken to enforce any regulation covered by this presumption unless the promulgating authority has obtained a waiver from the Commission pursuant to paragraph (e) of this section, or a final declaration from the Commission or a court of competent jurisdiction that the presumption has been rebutted pursuant to paragraph (b)(2) of this section.

(2) Any presumption arising from paragraph (b)(1) of this section may be rebutted upon a showing that the regulation in question:

(i) Is necessary to accomplish a clearly defined health or safety objective that is stated in the text of the regulation itself;

(ii) Is no more burdensome to satellite users than is necessary to achieve the health or safety objective; and

(iii) Is specifically applicable on its face to antennas of the class described in paragraph (b) of this section.

(c) Any person aggrieved by the application or potential application of a state or local zoning or other regulation in violation of paragraph (a) of this section may, after exhausting all nonfederal administrative remedies, file a petition with the Commission requesting a declaration that the state or local regulation in question is preempted by this section. Nonfederal administrative remedies, which do not include judicial appeals of administrative determinations, shall be deemed exhausted when:

(1) The petitioner's application for a permit or other authorization required by the state or local authority has been denied and any administrative appeal and variance procedure has been exhausted;

(2) The petitioner's application for a permit or other authorization required by the state or local authority has been on file for ninety days without final action;

(3) The petitioner has received a permit or other authorization required by the state or local authority that is conditioned upon the petitioner's expenditure of a sum of money, including costs required to screen, pole-mount, or otherwise specially install the antenna, greater than the aggregate purchase or total lease cost of the equipment as normally installed; or

(4) A state or local authority has notified the petitioner of impending civil or criminal action in a court of law and there are no more nonfederal administrative steps to be taken.

(d) Procedures regarding filing petitions requesting declaratory rulings and other related pleadings will be set forth in subsequent Public Notices. All allegations of fact contained in petitions and related pleadings must be supported by affidavit of a person or persons with personal knowledge thereof.

(e) Any state or local authority that wishes to maintain and enforce zoning or other regulations inconsistent with this section may apply to the Commission for a full or partial waiver of this section. Such waivers may be granted by the Commission in its sole discretion, upon a showing by the applicant that local concerns of a highly specialized or unusual nature create a necessity for regulation inconsistent with this section. No application for waiver shall be considered unless it specifically sets forth the particular regulation for which waiver is sought. Waivers granted in accordance with this section shall not apply to later-enacted or amended regulations by the local authority unless the Commission expressly orders otherwise.

(f) A satellite earth station antenna that is designed to receive direct broadcast satellite service, including direct-to-home satellite services, that is one meter or less in diameter or is located in Alaska is covered by the regulations in § 1.4000 of this chapter.

Subpart B – Applications and Licenses

GENERAL APPLICATION REQUIREMENTS

§ 100.100 Application filing requirements.

(a) All applications, notifications, or other filings must be filed electronically and submitted via the International Communications Filing System (ICFS), or any successor system designated by the Space Bureau.

(b) The Commission delegates authority to the Space Bureau to issue public notices directing changes to the form and format of all space station and earth station applications and other filings under this part.

(c) Space station applicants must submit the information required in §§ 100.110, 100.111, and 100.112 on FCC Form 312 – Main Form, Schedule O, and Schedule F. Petitioners filing a declaratory ruling seeking to access the U.S. market with a non-U.S. licensed space station must additionally submit any information required under § 100.114.

(d) Earth station applicants must submit the information required in §§ 100.120 and 100.121 on FCC Form 312 – Main Form and Schedule B.

(e) Applications for Commission consent to the assignment of a license or the transfer of control of a licensee, and notifications of assignment or transfer of control when permitted under this part, must be filed on FCC Form 312 – Main Form and Schedule A.

(f) Applicants may submit required or additional information as a supplement or exhibit to a contemporaneously-filed application if technical limitations prevent strict compliance with the application forms required by paragraphs (d) through (f) of this section.

(g) Application fees must be paid at the time of filing in ICFS or a successor system. A schedule of

application fees applicable to this part can be found at § 1.1107 in this chapter. Applicants filing under this chapter will be entitled to a refund of an application fee if, before the Commission has placed the application on public notice, the applicant notifies the Commission that it no longer wishes to keep its application on file and specifically requests a refund of the fee.

(h) Applicants must completely and accurately respond to all application questions and certifications.

(i) Each applicant is responsible for the continuing accuracy and completeness of information furnished in a pending application consistent with the requirements of § 1.65 of the Commission's rules and 100.137

§ 100.101 FCC Form 312 – Main Form.

(a) Applicants filing the FCC Form 312 – Main Form must include the following information:

(1) *Contact information*.

(i) The name, email, and phone number of the applicant and a designated contact, if different from the applicant; and

(ii) The name, mailing address, email, and telephone number of the person(s), including counsel, to whom inquiries or correspondence should be directed.

(2) *Ownership information*.

(i) *Ownership definitions and methodology.* Applicants under this section must use the definitions and methodology found in § 1.5000 of this chapter.

(ii) *Ownership.* Applicants must disclose the names, citizenship/place of organization, principal place of business, and mailing address of any individual or entity holding a 10% or greater direct or indirect equity or voting interest in the applicant, or a controlling interest, along with the percentages of those interests held.

(iii) *Officers and directors*. Applicants must provide the names, addresses, and citizenship of each individual officer and director of the applicant entity.

(iv) *Ownership diagram.* Applicants must provide a diagram illustrating the applicant's vertical ownership structure, including the direct and indirect equity and voting interests held by each individual and entity listed in response to paragraph (a)(2)(ii) of this section. For assignment and transfer of control applications, the ownership diagram must include both the pre-transaction and post-transaction ownership of the authorization holder.

(v) *Foreign ownership.* Applicants reporting foreign entities or individuals in compliance with the requirements of this section may be subject to further review at the Commission's discretion pursuant to other sections of the Communications Act.

(vi) *Continuing obligations*. Applicants and licensees are required to update the ownership information associated with a filed FCC Form 312 – Main Form to ensure that the disclosures submitted under this section are complete and accurate. Applicants and licensees must notify the Commission and provide updated ownership information in a supplement to the FCC Form 312 – Main Form if the change reflects: (1) a new or previously unreported foreign entity or individual in excess of the 10% threshold; (2) an increase in a reported percentage held by a foreign entity or individual; or (3) a change that the applicant or licensee or Commission may deem as significant to the public interest, convenience, and necessity. Updated ownership disclosures must be submitted in ICFS or a successor system within 30 days of the applicant's or licensee's knowledge of or effective date of the change.

(3) *Certifications*.

(i) A certification waiving any claim to the use or ownership of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise as required by 47 U.S.C. 304.

(ii) A certification that neither the applicant nor any party to the application is subject to a denial of federal benefits that includes FCC benefits pursuant to the Anti-Drug Act of 1988, 21 U.S.C. 862, because of a conviction for possession or distribution of a controlled substance.

(iii) An attestation under penalty of perjury that all information submitted on or associated with any FCC Form 312 – Main Form, or that will be associated with FCC Form 312 – Main Form, has been verified for accuracy and believed to be complete and accurate at the time of submission.

(b) A single FCC Form 312 – Main Form may be associated with multiple applications filed by the same licensee to meet the application requirement under § 100.100(d). If a licensee has a current FCC Form 312 – Main Form on file with the Commission in connection with an active license authorization when filing a subsequent application for authority, it may certify that its FCC Form 312 – Main Form on file is complete and accurate. Licensees may not incorporate a previously filed FCC Form 312 – Main form if it is not in compliance with paragraph (a)(2)(vi) of this section.

SPACE STATION APPLICATIONS

§ 100.110 General space station application requirements.

(a) Space station applicants requesting an authorization for license or petition for declaratory ruling for U.S. market access must submit the FCC Form 312 – Main Form, Schedule F, Schedule O and an orbital debris mitigation plan.

(b) Applicants must submit the following information:

(1) Type of authorization requested;

(2) Requested license term in years, if different than the default terms in § 100.148;

(3) A comprehensive statement describing the proposed system, including orbits, any service(s) to be provided (including the service areas), and planned operations; and

(4) A brief description of how the proposed operations will serve the public interest.

(c) An operator may apply for multiple GSO satellites under a single call sign so long as each satellite will operate at the same orbital location and all necessary information is provided for each space station listed in the application. To the extent that satellites in a GSO satellite system will be technically identical, the applicant may submit an application for a blanket license for those satellites that are technically identical. If the satellites and space stations in the GSO satellite system will not be technically identical, the applicant must provide the information required for each individual satellite.

(d) To the extent that satellites in an NGSO satellite system will be technically identical, the applicant may submit an application for a blanket license for those satellites that are technically identical. If the satellites and space stations in the NGSO satellite system will not be technically identical, the applicant must provide the information required for each distinct type of satellite.

(e) An operator may file an application for a hosted space station license separately from an underlying NGSO, GSO, or VTSS license as long as it is associated with an underlying FCC space station license or application. Applicants for a hosted space station license must submit the following information:

(1) An FCC Form 312 – Main Form, and the associated information required in § 100.101;

(2) The license grant or file number of the host spacecraft that contains the Schedule O and orbital debris information for the host spacecraft; and

(3) The space station frequency information required in § 100.112.

§ 100.111 Space station orbital information requirements.

(a) *General requirements*. Space station applicants must identify the type of system authorization requested. If an application is for a MOSS, the applicant must submit the required information for each system type. Applicants must submit the required orbital information and certifications in Schedule O to

the FCC Form 312 in ICFS.

(b) *Orbital Debris Mitigation Plan*. All space station applicants must provide an orbital debris mitigation and end-of-life disposal plan that demonstrates how the operator will or will not comply with §§ 100.260 and 100.261, that supports the certifications made according to the relevant paragraphs in this section, and that includes any required additional information pursuant to this section.

(1) Except as otherwise specified, no space station operator may launch and commence operations until the Commission has reviewed the orbital debris mitigation and end-of-life disposal plan and determined that an operator has met the applicable orbital debris certifications and requirements under this section.

(2) Space station applicants requesting authorization conditioned on a deferred submission and approval of the required orbital debris mitigation plan must clearly state this request in the application and comply with the conditional application procedures under § 100.139.

(c) *GSO satellite systems*. An applicant for a GSO satellite system must provide the following information:

(1) *Orbital location*. The requested orbital location(s) of the satellite(s), the east-west, north-south station-keeping range and the accuracy to which the antenna axis (yaw, pitch and roll) attitude will be maintained. Applicants must assess whether there are any known satellites located at, or reasonably expected to be located at, the requested orbital location, or assigned in the vicinity of that location, such that the station keeping volumes of the respective satellites might overlap or touch. If so, applicants must identify those satellites and the measure that will be taken to prevent collisions.

(2) *Certifications.* Certification whether the following criteria will or will not be met for all space station(s) to be operated under the license:

(i) The operator will comply with the 2-degree spacing requirements per §§ 100.230, 100.278 and 100.279; and

(ii) The space station(s) will comply with the orbital debris mitigation rules in §§ 100.260 and 100.261;

(iii) The probability that any individual satellite will become a source of debris by collision with small debris or meteoroids that would cause loss of control and prevent disposal is 0.01 (1 in 100) or less, as calculated using the most current at the time of filing NASA Debris Assessment Software or a higher fidelity assessment tool;

(iv) The stored energy will be removed at the end of life for each satellite, by depleting residual fuel and leaving all fuel line valves open, venting any pressurized system, leaving all batteries in a permanent discharge state, and removing any remaining source of stored energy, or through other equivalent procedures;

(v) The satellite(s) will be 1 m or larger in the smallest dimension.

(d) *NGSO satellite systems*. An applicant for an NGSO satellite system must provide the following information:

(1) *Technical information*.

(i) The number of satellites in the constellation,

(ii) The number of in-orbit spares if any,

(iii) The orbital planes and the number of satellites in each plane,

(iv) The inclination of the orbital plane(s),

(v) The orbital period,

(vi) The apogee,

(vii) The perigee,

(viii) The argument(s) of perigee,

(ix) Active service arc(s),

(x) Right ascension of the ascending node(s),

(xi) The initial phase angle at the reference time for each satellite in each orbital plane,

(xii) The tolerances with which the orbital parameters will be maintained, including apogee, perigee, inclination, and the right ascension of the ascending node(s),

(xiii) Estimated operational lifetime of each satellite in the constellation.

(2) *Certifications.* Applicants must certify whether it will meet the following criteria for all satellites that the applicant proposes to operate under the license:

(i) The space station(s) will operate only in non-geostationary orbit;

(ii) The space station(s) will be identifiable by a unique signal-based telemetry marker distinguishing it from other space stations or space objects;

(iii) The satellite(s) will be 10 cm or larger in the smallest dimension if operating only below 2,000 km, or will be 1 m or larger in the smallest dimension if operating above 2,000 km;

(iv) The operator will take appropriate steps to assess and mitigate collision risk upon receipt of a space situational awareness conjunction warning, including, but not limited to: contacting the operator of any active spacecraft involved in such a warning, sharing ephemeris data and other appropriate operational information with any such operator, and modifying satellite attitude and/or operations;

(v) The probability that any individual satellite will become a source of debris by collision with small debris or meteoroids that would cause loss of control and prevent disposal is 0.01 (1 in 100) or less, as calculated using the most current at the time of filing NASA Debris Assessment Software or a higher fidelity assessment tool;

(vi) The probability of collision between each satellite and any large object (10 centimeters or larger) during the orbital lifetime of the space station, including any de-orbit phases is 0.001 (1 in 1,000) or less, as calculated using the most current at the time of filing NASA Debris Assessment Software or higher fidelity tool. The collision risk may be assumed zero for a satellite during any period in which the satellite will be maneuvered effectively to avoid colliding with large objects;

(vii) The probability of human casualty from portions of the spacecraft surviving re-entry and reaching the surface of the Earth with a kinetic energy in excess of 15 joules is 0.0001 (1 in 10,000) or less, as calculated using the most current at the time of filing NASA Debris Assessment Software or higher fidelity tool;

(viii) The stored energy will be removed at the end of life for each satellite, by depleting residual fuel and leaving all fuel line valves open, venting any pressurized system, leaving all batteries in a permanent discharge state, and removing any remaining source of stored energy, or through other equivalent procedures;

(ix) The space station(s) will be disposed of via atmospheric re-entry;

(x) The space station(s) will be designed and operated to de-orbit no later than five years after the end of the mission; and

(xi) The system will maintain a probability of success of disposal of 0.9 or greater for any individual space station.

(3) *Additional information*. Applicants must provide the following information:

(i) If at any time during the space station(s)' mission or de-orbit phase the space station(s) will transit through any orbits used by any inhabitable spacecraft, a description of the design and operational strategies, if any, that will be used to minimize the risk of collision and avoid posing any operational constraints to the inhabitable spacecraft.

(ii) A description of the design, operation, capability and reliability of maneuverability and deorbit systems, if any, including the quantity of fuel that will be reserved for disposal maneuvers, as well as the anticipated evolution over time of the orbit of the proposed satellite(s).

(iii) If the space station(s) will not terminate operations in an orbit in or passing through the low-Earth orbit region below 2000 km altitude, the operator must submit a statement indicating whether disposal will involve use of a storage orbit or long-term atmospheric re-entry. If disposal will involve the use of a storage orbit, provide a plot of the long-term (100 years or more) stability of the orbit reflecting the orbit variations over time.

(e) *Variable Trajectory Spacecraft System*. An application for a VTSS authorization must provide the following information:

(1) *Technical information*:

(i) The total number of spacecraft for which authority is sought, and the maximum number of spacecraft operating at any one time if the number of operational spacecraft will vary during the course of the license period;

(ii) The operational envelope or range of altitudes (or orbital shell(s)) and inclinations in which the space station(s) will operate, including any planned drift, loiter, or transfer regimes;

(iii) The initial deployment apogee, perigee, and inclination to the extent known at the time of filing, and

(iv) The planned amount of time expected to be spent in any particular phase of the operations, expressed as estimated ranges or mission phases, including earth's orbit, transiting to the moon, lunar orbit, lunar surface, transiting beyond the moon, and/or operating on another celestial body, as applicable to the individual application.

(2) *Certifications*. Applicants must certify whether the following criteria will be met for all space station(s) proposed for operation under the license:

(i) The space station(s) will be identifiable by a unique signal-based telemetry marker distinguishing it from other space stations or space objects.

(ii) The spacecraft will be 10 cm or larger in the smallest dimension if operating only below 2,000 km, or will be 1 m or larger in the smallest dimension if operating above 2,000 km.

(iii) The operator will take appropriate steps to assess and mitigate collision risk upon receipt of a space situational awareness conjunction warning, including, but not limited to: contacting the operator of any active spacecraft involved in such a warning, sharing ephemeris data and other appropriate operational information with any such operator, and modifying spacecraft attitude and/or operations.

(iv) Prior to, and during, any planned maneuvers or rendezvous and proximity operations, the operator will share and update propagated ephemeris and covariance data in accordance with the requirements and formats specified under § 100.201(c).

(v) The stored energy will be removed at the end of life for each satellite, by depleting residual fuel and leaving all fuel line valves open, venting any pressurized system, leaving all batteries in a permanent discharge state, and removing any remaining source of stored energy, or through other equivalent procedures;

(vi) For all related space stations under paragraph (f)(1), operations will be conducted only with the consent of the operator of the related station, and with certification from the other operator to be submitted when consent is finalized.

(vii) For all related space stations under paragraph (f)(1), the applicant is or will consult with other relevant federal agencies, including, as appropriate, the Department of State, the Department of Commerce, NASA, and other relevant agencies.

(viii) Operations that will terminate in low-earth orbit will comply with § 100.260(e).

(ix) For spacecraft that will be disposed of via atmospheric reentry, the probability of human casualty from portions of the spacecraft surviving re-entry and reaching the surface of the Earth with a kinetic energy in excess of 15 joules is 0.0001 (1 in 10,000) or less, as calculated using the most current at the time of filing NASA Debris Assessment Software or higher fidelity tool.

(x) Operations that will terminate at or near the GSO arc will comply with § 100.260(b).

(xi) If the spacecraft will terminate its mission beyond the geosynchronous orbit, the spacecraft will be disposed of beyond Earth's orbit.

(xii) The operator will register with an approved SSA provider at least 30 days prior to launch and maintain current points of contact for collision avoidance coordination consistent with § 100.201(c).

(3) *Additional information.* Applicants must provide the following information:

(i) If at any time during the space station(s)' mission or de-orbit phase the space station(s) will transit through any orbits used by any inhabitable spacecraft, a description of the design and operational strategies, if any, that will be used to minimize the risk of collision and avoid posing any operational constraints to the inhabitable spacecraft.

(ii) Applicants planning to travel beyond the geosynchronous orbit must provide the following information, if known at the time of filing. If such information is not known at the time of filing, the applicant must affirmatively certify that this information will be provided to the Commission no later than 30 days before the relevant phase of operations begins (or as soon as practicable) and prior to beginning any such operations. Lack of such information at the time of filing shall not, by itself, render an application incomplete or ineligible for grant.

(A) A description of any instruments or rovers onboard the spacecraft that will engage in radiofrequency communications with the spacecraft while in transit or on the surface of the moon or any other celestial body.

(B) A description of completed or planned coordination with relevant government entities such as the National Science Foundation (NSF), their federally funded research and development centers such as the National Radio Astronomy Observatory (NRAO), or other similar groups regarding radio astronomy or space research considerations that may be impacted by any instruments or experiments to be conducted on board or who have an interest in the maintenance of the Shielded Zone of the Moon and mitigation of contamination of the lunar environment or other celestial bodies.

(f) *Rendezvous and Proximity Operations*. Any applicant planning to engage in rendezvous and proximity operations, servicing, or otherwise planning to interact with additional spacecraft on orbit must provide the following information, if known at the time of filing. When such information is not known at the time of filing, the applicant must affirmatively certify that this information will be provided to the Commission as soon as practicable once the information is known, and prior to beginning any such operations.

(1) All FCC file numbers or call signs for any applications or Commission grants related to the proposed operations (e.g., experimental license grants, other space station or earth station applications

or grants), including client space stations or spacecraft, spacecraft that have become debris the applicant seeks to remediate, and other space stations or spacecraft the applicant plans to interact with as part of its operations.

(2) A list of the International Telecommunications Union filings and United Nations Registration information, or the expected State of United Nations Registry, for any space stations or spacecraft not licensed or granted market access by the United States that are related to the proposed operations, including client space stations or spacecraft, spacecraft that have become debris the applicant seeks to remediate, and other space stations or spacecraft the applicant plans to interact with or collaborate with as part of its operations.

(3) A statement disclosing planned proximity operations and addressing debris generation that will or may result from the proposed operations, including any planned release of debris, the risk of accidental explosions, the risk of accidental collision, and measures taken to mitigate those risks.

§ 100.112 Space station frequency information requirements.

(a) *Services identified*. Space station applicants must identify all intended services in the proposed system and for each requested frequency state the service in which the space station(s) will operate. Applicants must submit the required frequency information and certifications on Schedule F to the FCC Form 312.

(b) *Required information*. Applicants must provide the following information:

(1) The frequencies that the satellite proposes to both transmit and receive on and the polarization and channelization plan (with carrier frequency and bandwidth of each channel) for each beam. For space stations in which the channels are dynamically generated and the bandwidth varies, specify only the range of frequencies in that band over which the beam can operate and the polarization plan.

(2) A table listing the corresponding uplink and downlink frequencies.

(3) Identification of any requested bands for which there are Federal allocations. Applicants shall provide sufficient information to evaluate electromagnetic compatibility with the federal government use of the spectrum, and any additional information requested by the Commission. As part of the coordination process, applicants shall show that they will not cause harmful interference to authorized federal government users, based upon existing system information provided by the federal government.

(4) For each space station, the maximum EIRP, maximum EIRP density and emission bandwidth for each transmitting beam. If the satellite uses shapeable antenna beams, specify instead the maximum possible EIRP, maximum possible EIRP density and emission bandwidth within each shapeable beam's proposed coverage area. Provide this information for each frequency band in which the transmitting antenna would operate. For bands below 15 GHz, specify EIRP density in dBW/4 kHz; for bands at and above 15 GHz, specify EIRP density in dBW/MHz. If the EIRP density varies, specify the maximum possible EIRP density.

(5) For each space station, the receive antenna gain and the gain-to-temperature ratio at beam peak for each receiving beam. For receiving beams fed into transponders, also specify the minimum and maximum saturation flux density at beam peak. If the satellite uses shapeable beams, specify the minimum and maximum gain-to-temperature ratio and the corresponding receive antenna gains within each shapeable beam's proposed coverage area. For shapeable receiving beams fed into transponders, specify the minimum and maximum saturation power flux density within the 0 dB relative antenna gain isoline. Provide this information for each frequency band in which the receiving beam can operate.

(6) For GSO space stations, the antenna gain contours for each transmit and each receive antenna beam. The contours should be plotted on an area map with the beam depicted on the surface of the earth with the space station's peak antenna gain pointed at nadir to a latitude and longitude within the proposed service area. The contours should be plotted at 2 dB intervals down to 10 dB below the

peak gain and at 5 dB intervals between 10 dB and 20 dB below the peak gain. For intersatellite links, applicants must specify the peak antenna gain and 3 dB beamwidth. The plots should be presented in a Graphical Interference Management System (GIMS)-readable format. Alternatively, this information may be provided in pdf file format. For geostationary satellites with large numbers of identical fixed spot beams, other than DBS satellites, applicants may provide the antenna gain contours required in this paragraph for one transmit and one receive antenna beam, together with an area map showing all of the transmit and receive beams depicted on the surface of the Earth.

(7) For NGSO space stations, the antenna gain contours plotted on an area map with the beam depicted on the surface of the earth for each transmit and each receive antenna beam for one space station for each orbital plane if all space stations in the orbital plane are identical. If individual space stations in the NGSO constellation have different antenna beam configurations, specify the predicted antenna gain contours for each transmit and each receive beam for each space station type in each orbital plane requested. The contours should be plotted on an area map with the beam depicted on the surface of the earth with the space stations' peak antenna gain pointed at nadir to a latitude and longitude within the proposed service area. The contours should be plotted at 2 dB intervals down to 10 dB below the peak gain and at 5 dB intervals between 10 dB and 20 dB below the peak gain. For intersatellite links, applicants must specify the peak antenna gain and 3 dB beamwidth. The plots should be presented in a Graphical Interference Management System (GIMS)-readable format. Alternatively, this information may be provided in pdf file format.

(8) For space stations with shapable antenna beams, the antenna gain contours, as specified in (6) or (7) of this section, as applicable, for the transmitting beam configuration that results in the highest EIRP density, and the receiving beam configuration with the smallest gain-to-temperature ratio and the highest saturation power flux density for the beams listed in (5) of this section. If the beams are both shapable and steerable, include the contours, plotted on an area map, of the 0 dB and -3 dB relative antenna gain isolines that that would result from moving the beam peak around the limit of the effective beam peak area. The proposed maximum coverage area must be clearly specified.

(9) For space stations with steerable antenna beams that are not shapeable, in addition to (6) or (7) of this section, the contours, plotted on an area map, of the 0 dB and -3 dB relative antenna gain isolines that would result from moving the beam peak around the limit of the effective beam peak area. The proposed maximum coverage area must be clearly specified.

(10) In addition to (6) through (9) of this section, area maps showing all of the transmit beams, and all of the receive beams, depicted on the surface of the Earth.

(11) Transmitter and receiver characteristics (transmit power, transmit antenna gain, EIRP density, emission bandwidth, receive antenna gain, receiver noise temperature and receiver bandwidth) and link budget for each of the different links.

(12) For each space station emission (space-to-Earth), the power flux-density (dB(W/(m^2. reference bandwidth)) at the Earth's surface for the various angles of arrival above the horizontal plane under free-space propagation conditions. For frequencies below 15 GHz, the reference bandwidth should be 4 kHz. For frequencies at and above 15 GHz, the reference bandwidth should be 1 MHz.

(13) For NGSO satellite systems not requesting authorization under section 100.140, a description of how the requested spectrum can be shared with both current and future operators (e.g., antenna design, earth station geographic locations).

(14) Whether the space station will operate on a common carrier basis.

(c) *Certifications*. Applicants for space station authorizations must certify whether the following criteria will be met for all requested space station(s):

(1) The space station(s) will comply with and operate within the applicable service and frequency requirements and technical and operational parameters outlined in the Commission's rules;

(2) The space station(s) will operate under ITU coordination procedures and agreements; and

(3) The space station(s) can be commanded to immediately cease transmissions and the licensee will have the capability to eliminate harmful interference when required under the terms of the license or other applicable regulations.

(4) Operation of the space station(s) will be compatible with existing operations in the requested frequency band(s) and will not materially constrain future space station entrants from using the requested frequency band(s).

(d) *Service-specific application requirements.*

(1) Applications for SCS must also provide the information required in § 100.113.

(2) In the Direct Broadcast Satellite service, applicants and licensees shall also provide the Commission with all information it requires in order to modify the plans for the Broadcasting-Satellite Service (BSS) in Appendix 30 of the ITU Radio Regulations (RR) and associated feeder-link plans in Appendix 30A of the ITU RR, if the system has technical characteristics differing from those specified in the Appendix 30 BSS Plans, the Appendix 30A feeder link Plans, Annex 5 to Appendix 30, or Annex 3 to Appendix 30A. For such systems, no protection from interference caused by radio stations authorized by other Administrations is guaranteed until the agreement of all affected Administrations is obtained and the frequency assignment becomes a part of the appropriate Region 2 BSS and feeder-link Plans. Authorizations for which coordination is not completed and/or for which the necessary agreements under Appendices 30 and 30A have not been obtained may be subject to additional terms and conditions as required to effect coordination or obtain the agreement of other Administrations. Applicants and licensees shall also provide the Commission with the information required by Appendix 4 of the ITU RR for advance publication and notification or coordination of the frequencies to be used for tracking, telemetry and control functions of DBS systems.

(3) Space station license applications must also include any additional information required by applicable provisions in subpart C of this part:

(i) *NVNG MSS in 137-138 MHz, 148-150.05 MHz, 399.9-400.05 MHz, and 400.15-401. See* § 100.220.

(ii) *1.6/2.4 GHz and 2 GHz MSS. See* § 100.214.

(iii) *SDARS in 2.3 GHz. See* § 100.250.

(iv) *NGSO FSS in 10.7-30 GHz. See* § 100.222.

(v) *DBS in 12.2-12.7 GHz. See* § 100.233.

(vi) *GSO FSS or BSS in 17.3-17.8 GHz. See* § 100.231 and § 100.232.

(vii) *GSO FSS and 17/24 GHz BSS. See* § 100.230 and § 100.234.

(viii) *Inter-satellite service*. See § 100.240(c).

(ix) *Default service rules*. For space station operations in a frequency band where band-specific service rules have not yet been adopted, *see* §100.204.

§ 100.113 Applications for supplemental coverage from space.

(a) *SCS entry criteria.* This section applies only to applicants seeking to provide supplemental coverage from space (SCS) services. An applicant for SCS space station authorization must hold either an existing NGSO or GSO license or grant of U.S. market access under this part, or must be seeking an NGSO or GSO license or grant of U.S. market access under this part, and must have a lease arrangement(s) or agreement pursuant to § 1.9047 of this chapter with one or more terrestrial wireless licensee(s) that hold, collectively or individually, all co-channel licenses throughout a GIA in a band identified in § 2.106(d)(33)(i) of this chapter. Applicants for SCS space stations must comply with the requirements set forth in paragraph (b) of

this section.

(b) *SCS space station application requirements.* An applicant seeking a space station authorization to provide SCS must either submit an application requesting modification of a current NGSO or GSO license or grant of U.S. market access under this part, or an application seeking a new NGSO or GSO license or grant of U.S. market access under this part.

(1) The application must certify that:

(i) A lease notification(s) or application(s), pursuant to § 1.9047 of this chapter, where a single terrestrial wireless licensee holds or multiple co-channel licensees collectively hold all co-channel licenses within the relevant Geographically Independent Area (GIA) in the bands identified in § 2.106(d)(33)(i) of this chapter, or as it pertains to FirstNet, an agreement, is on file with the Commission;

(ii) The current space station licensee under this part or grantee of market access for NGSO or GSO satellite operation under this part seeks modification of authority to provide SCS in the same geographic areas covered in the relevant GIA, or the applicant for a space station license under this part or grant of market access for NGSO or GSO satellite operation under this part seeks to provide SCS in the same geographic areas covered in the relevant GIA; and

(iii) SCS earth stations will qualify as "licensed by rule" earth stations under § 100.120(d).

(2) The application must include a proposal for the prospective SCS system and the certifications described in paragraph (b)(1) of this section.

(3) The application must include a list of the file and identification numbers associated with the relevant leasing notifications under part 1 of this chapter, application(s), and FCC Form 601(s).

(4) The application must provide a description of the coverage areas that will be served both domestically and internationally, as applicable.

(5) If the licensee is seeking to provide SCS in a foreign administration with a foreign terrestrial partner then the licensee must submit a request for authorization via ICFS or a successor system to operate in a foreign country which must include a letter from the communications authority approving the SCS operations as well as a letter from the mobile operator certifying that there is a lease agreement between them and the licensee. This request must include the frequencies of operation and a certification that cross-border interference has been assessed and the operations proposed will not cause harmful interference to stations in other countries.

(c) *Effective date and continued operation of SCS authorization.* SCS authorization will be deemed effective in the Commission's records and for purposes of the application of the rules set forth in this section after each of the following requirements is satisfied:

(1) Grant of:

(i) A modification application under this part or request for modification of a grant of market access; or

(ii) An application to launch and operate or for market access;

(2) Approval of a leasing arrangement(s) or agreement(s) under part 1 of this chapter; and

(3) Grant of a valid SCS earth station equipment certification under part 2 of this chapter.

§ 100.114 Requests for U.S. market access.

(a) Entities filing a petition for declaratory ruling seeking to access the U.S. market using a non-U.S. licensed space station must provide all the applicable information for the type of system for which they are requesting market access as described in §§ 100.110 through 100.113 and the application requirements general to all applications described in §§ 100.100 and 100.101.

(b) Entities filing a petition for declaratory ruling seeking to access the United States market using a space station that is not or will not be licensed by a member nation of the World Trade Organization or that is seeking authority to provide services not covered under the World Trade Organization Basic Trading Agreement, must provide an exhibit demonstrating:

(1) That U.S.-licensed space stations have effective competitive opportunities to provide analogous services in the country in which the non-U.S. licensed space station is licensed; and

(2) That U.S.-licensed space stations have effective competitive opportunities to provide analogous services in all countries in which communications will originate or terminate. The application must include a statement that grant is in the public interest, and the applicant bears the burden of showing that there are no practical or legal constraints that limit or prevent access of U.S. space stations in the relevant foreign markets.

(c) Entities filing a petition for declaratory ruling seeking to access the United States must demonstrate that the system, at the time of filing:

(1) Is in orbit and operational;

(2) Has a license from another administration; or

(3) Has been submitted for coordination to the ITU and has been published as "as received."

(d) Entities filing a petition for declaratory ruling to access the U.S. market must certify that the non-U.S. licensed space station has complied with all applicable Commission requirements, including but not limited to the following:

(1) Milestones;

(2) Reporting requirements;

(3) Any other applicable service rules;

(4) The surety bond requirement pursuant to § 100.147,

(5) Entities that have one market access request on file with the Commission for NGSO satellite system operations in a particular frequency band will not be permitted to request access to the U.S. market for another NGSO satellite system in that frequency band in the same processing round subject to §§ 100.140 and 100.241.

(e) Non-U.S. licensed space station operators may file initial petitions for U.S. market access, amendments to petitions, petitions for modification of U.S. market access, petitions for special temporary market access, and other requests for Commission action using the same procedures as space station license applicants, provided they comply with all relevant application and operational requirements, and unless otherwise provided in this part. A non-U.S. licensed space station operator with a grant of market access may seek special temporary access for operations under the procedures set forth in § 100.13.

§ 100.115 Submission of ITU Filings

The Commission will submit filings to the ITU on behalf of an applicant, licensee, or other requesting party only after the party has filed an FCC Form 312 – Main Form and a signed declaration of unconditional acceptance of all consequent ITU cost-recovery responsibility. Applicants and licensees must file the declaration electronically in the application file in the International Communications Filing System (ICFS). In addition, applicants and licensees must reference the call sign (if available) and name of the satellite network in the declaration. All cost-recovery declarations must include the name(s), address(es), email address(es), and telephone number(s) of a contact person, or persons, responsible for cost recovery inquiries and ITU correspondence and filings. Supplements must be filed as necessary to apprise the Commission of changes in the contact information until the ITU cost-recovery responsibility is discharged. The applicant, licensee, or other party must remit payment of any resultant cost-recovery

fee to the ITU by the due date specified in the ITU invoice, unless an appeal is pending with the ITU that was filed prior to the due date. A license granted in reliance on such a commitment will be conditioned upon discharge of any such cost-recovery obligation. Where an applicant or licensee has an overdue ITU cost-recovery fee and does not have an appeal pending with the ITU, the Commission will dismiss any application associated with that satellite network.

EARTH STATION APPLICATIONS

§ 100.120 Earth station licensing application requirements.

(a) *Requirements for all earth station license applications.*

(1) All applicants must provide the name, address, email, and telephone number of the person(s) or entity with the authority and capability to cease transmissions of any service for which the application seeks authority. This person or entity must be available 24/7, 365 days a year and be located within the United States.

(2) Earth station applicants must certify whether the applicant will operate the earth station at the lowest power level to close the link as required by § 100.201.

(3) A certification whether the application complies with all the Commission's rules or if a waiver is requested of any Commission rule.

(4) Earth station applicants must provide the following technical information:

(a) Whether the request is for a blanket license;

(b) The frequencies that the earth station(s) propose(s) to use;

(c) The geographic coordinates and operating radius of the earth station(s) if requesting a location area other than Nationwide, Non-site license or a nationwide blanket license;

(d) The proposed relevant power, out of band emission, off axis limits, and power density limits as described in §§ 100.270 – 100.283;

(e) The antenna type;

(f) The number of antennas or devices if not requesting an unlimited number;

(g) If the applicant is not seeking 360 degree coordination, the maximum and minimum elevation and azimuth angles for intended operations for the antenna;

(h) The identified satellite point of communication, if known;

(i) Any additional information necessary to complete coordination with federal entities; and

(j) For applications other than those for a Nationwide, Non-site license or a nationwide blanket authorization that seek to operate in bands shared with other non-federal services, a copy of the coordination report pursuant to § 100.275.

(b) *Additional service-specific information.*

(1) *Type of application*. Earth station applicants must identify whether their application is for an Immovable earth station, user terminal including VSATs and transportable, ESIM, or mobile earth station.

(2) *Additional requirements for Immovable earth station authorizations*.

(a) Applicants must certify whether the following criteria will or will not be met for all Immovable Earth Stations to be operated under the license*:*

(A) For non-Nationwide, Non-Site licenses, that the applicant has completed all required location and frequency specific coordination;

(B) For Nationwide, Non-Site licenses, that the applicant will register all site locations in ICFS or a successor system and will complete all required location and frequency specific coordination for the registered sites prior to operation;

(C) That the proposed operations meet the relevant power, out of band emission, off axis limits, and power density limits as described in §§ 100.270–100.283.

(b) Applicants must also provide the geographic coordinates of the proposed Immovable Earth Station for those applications that do not affirmatively certify to all application requirements, or that request a waiver of the Commission's rules, or that are not seeking Nationwide, Non-Site License.

(3) *Additional requirements for user terminals and Earth Stations in Motion authorizations*. Applicants must certify whether the following will be met for all User Terminals or Earth Stations in Motion to be operated under the license*:*

(a) That the proposed operations meet the relevant power, out of band emission, off axis limits, and power density limits as described in § 100.281.

(b) The radiofrequency exposure meets the requirements of 47 CFR 1.1307(b) and 47 CFR 1.1310 .

(c) The applicant has completed all required location and frequency specific coordination.

(4) *Additional requirements for mobile earth station authorizations*.

(a) Applicants that do not meet the requirements of paragraph (b)(4)(b) of this subpart must certify whether the following will be met for all mobile earth stations to be operated under the license*:*

(A) The proposed operations meet the relevant power, out of band emission, off axis limits, and power density limits as described in §§ 100.270–100.280 and 100.283.

(B) The radiofrequency exposure meets the requirements of 47 CFR 1.1307(b) and 47 CFR 1.1310.

(b) Mobile earth station handset portable devices, as defined in part 2, may communicate with a space station or satellite without the need for a separate earth station license or authorization and without the need to certify pursuant to paragraph (b)4(a) of this subpart so long as:

(A) The device is certified pursuant to the relevant part 2 rules to meet the operational requirements of the relevant sections of this part;

(B) The device is communicating with a satellite or space station that is licensed by the Commission or authorized for Market Access;

(C) The device is operating within the parameters of its license, authorization, or any associated equipment authorization as applicable;

(D) The device is operating on frequencies that the associated satellite or space station is authorized to operate on;

(E) The satellite or space station licensee is capable of ceasing and monitoring transmissions to or from the handset or device over their network; and

(F) No waiver of any of the Commission's rules or the parameters of any underlying license or authorization is required to effectuate the communication from the device or handset to the satellite or space station or from the satellite or space station to the device or handset.

(c) *Earth stations subject to § 100.280*. Earth stations proposing to operate in frequencies subject to § 100.280 must provide all information required under § 100.280 and any additional information required under paragraph (b) of this section.

(d) *SCS and terrestrial handsets or devices as earth stations application requirements*.

(1) An applicant seeking to use SCS earth stations to provide Supplemental Coverage from Space must comply with § 100.113.

(2) A satellite operator licensed under § 100.113 to provide SCS is permitted to communicate with all terrestrial wireless licensee(s)-associated SCS earth stations that have been approved for such use under part 2 of this chapter.

(a) Such earth stations must show compliance with least one of either part 22, 24, or 27 of this chapter to provide SCS within the technical parameters and provisions associated with the device certification.

(b) The device certification must show compliance with the licensed parameters of the terrestrial wireless license(s) and at least one of either part 22, 24, or 27 of this chapter, as applicable.

(3) An earth station may be used for the provision of SCS when:

(a) The satellite operator licensed under § 100.113 is a party to a valid and approved spectrum leasing arrangement or agreement pursuant to § 1.9047 of this chapter with at least one terrestrial wireless licensee(s) licensed under one of either part 22, 24, or 27 of this chapter; and

(b) That terrestrial wireless licensee(s) has met and operates within all conditions associated with the relevant terrestrial wireless license(s).

(4) A satellite operator authorized to provide SCS under § 100.113 is authorized under this section to communicate with SCS earth stations for any period during which each of the following apply:

(a) The service is provided during the valid duration of any spectrum leasing arrangement or agreement pursuant to § 1.9047 of this chapter between the terrestrial wireless licensee(s) and satellite operator;

(b) The devices to which service is provided are certified under part 2 of this chapter; and

(c) The terrestrial wireless licensee(s) is a valid licensee(s) under part 22, 24, or 27 of this chapter.

(5) A satellite operator with SCS authorization via a grant of market access can avail itself of the provisions of this paragraph but, in addition to the parameters established in this section, must also comply with any additional parameters included in the satellite operator's space station market access grant.

(6) A space station licensee operating in conformance with the parameters established in this part does not need a separate earth station authorization for the provision of SCS under this part.

(7) A handset or terrestrial device other than an SCS earth station authorized to operate pursuant to part 22, part 24, or part 27 of this chapter in a frequency that is not subject to spectrum leasing requirements may communicate with a space station or satellite without the need for a separate earth station license or authorization so long as:

(a) The device is authorized to operate and meets the requirements of at least one of the following: part 22, part 24, or part 27 of this chapter. Nothing in this rule limits a device from also being authorized under additional rule parts so long as the device has been certified pursuant to part 2 of this chapter under the aforementioned rule parts;

(b) The device is communicating with a satellite or space station that is licensed by the Commission or authorized for Market Access;

(c) The device is operating within the parameters of its license, authorization, or any associated equipment authorization as applicable;

(d) The device is communicating with the associated satellite or space station using frequencies

that the associated satellite or space station is authorized to operate on;

(e) The satellite or space station licensee is capable of ceasing and monitoring transmissions to or from the handset or device over their network; and

(f) No waiver of the Commission's rules or the parameters of the underlying terrestrial license is required or requested to effectuate the communication from the device or handset to the satellite or space station or from the satellite or space station to the device or handset.

(e) *Other requirements in subpart C.* Applicants for earth station authorizations must also submit any information required by applicable provisions in subpart C of this part:

(1) *Radiofrequency exposure reports*. See 47 CFR 1.1307(b) and 47 CFR 1.1310 ,

(2) *Siting*. See § 100.275.

(3) *MSS and ATC*. See § 100.282

(4) *Receive-only earth stations*. See § 100.272.

(5) *Temporary-fixed earth stations*. See § 100.273.

(6) *UMFUS*. See § 100.280.

(7) *Coordination and sharing requirements*. See § 100.275.

§ 100.121 Earth station application processing.

(a) For applications not subject to federal coordination for which no waiver is requested:

(1) The application will be placed on public notice pursuant to § 100.132;

(2) When an application is placed on public notice pursuant to this subsection, the applicant may begin operating pursuant to the parameters requested in the underlying application that have already been coordinated, if coordination is required as reflected in the filed coordination report. So long as:

(i) These operations must be on a non-interference, unprotected basis until further action is taken by the Commission on the application;

(ii) The applicant has an already approved Form 312 Main Form on file prior to submitting their application; and

(iii) The applicant certifies that there are no changes to the approved Form 312 Main Form.

(b) For applications that request a waiver or are subject to federal coordination:

(1) The application will be placed on public notice pursuant to § 100.132;

(2) If a waiver is requested or required, applications placed on public notice pursuant to this subsection may not begin operations until authorized to do so by the Commission;

(3) If an applicant seeks to operate in bands subject to both federal coordination and bands not subject to federal coordination and does not request a waiver of the rules, the applicant may begin operations when placed on public notice, in the bands not subject to federal coordination pursuant to the parameters requested in the underlying application that have already been coordinated, if coordination is required as reflected in the filed coordination report. So long as:

(i) These operations must be on a non-interference, unprotected basis until further action is taken by the Commission on the application;

(ii) The applicant has an already approved Form 312 Main Form on file prior to submitting their application; and

(iii) The applicant certifies that there are no changes to the approved Form 312 Main Form.

(c) An applicant that affirmatively certifies to all application requirements in § 100.120 may apply for a

Nationwide, Non-Site license without an identified site. Applicants who seek to operate in frequency bands subject to federal coordination may apply for a Nationwide, Non-Site license pursuant to the limits and requirements established in § 100.139.

(d) Immovable earth stations registered pursuant to a Nationwide, Non-Site license in frequency bands shared with other services that do not have specific registration requirements:

(1) May not begin operations until successfully completing coordination and providing all necessary information to demonstrate compliance with our rules, if required under this rule part, with affected entities in shared frequency bands;

(2) Sites operating in frequency bands shared with other services that require coordination as discussed in this rule part must provide as part of their registration all showings and demonstrations that demonstrate compliance with the rules;

(3) Registrants must certify to having completed the requirements of paragraphs (d)(1)-(2) before being permitted to operate;

(4) Registrations later filed cannot cause harmful interference to and must coordinate with earlier filed registrants that have certified to commencing operations within 1 year of registration of the Immovable earth station. Coordination must be done in good faith;

(5) Registrants may elect, upon notice to the Commission and upon agreement with incumbent or earlier filed operations, to operate on an unprotected, non-interference basis while undergoing coordination pursuant to this rule section to meet any applicable bring in to use period described in § 100.274 or to allow for continued operations of already operating later filed sites.

(e) A licensee with a Nationwide, Non-Site license must register its Immovable earth station sites in accordance with the Commission's rules and guidance and certify that any necessary location and frequency specific coordination is to be completed prior to operations within the period described in § 100.275.

GENERAL APPLICATION PROCESSING

§ 100.130 Receipt of applications.

Applications received by the Commission are given a file number and a unique station identifier for administrative convenience. Neither the assignment of a file number and/or other identifier nor the listing of the application on public notice as received for filing indicates that the application has been found acceptable for filing or precludes subsequent return or dismissal of the application if it is found to be defective or not in accordance with the Commission's rules.

§ 100.131 Completeness.

(a) An application will be considered complete if, under the relevant rule section(s), all required information, forms, certifications, exhibits, waiver requests, and showings are included in the application and contains no internal inconsistencies.

(b) Applicants that are unable to certify to all relevant application certifications must provide the appropriate waiver request(s) and/or additional information or justification in order for the application to be deemed complete under paragraph (a) of this section.

(c) The Commission will make a determination regarding the completeness of an application within 30 days from the date of filing.

(1) If an application is determined to be complete, the Commission will list the application on public notice as accepted for filing pursuant to § 100.132.

(2) If an application is determined to be incomplete, the Commission will provide notice to the applicant identifying any apparent deficiencies, inconsistencies, or omissions in the application pursuant to § 100.134. If an applicant fails to respond to an information request within the time

period established by the Commission, the application will be dismissed pursuant to § 100.135.

(d) The Commission may, in its discretion, list an application on public notice as accepted for filing without a determination of completeness, if the Commission, upon its own motion, waives (or allows an exception to), in whole or in part, any rule, regulation or requirement, or otherwise determines that it is in the public interest to do so

(e) The Commission reserves the right to dismiss any application if, upon further examination, it is not in conformance with the Commission's rules or its policies pursuant.

§ 100.132 Public notice.

(a) At regular intervals, the Commission will issue public notices listing:

(1) Applications for new space station licenses and requests for authorization of U.S. market access that are accepted for filing;

(2) Applications for new earth station licenses that are accepted for filing;

(3) Applications for major amendments to pending applications that are accepted for filing;

(4) Applications for major modifications to earth station licenses, space station licenses or authorizations of U.S. market access;

(5) Applications for special temporary authority filed pursuant to § 100.143(d);

(6) Sites registered pursuant to a Nationwide, Non-Site license under § 100.121(d).

(7) Significant Commission actions regarding applications; or

(8) Information that the Commission in its discretion believes to be of public significance.

(b) The following procedures apply to applications listed on public notice as accepted for filing pursuant to § 100.131:

(1) Petitions to deny, petitions for other forms of relief, and other objections or comments filed in response to an application must be filed within 15 days after the date of public notice, unless otherwise specified by the Commission.

(2) Notwithstanding paragraph (b)(1) of this section, applications for stations in the broadcasting or common carrier services, or stations listed in § 309(b)(2)(A)-(E), subject to Section 309 of the Communications Act will be placed on public notice following the procedures described in section 309 of the Communications Act for a period of at least 30 days.

(c) The Commission may issue special public notices at other times under special circumstances involving non-routing matters where speed is of the essence and efficiency of Commission process will be served thereby.

(d) The Commission may, in its sole discretion or upon request by an applicant, petitioner, or commenter, extend or shorten the public notice periods outlined in this part, except for applications subject to the requirements of § 309(b) of the Communications Act.

§ 100.133 Opposition to applications and other pleadings.

(a) Oppositions, including petitions to deny, petitions for other forms of relief, and other objections or comments must:

(1) Identify the application(s) (including applicant's name, station location, Commission file numbers, and radio service and frequencies involved) with which it is concerned;

(2) Provide contact information for the filing party, including representative individual(s) and the email address(es) at which the filing party may be served pursuant to § 1.47 of this chapter;

(3) Contain the specific allegations of fact to support the relief requested which shall be sufficient to

demonstrate that the petitioner (or respondent) is a party in interest and that a grant of, or other Commission action regarding, the application would be inconsistent with any of the rules in this chapter or the Communications Act, or otherwise inconsistent with the public interest;

(4) Be timely filed within the designated public notice period, unless designated otherwise by the Commission;

(5) Be filed in accordance with the pleading limitations, periods, and other applicable provisions of §§ 1.41 through 1.52 of this chapter, except that such pleadings or filings must be filed electronically through ICFS; and

(6) Contain a certificate of service showing that it has been served on the applicant via email and otherwise in accordance with § 1.47 of this chapter no later than the date the pleading is filed with the Commission.

(b) Oppositions to petitions to deny an application or responses to comments regarding an application may be filed within 10 days after the end of the public notice window in which the petition or comment is filed, and must be in accordance with other applicable provisions of §§ 1.41 through 1.52 of this chapter, except that such oppositions or responses must be filed in ICFS in accordance with the applicable provisions of part 1, subpart Y, of this chapter.

(c) Reply comments may be filed by any party who participated in the initial public comment period in response to oppositions or responses filed pursuant to paragraph (b) of this section. Reply comments must be filed within five days after the expiration of the time for filing oppositions or responses, unless the Commission extends the filing deadline, and must be in accordance with other applicable provisions of §§ 1.41 through 1.52 of this chapter, except that such reply comments must be filed electronically through the International Communications Filing System (ICFS) in accordance with the applicable provisions of part 1, subpart Y, of this chapter.

(d) Pleadings, oppositions, and comments filed pursuant to this section must address the merits and/or public interest considerations of the application(s) with which they are concerned. Pleadings, oppositions, and comments outside the scope of the application(s) will not be considered.

(e) Pleadings, oppositions, and comments may only be filed during the respective time periods in paragraphs (a) through (c) of this part. Pleadings, oppositions, and comments filed outside of the relevant time period will not be considered without a petition requesting the Commission for leave to file.

(f) An applicant may reply to any pleadings, oppositions, or comments filed against their application within five days of a filing filed pursuant to this section even if the public notice period has closed and need not file a request for leave to file. Filings pursuant to this section may be served via email in lieu of paper filing.

(g) The Commission may, in its sole discretion upon request by a petitioner, commenter, or applicant, extend or shorten the filing periods outlined herein, except that the Commission may not shorten the 30-day notice period for applications subject to the requirements of section 309(b) of the Communications Act.

§ 100.134 Information requests.

(a) The Commission may request additional information from applicants and licensees to:

(1) Determine completeness of an application under § 100.131;

(2) Understand the facts of informational showings, inconsistencies, execution, or other technical matters, if the factual issue is directly material to the Commission's review;

(3) Resolve an issue related to a targeted review category in § 100.136(b);

(4) Resolve matters of concern raised in pleadings, objections, or comments;

(5) Evaluate compliance with the Commission's rules, the Communications Act, or other legal

requirements;

(6) Obtain information needed by another federal agency to complete required review by such agency, so long as the information directly pertains to issues within the Commission's jurisdiction, legal authority, and rules regarding review in 100.136.

(b) The Commission will identify all apparent deficiencies requiring additional information or clarification and will notify the applicant as follows:

(1) The Commission must clearly identify all apparent deficiencies with an application as soon as practicable;

(2) The Commission must identify all known deficiencies in an initial request for information;

(3) Applicants must respond completely to all deficiencies raised in a request for additional information within the prescribed time frame and in the manner required by the information request;

(4) If an applicant's response, or the pleadings, objections, or comments on an application raise additional issues outside the scope of an initial information request the Commission may request additional information from the applicant; and

(5) Nothing in this rule part prevents the Commission from issuing subsequent information requests if the applicant fails to fully respond to the initial information request.

§ 100.135 Dismissal and return of applications.

(a) Unless otherwise specified, dismissal or return of an application is without prejudice.

(b) An application will be deemed unacceptable for filing and may be returned to the applicant or dismissed with a brief statement identifying the reason if:

(1) The application is not determined to be complete pursuant to §100.131 and the applicant does not cure any identified deficiencies within the time period specified by the Commission of a notice of deficiency from the Commission pursuant to 100.131(b) and 100.134;

(2) The application is filed for a specific type of authority for service (i.e., NGSO satellite system, GSO satellite system, VTSS) that does not align with the proposed service for operation;

(3) The application, or any associated waiver requests, do not comply with the Commission's rules, regulations, or relevant application requirements as described §§ 100.100 through 100.121;

(4) The application is identical to a pending application that was timely filed pursuant to §§ 100.140 or 100.141; or

(5) The application contains, or clearly appears to contain, materially false information.

(c) Applications for space station licenses found defective under paragraph (b)(1) of this section may be accepted for filing if:

(1) The application is accompanied by a request which sets forth the reasons in support of a waiver of (or exception to), in whole or in part, any specific rule, regulation, or requirement with which the application is in conflict; or

(2) The Commission, upon its own motion, waives (or allows an exception to), in whole or in part, any rule, regulation, or requirement.

(d) The Commission will dismiss an application for failure to prosecute or failure to respond substantially within a specified time period to official correspondence or requests for additional information.

(e) An application that is not accompanied by the appropriate application fee in accordance with part 1, subpart G of this chapter will be dismissed by the Commission.

(f) An applicant may withdraw or request that an application be dismissed or returned without action at any time prior to final action by the Commission. Withdrawal of application will be without prejudice.

§ 100.136 Consideration of applications.

(a) *Public Interest Presumption.* Applications for an initial license or request U.S. market access to operate a space station or earth station, or for modification or renewal of an existing station authorization, will be reviewed under the presumption that any requested authorization is in the public interest if the application demonstrates compliance with the Commission's rules, regulations, and policies.

(b) *Targeted Review Categories*. The public interest presumption under paragraph (a) of this section does not apply to elements of an application involving one or more of the following identified targeted review categories:

(1) *Failure to Certify*. The application fails to certify compliance with one or more of the required certifications under §§ 100.110, 100.111, 100.112, and 100.113.

(2) *Waiver Requests*. The application requests waiver of one or more of the Commission's rules.

(3) *Market Access*. The application requests authority to access the U.S. using a non-U.S. licensed space station under § 100.114.

(4) *Foreign Ownership*. The applicant includes reportable foreign ownership disclosures under § 100.101.

(5) *Processing Round*. The application requests consideration in a processing round under § 100.140.

(6) *Spectral Constraints*. The application requests to operate in frequency bands which are subject to limitations prescribed by rule or policy.

(7) Federal Coordination. The application requests to operate in frequency bands shared with federal operators in the U.S. Table of Frequency Allocations in § 2.106 of this chapter.

(c) *Requirements for authorization*. Applications for a radio station authorization, or for a modification or renewal of an authorization, will be granted if, upon examination of the application, any pleadings or objections filed, and upon consideration of such other matters as it may officially notice, the Commission finds that the applicant is legally, technically, and otherwise qualified, that the proposed facilities and operations comply with all applicable rules, regulations, and policies, and that grant of the application will serve the public interest, convenience, and necessity.

§ 100.137 Amendments to applications.

(a) *General.* Except as specified in this section, any pending application may be amended prior to final action on the application by the Commission. An application is "pending" before the Commission from the time it is filed until the Commission takes such final action. Amendments will not be placed on public notice under § 100.132 unless the Commission determines that the amendment qualifies as a major amendment under paragraph (c) of this section or that placing the amendment on public notice is otherwise in the public interest.

(b) *Pending applications*. Pursuant to 1.65 of the Commission's rules, applicants are responsible for the continuing accuracy and completeness of information furnished in a pending application or in Commission proceedings involving a pending application. Whenever the information in a pending application is no longer substantially accurate or is no longer complete under section 100.131, or there has been a substantial change that may be of decisional significance to the Commission, applicants shall promptly file to amend the application or otherwise correct the information as may be appropriate.

(c) *Major amendments*. Major amendments submitted pursuant to paragraph (a) of this section establish a new filing date for the application being amended and are subject to the processes for initial applications for authorization or petitions for declaratory ruling, including completeness, public notice, and dismissal rules. An amendment will be deemed a major amendment under the following circumstances if the requested amendment:

(1) fails to affirmatively certify to any of the required certifications in §§ 100.110 through 100.121,

unless such failure to certify was included in the original application;

(2) requests a waiver of the Commission's rules, unless such request was included in the original application;

(3) would increase power, power density, or increase in the out-of-band emissions beyond what is permitted in the Commission's rules;

(4) would result in modification of the antenna pattern(s) or antenna gain characteristics beyond what is permitted in the Commission's rules;

(5) would require operations outside of already coordinated ranges or require re-coordination with federal agencies;

(6) seeks to add frequency bands for authorized operation;

(7) would increase the number of space stations requested;

(8) would change the orbital characteristics or orbital location of the system or space station(s);

(9) It would cause an increased risk of radiofrequency exposure to humans beyond what is permitted pursuant to 47 CFR § 1.1307(b) and 47 CFR § 1.131 of this chapter and § 100.270;

(10) For non-blanket licensed earth stations, it proposes a change of more than 10 seconds (or 100 feet) from the initially requested location; or

(11) If the amendment, or the cumulative effect of the amendment, is determined by the Commission otherwise to be substantial pursuant to section 309 of the Communications Act.

(d) An application or petition for declaratory ruling filed under section 100.140 will be considered to be a newly filed application if it is amended by a major amendment, under paragraph (c) of this section, unless the amendment resolves frequency conflicts with authorized systems and does not create new or increased frequency conflicts.

§ 100.138 Application processing timelines.

(a) *Processing timelines for space stations.*

(1) No later than 30 days after an application for a space station license or request for market access is filed and application fee has been paid as reflected in the FCC's fee filing system, the Commission will place the application on public notice, dismiss the application, or identify for the applicant additional information required to achieve completeness.

(2) The Space Bureau will place an application on public notice as soon as practicable once an application is determined to be complete pursuant to § 100.131.

(3) If the Commission has not acted on a space station application or request for market access within 60 days from the end of the public notice period, the Commission will inform the applicant, with specificity, of the reason(s) preventing authorization, with particular reference to any applicable targeted review categories in § 100.136(c):

(b) *Processing timelines for earth stations.*

(1) For an earth station application filed pursuant to § 100.120, no later than 30 days after the application is filed and application fees have been received as reflected in the FCC's fee filing system, the Commission will place the application on Public Notice, dismiss the application, or identify for the applicant additional information required to achieve completeness.

(2) The Bureau will place an application on Public Notice as soon as practicable once an application is determined to be complete.

(3) If the Commission has not acted upon an earth station application within 60 days following the end of the public notice period, the Commission will inform the applicant, with specificity, of the

reason(s) preventing grant with particular reference to any applicable targeted review categories in § 100.136(c).

(4) Applications for earth station renewals that affirmatively certify to all certifications described in § 100.120 and do not request a waiver of any of the Commission's rules will be deemed granted 30 days after filing the application and payment of any application fees unless the Commission notifies the applicant otherwise prior to the expiration of the 30 days.

§ 100.139 Conditional grants.

(a) An applicant may request that the Commission conditionally grant an application for authority under the circumstances described in this section.

(1) *Orbital debris deferral*. If a space station applicant requests to defer submission of the required orbital debris mitigation and end-of-life disposal plans, the Commission may issue a conditional grant subject to the following requirements:

(i) The applicant must provide all information required by §§ 100.110, 100.111, 100.112, and 100.113, as necessary, except the orbital debris mitigation and end-of-life disposal plan.

(ii) The applicant must certify that the finished and operational satellite system detailed in the application will comply with all the requirements in §§ 100.111, 100.260, and 100.261 including all relevant and required certifications.

(iii) The applicant must certify that it will submit a complete orbital debris mitigation and end-of-life disposal plan that:

(A) Demonstrates compliance with the requirements in §§ 100.260 and 100.261;

(B) Supports the applicant's affirmative Schedule O orbital debris certifications in § 100.111; and

(C) Will be filed at least 6 months prior to integration of any of the proposed system's space stations with a launch vehicle.

(iv) A conditionally authorized system under this section is not authorized to launch and begin operations until the Commission has reviewed and expressly approved the submitted orbital debris mitigation and end-of-life disposal plans. Upon approval, the Commission will issue a license of authorization or authorization for U.S. market access, subject to any additional conditions.

(v) Once a conditional authorization is granted, any proposed changes to the information or certifications required by §§ 100.111, 100.260, or 100.261 will require an application for major modification pursuant to § 100.142. An application for a major modification of a conditional grant under this section renders the authorization null and void.

(vi) A conditional grant of authority under this section will be automatically terminated if a licensee either fails to demonstrate compliance with the requirements and certifications of §§ 100.111, 100.260 and 100.261 or fails to provide a compliant orbital debris mitigation and end-of-life disposal plans at least 6 months prior to the integration of any space station with a launch vehicle.

(2) *Commercial coordination*. In frequency bands where space station operators are required to complete coordination with other commercial operators prior to beginning operations, an applicant may request that the Commission issue an authorization expressly conditioned on completion of the required coordination. Recipients of a conditional grant under this section must provide notice to the Commission in ICFS once coordination has been completed. Operations must conform with all applicable coordination agreements.

(i) NGSO space station operators seeking a license or authorization for U.S. market access under

§ 100.140 or NGSO FSS space station operators subject to § 100.241 are not permitted to seek conditional authority under this section.

(ii) The conditional grant will identify the frequency bands in which coordination must be completed prior to beginning operations. Operators may not operate in those bands until they have provided notice to the Commission that coordination has been completed.

(3) *Federal Coordination*. In frequency bands where space station or earth station operators are required to coordinate with Federal operators, the Commission may issue an authorization expressly conditioned upon completing or operating in accordance with the required Federal coordination. Recipients of a conditional grant under this section must provide notice to the Commission in ICFS once coordination has been completed or a coordination arrangement has been reached. Operations must conform with all applicable coordination requirements, arrangements, or agreements.

(i) Earth Station Requirements.

(A) Earth station operators who receive a conditional grant under this section must coordinate with federal interests or services in all licensed frequency bands shared with federal services.

(B) Unless otherwise specified, earth station operators who receive a conditional grant under this section may continue operating in shared federal bands for which they hold an authorization for special temporary authority on an unprotected, non-interference basis pursuant to that special temporary authorization until coordination is achieved.

(ii) *Space Station Requirements*. Space station operators who receive a conditional grant under this section must coordinate with federal operators.

(b) Any system operations authorized pursuant to a conditional grant under this section are entirely at the risk of the licensee. Any license or operations authorized under conditional grant can be automatically terminated for failure to comply with the terms or conditions of the grant. Upon notice of termination from the Commission, the conditional licensee or grantee must immediately cease all operations, other than those required to maintain control of the apparatus.

§ 100.140 Processing rounds.

(a) This section specifies the procedures for considering license applications or requests for U.S. market access for operation of an NGSO satellite system and a GSO MSS satellite communicating with earth stations with non-directional antennas that request inclusion in a processing round.

(b) Applicants for an initial license authorization or petition for declaratory ruling must clearly state that the applicant is requesting consideration under the section 100.140 processing round procedures and identify the specific frequency bands proposed for operation in the applicable processing round(s).

(c) *Eligible frequency bands*. The Commission delegates authority to the Space Bureau to annually determine the eligible frequency bands that will open for processing rounds at the start of the next year. The Commission will announce the list of eligible frequency bands via public notice no later than 30 days prior to the opening of the processing round.

(d) *Annual processing rounds*. Processing rounds will open annually on January 1st at 12:00 a.m. Eastern Time and will close at 11:59 p.m. Eastern Time on October 31st of the same year.

(1) All applications filed in the same annual application window requesting inclusion in a processing round will be considered part of the same band-specific processing round.

(2) NGSO FSS system applicants authorized for operation in the same processing round must share spectrum in accordance with the procedures in § 100.241(c).

(3) If two or more non-FSS system licensees are authorized in the same processing round, they will be required to coordinate on an equal basis to share the spectrum among all operators licensed in the same processing round. A licensee authorized in an earlier processing round may not prevent

licensees granted in later processing rounds from accessing spectrum.

(e) If an NGSO FSS satellite system operator is licensed in a frequency band prior to the first processing round for that frequency band, the operator must comply with any sharing requirements later applied to licensees authorized in the first processing round in that band.

(f) Services offered pursuant to an NGSO license in a frequency band granted before the Commission has adopted frequency-band-specific service rules for that band will be subject to the default service rules in section § 100.204.

(g) The Commission will review each application in a processing round, and all the pleadings filed in response to each application, and will grant the applications that meet the standards of § 100.136(c), and deny the other applications.

(h) The procedures in this section do not apply to an application for authority to operate a replacement satellite(s) that will be launched before the satellite(s) to be replaced is retired from service or within a reasonable time frame after loss of a space station during launch or due to premature failure in orbit.

(i) The following procedures do not apply to NGSO FSS system applications:

(1) *Spectrum assignment*.

(i) In the event that there is insufficient spectrum in the frequency band available to accommodate all the qualified applicants in a processing round, the available spectrum will be divided equally amount the licensees whose applications are granted pursuant to paragraph (g) of this section, except as set forth in paragraph (i)(1)(ii) of this section.

(ii) In cases where one or more applicants apply for less spectrum than they would be warranted under paragraph (i)(1)(i) of this section, those applicants will be assigned the bandwidth amount they requested in their applications. In those cases, the remaining qualified applicants will be assigned the lesser of the amount of spectrum they requested in their applications, or the amount of spectrum that they would be assigned if the available spectrum were divided equally among the remaining qualified applicants.

(2) *Band segment selection*.

(i) Each licensee will be allowed to select the particular band segment it wishes to use no earlier than 60 days before they plan to launch the first satellite in its system, and no later than 30 days before that date, by submitting a letter to the Secretary of the Commission. The licensee shall serve copies of this letter to the other participants in the processing round pursuant to 1.47 of this chapter.

(ii) The licensee shall request contiguous bandwidth in both the uplink and downlink band. Each licensee's bandwidth selection in both the uplink and downlink band shall not preclude other licensees from selecting contiguous bandwidth.

(iii) If two or more licensees in a particular processing round request the same band segment, all licensees other than the first one to request that particular band segment will be required to make another selection.

(3) *Redistribution of bandwidth*.

(i) In the event that a license granted in a processing round pursuant to this section is cancelled for any reason, the Commission will redistribute the bandwidth allocated to that applicant equally among the remaining applicants whose licenses were granted concurrently with the cancelled license, unless the Commission determines that such a redistribution would not result in a sufficient number of licensees remaining to make reasonably effective use of the frequency band.

(ii) In the event that the redistribution of bandwidth set forth in paragraph (i)(3)(i) of this section would not result in a sufficient number of licensees remaining to make reasonably efficient use of

the frequency band, the Commission will issue a public notice initiating a processing round to invite parties to apply for a license to operate in a portion of the bandwidth made available as a result of the cancellation of the initial applicant's license. Parties already holding licenses in that frequency band will not be permitted to participate in that processing round.

§ 100.141 First-come, first-served application processing for GSO systems.

(a) Applications for GSO satellite systems will be processed on a first-come, first-served basis and will be placed in a queue and considered in the order in which they are filed. Such applications will be granted only if the proposed operation will not cause harmful interference to any previously authorized operations, and the application otherwise meets the criteria for grant.

(b) Notwithstanding paragraph (a), applications for authority to deploy and operate a GSO space station that will be used as an emergency replacement for a previously authorized space station that has been lost as a result of a launch failure or a catastrophic in-orbit failure will not be placed in a queue or processed on a first-come, first-served basis.

§ 100.142 Modifications.

(a) *General.* A licensee may request to modify any portion of a license subject to the requirements described in this section and any conditions placed on the license. Applications for modifications of space station authorizations will be granted unless a grant of the modification would make the applicant unqualified to operate a space or earth station under the Commission's rules or would not serve the public interest, convenience, and necessity.

(b) *Modifications not requiring notice or approval*. A licensee may modify system operations without filing an application for modification or notice to the Commission, unless the change is a major or minor modification pursuant to paragraphs (c) and (d) of this section.

(c) *Major modifications.*

(1) An application for a major modification of a system license or authorization will be considered as an initial license authorization and requires prior authorization from the Commission before a licensee may begin any operations proposed in the modification.

(2) A major modification is any request to change the parameters, terms or conditions of the station authorization that:

(i) Fails to affirmatively certify to any of the required certifications in §§ 100.110 through 100.121;

(ii) Requires a waiver of the Commission's rules;

(iii) Increases power, power density, or increase in the out-of-band emissions beyond what is permitted in the Commission's rules or limits placed on a license;

(iv) Modifies the antenna pattern(s) or antenna gain characteristics or expand the coverage area beyond what is permitted under the licensee's authorization;

(v) Requests operations outside of already coordinated ranges or requires re-coordination with federal agencies;

(vi) Adds frequencies;

(vii) Adds or removes authorized space stations;

(viii) Increases any orbital debris risk beyond that permitted in the licensee's authorization;

(ix) Changes the authorized orbit(s) or orbital location;

(x) Causes an increased risk of radiofrequency exposure to humans beyond what is permitted pursuant to 47 CFR §§ 1.1307(b) and 1.1310;

(xi) Requests to remove or change the terms or conditions of an authorization; or

(xii) The Commission otherwise determines to be substantial pursuant to section 309 of the Communications Act.

(3) Applications for major modifications must comply with the application and processing requirements described in §§ 100.100 through 100.121.

(4) Applications for major modifications will be placed on public notice pursuant to § 100.132.

(d) *Minor Modifications not requiring prior authorization*. Licensees may make the following modifications without prior Commission approval, provided they notify the Commission at the required time. Notifications must be submitted electronically via ICFS.

(1) *Notification required after modification.* For modifications under this paragraph, the licensee must notify the Commission no later than 30 days after the modification is made.

(i) Space station operators may commence operations in inclined orbit mode provided that they submit a notification to the Commission that includes:

(A) The operator's name;

(B) The date of commencement of inclined orbit operation;

(C) The initial inclination;

(D) The rate of change in inclination per year; and

(E) The expected end-of-life of the satellite accounting for inclined orbit operation, and the maneuvers specified under §100.260 of the Commission's rules for end-of-life disposal.

(ii) Space station operators may change an antenna, sensor, or microelectronics, if doing so would not result in a major modification, provided that they submit a notification to the Commission that includes:

(A) The operator’s name;

(B) The date of the modification.

(2) *Notification required prior to modification.* For applications for modifications under this paragraph, the licensee must notify the Commission prior to the modification.

(i) *Hosted space stations*. A space station licensee may modify a license to add one or more U.S.-licensed hosted space stations to an authorized spacecraft provided they submit a notification to the Commission at least 30 days prior to the modification and the change does not otherwise constitute a major modification under paragraph (c)(2) of this section. The licensee must provide the following information as part of the notice:

(A) The name of the hosted space station owner and licensee for the payload;

(B) A description of the hosted space station;

(C) The FCC file number for the hosted space station’s application; and

(D) A certification that the addition of the hosted space station does not increase any orbital debris risk beyond that permitted in the licensee’s authorization and that the host’s operations with the hosted space station will remain within the parameters of the host’s license.

(ii) *Point of communication*. An earth station operator may add a point of communication upon notification to the Commission pursuant to the following procedures:

(A) An earth station applicant may begin operations with the added point of communication under this rule part after filing the Schedule B in ICFS, or any successor system, in accordance with the applicable provisions of part 1, subpart Y of this chapter and paying the applicable

filing fee, provided:

(1) The operator has permission from the satellite operator to communicate with the satellite system;

(2) The earth station operator has completed frequency coordination with other potentially affected licensees as required by Commission rules;

(3) Adding the point of communication does not result in a change classified as a major modification; and

(4) The added point of communication has either an FCC space station license or U.S. market access.

(B) This notification shall constitute a conditional authorization. The conditional authorization will automatically expire and the operator must terminate operations immediately using the new point of communication if, within 15 days of paying the filing fee, the Commission notifies the earth station operator that the added point of communication does not comply with requirements of this paragraph. If the Commission does not provide the foregoing notice within the prescribed period, the conditional authorization will automatically expire and the license will be modified in ICFS or any successor system to add the point of communication as of the date of payment of the filing fee. Nothing in this rule part prohibits the Commission from pursuing enforcement action after the lapse of the 15-day period for noncompliant operation, including noncompliant operation occurring during the period of conditional authorization.

(iii) *GSO relocation*. A space station licensee may conduct telemetry, tracking and command functions necessary to relocate a U.S.-licensed GSO space station to, and maintain the space station at, a different orbital location on the geostationary arc, without prior authorization, but must provide seven days prior notice to the Commission by submitting the Schedule O and Schedule F, as necessary, via ICFS or any successor system. The notice must include the following information:

(A) The date on which the space station is planned to depart from its current orbital location, the planned duration of the drift and the planned date of arrival at the new location.

(B) A certification that the licensee will limit operations of the space station to tracking, telemetry, and command functions.

(C) A description of the frequencies and radiocommunication services to be provided during and after the space station relocation.

(D) A certification that the space station will be relocated to a position within ±0.15° of an orbital location for which a filing of the administration of the United States of America has been recorded in the Master International Frequency Register of the International Telecommunications Union (ITU).

(E) A certification that the space station has coordinated all operations at the relocated site location under the ITU filing of the administration of the United States of America at that location.

(F) A certification that that the space station will conduct all operations after the relocation within the technical parameters coordinated under the ITU filing of the administration of the United States of America at that location.

(G) A certification that all operations, including any non-telemetry, tracking and command operations, during and after the relocation will be conducted on an unprotected, non-harmful interference basis and that all operations will be coordinated with any existing geostationary space stations to ensure that no harmful interference results from operations during or after the

relocation.

(H) A certification that the relocation will not result in a lapse of service for any current customer and provides a list of any frequency bands that will not be in use by the licensee at the current orbital location after the relocation of the space station.

(I) A certification that the space station will not be used to bring into use, or maintain the use of, any ITU filing of an administration other than the United States of America.

(J) A certification that:

(1) The licensee has assessed and limited the probability of the satellite(s) becoming a source of debris as a result of collisions with large debris or other operational satellites during or after the relocation;

(2) The proposed station-keeping volume of the space station(s) following relocation will not overlap a station-keeping volume reasonably expected to be occupied by any other space station, including those authorized by the Commission, applied for and pending before the Commission, or otherwise the subject of an ITU filing and either in orbit or progressing towards launch; and

(3) The relocation will not result in any changes to the previously approved orbital debris mitigation plans for the satellite(s), including the end-of-life disposal plans for the satellite(s) and the quantity of fuel that will be reserved for disposal maneuvers.

(K) A certification that the licensee acknowledges that any action taken or expense incurred as a result of the relocation is solely at the licensee's own risk and is without prejudice to any potential enforcement action by the Commission.

(e) *Modification to extend a required date of completion*. Any application for modification of authorization to extend a required date of completion, as set forth in § 100.274 for earth station authorizations or § 100.146 for space station authorizations, or as included as a condition of any earth station or space station authorization, must include a verified statement from the applicant:

(1) That states that the additional time is required due to unforeseeable circumstances beyond the applicant's control, describes these circumstances with specificity, and justifies the precise extension period requested; or

(2) That states there are unique and overriding public interest concerns that justify an extension, identifies these interests and justifies a precise extension period.

§ 100.143 Special temporary authorizations.

(a) In circumstances requiring immediate or temporary use of facilities, a request may be made for special temporary authority (STA) to install and/or operate new or modified equipment or for modified operations.

(b) A request for temporary authority must be filed in accordance with the applicable requirements of §§ 100.100 through 100.121. Alternatively, a request for STA may instead reference a pending license application if the requested STA is for identical operations as requested in the license application.

(c) No request for temporary authority will be considered unless it is received by the Commission at least 3 business days prior to the date of proposed operation, pursuant to § 1.4 of this chapter. A request received within less than 3 business days may be accepted only upon due showing of extraordinary reasons for the delay in submitting the request which could not have been reasonably foreseen by the applicant.

(d) Other than for those services expressly enumerated in § 309(b) of the Communications Act, the Commission may grant a temporary authorization pursuant to the following:

(1) The Commission may grant a temporary authorization only if there are circumstances requiring

temporary operations in the public interest and that delay in the institution of these temporary operations would seriously prejudice the public interest.

(2) If placed on public notice pursuant to § 100.132, the Commission may grant an STA for up to 180 days that may not be renewed or extended other than as expressly enumerated in paragraph (d)(5) of this section. Temporary authorization holders authorized under this paragraph may file for a new STA for up to another 180 days no sooner than 60 days and no later than 30 days before the end of the prior grant of special temporary authority.

(3) If not placed on public notice, the Commission may grant an STA for a period of up to 60 days.

(4) An STA for an earth station not placed on public notice will be deemed granted 5 days after filing and paying of the application fee if the application is associated with an already approved Form 312 Main Form and the applicant certifies that no changes need to be made to any information contained within the Form 312 Main Form unless the Commission informs the applicant otherwise. Notice of the grant will appear in the actions taken public notice.

(5) An STA will be automatically extended provided that an application that is identical to the STA but for full authority pursuant to §§ 100.100 through 100.121 has been filed at least 15 days prior to the expiration of the underlying STA. When such application is filed the operations may continue in accordance with the other terms and conditions of the STA pending disposition of the application for full authority, unless the applicant is notified otherwise by the Commission.

(6) An STA holder authorized pursuant to paragraph (d)(3) of this section cannot file for subsequent STAs without going on public notice pursuant to paragraph (d)(2) of this section.

(e) For operations expressly enumerated in § 309(b) of the Communications Act, the Commission may grant an STA pursuant to the following:

(1) The Commission may grant a temporary authorization only upon a finding that there are extraordinary circumstances requiring temporary operations in the public interest and that delay in the institution of these temporary operations would seriously prejudice the public interest. Convenience to the applicant, such as marketing considerations or meeting scheduled customer in-service dates, will not be deemed sufficient for this purpose.

(2) The Commission may grant a temporary authorization for a period not to exceed 180 days, with additional periods not exceeding 180 days, if the Commission has placed the STA request on public notice.

(3) The Commission may grant a temporary authorization for a period not to exceed 60 days, if the STA request has not been placed on public notice, and the applicant plans to file a request for regular authority for the service.

(4) The Commission may grant a temporary authorization for a period not to exceed 30 days, if the STA request has not been placed on public notice, and an application for regular authority is not contemplated.

(f) Temporary authorizations granted pursuant to this subsection are not of a continuing nature or subject to § 1.62 of this chapter.

(g) All operations authorized by and pursuant to this rule part are on a non-interference, unprotected basis and cannot be modified.

(h) A special temporary authorization shall automatically terminate upon the expiration date specified therein, or upon failure of the grantee to comply with any terms or conditions in the authorization, unless otherwise extended pursuant to paragraph (d)(5).

§ 100.144 Coordination requirements with Federal government users.

The Commission will coordinate with the National Telecommunications Information Administration

regarding the operations of any application for a license or market access requesting to operate in a shared government/non-government frequency band if requested by an applicant. The Commission will use its procedures for liaison with NTIA to reach agreement with respect to achieving compatible operations between federal government users under the jurisdiction of NTIA and commercial applicants in shared government/non-government frequency bands through the frequency assignment and coordination practices established by NTIA and the Interdepartment Radio Advisory Committee (IRAC) or any successor organization.

§ 100.145 Assignments and transfers of control.

(a) *Prior approval required*. An application for Commission authorization must be filed prior to any transfer, assignment, or disposal of a station license, or accompanying rights, whether voluntarily or involuntarily, directly or indirectly, or by transfer of control of any entity, except as provided in paragraph (c)(1) of this section. The Commission will grant an application only if it finds that doing so will serve the public interest, convenience, and necessity.

(b) *Assignment of license*. An applicant must submit an application to voluntarily assign (*e.g.*, as by contract or other agreement) or involuntarily assign (*e.g.*, as by death, bankruptcy, or legal disability) a station authorization.

(c) *Transfers of control*. Transfers of control requiring Commission approval, for purposes of this section, include all transactions that:

(1) Change the party controlling the affairs, operations, or management of the licensee; or

(2) Effect any change in a controlling interest in the ownership of the licensee, including changes in legal or equitable ownership.

(d) *Pro forma transactions*.

(1) *Pro forma transactions involving a telecommunications carrier*. No prior Commission approval is required for a non-substantial (pro forma) transfer of control or assignment of license involving a telecommunications carrier as defined in 47 U.S.C. 153(51). The pro forma transferee or assignee must file a notification with the Commission no later than 30 days after the transfer or assignment is complete and include a certification that the transfer of control or assignment was pro forma and, together with all previous pro forma transactions, did not result in a change of the actual controlling party.

(2) *Pro forma transactions not involving a telecommunications carrier.* An application for Commission approval of a non-substantial (pro forma) transfer of control or assignment of a license not involving a telecommunications carrier, as defined in 47 U.S.C. 153(51), will be deemed granted one business day after filing, provided that:

(i) Approval does not require a waiver of, or declaratory ruling pertaining to, any applicable Commission rule; and

(ii) The application includes a certification that the proposed transfer of control or assignment is pro forma and that, together with all previous pro forma transactions, it would not result in a change in the actual controlling party.

(e) *Transfer of control of corporation holding license.* For a transfer of control of a corporation, which holds one or more licenses voluntarily or involuntarily (*de jure* or *de facto*), an applicant must submit an application via ICFS. For involuntary transfers, an application must be file within 10 days of the event causing the transfer of control. The Form 312 – Main Form and Schedule A may also be used for non-substantial (*pro forma*) transfers of control.

(f) *Market access.*

(1) A non-U.S.-licensed satellite operator that acquires control of a non-U.S.-licensed space station that is permitted to serve the United States must notify the Commission within 30 days after

consummation of the transaction.

(2) If the transferee or assignee is not licensed by, or seeking a license from a country that is a WTO member for services covered under the WTO BTA, the non-U.S.-licensed satellite operator must provide the showings under the market access application procedures in § 100.114.

(3) A non-U.S.-licensed satellite that is transferred to new owners may continue to provide service in the United States unless and until the Commission determines otherwise.

(g) *Receive-only earth station registrations*. No prior Commission approval is required for the assignment or transfer of control of a receive-only earth station registration. For all such transactions other than non-substantial (*pro forma*) transfers of control, the transferee or assignee must file a notification with the Commission no later than 30 days after the assignment or transfer of control is completed. No notification is required for a pro forma transfer of control of a receive-only earth station registrant.

(h) *Involuntary assignments or transfers of control*. Applications for assignment or transfer of control on an involuntary basis (*e.g.*, by bankruptcy, death, or legal disability) must be filed within ten days of the event causing the assignment or transfer of control.

(i) *Applications with multiple authorizations*. A single application or notification may be filed to cover an assignment or transfer of a group of station authorizations held by the same entity to a single assignee or transferee, provided the authorizations are in the same radio service for the same class of facility and the application identifies in an exhibit each station by call sign, station location, and expiration date of license.

(j) *Consummation*. Assignments and transfers of control shall be completed within 180 days from the date of authorization. Within 30 days of consummation, the Commission shall be notified via ICFS of the date of consummation and the file numbers of the applications involved in the transaction.

(k) *Good faith intent to construct*. The Commission retains discretion in reviewing assignments and transfers of control of space station and earth station licenses to determine whether the initial license was obtained in good faith with the intent to construct a satellite system.

§ 100.146 Milestones.

(a) *GSO systems*. Recipients of an initial license for a GSO satellite system, other than an SDARS space station, must launch, position in the assigned orbital location, and operate the authorized space station(s) in accordance with the system authorization no later than five years after the grant of license, unless a different schedule is established by this chapter or the Commission.

(1) Licensees must demonstrate compliance with paragraph (a) or notify the Commission in writing that the requirement was not met within 15 days after the specified deadline.

(2) The failure to meet the milestone in paragraph (a), if no authorized space station is functional in orbit, will result in automatic termination of the station authorization.

(b) *NGSO systems*. The following milestone requirements apply to recipients of an initial authorization for an NGSO satellite system or grant of U.S. market access, excluding NGSO systems authorized in a processing round pursuant to § 100.140, SDARS space stations, and VTSS authorizations.

(1) *Deployment*. Licensees must comply with the following deployment requirements:

(i) Launch, deploy, and operate at least one satellite in accordance with the space station authorization for a continuous period of ninety (90) days and no later than seven years after the grant of the authorization, unless a different schedule is established by this chapter or by the Commission.

(ii) If the requirement in paragraph (b)(1)(i) is met, the licensee must launch ten percent of the maximum number of satellites authorized for service, place them in their assigned orbits, and

operate in accordance with the station authorization no later than nine years after grant of the authorization unless a different schedule is established by Title 47, Chapter 1 or by the Commission.

(iii) If the requirements in paragraphs (b)(1)(i) and (b)(2)(ii) are met, the licensee must launch 50% of the maximum number of satellites authorized for service, place them in their assigned orbits, and operate in accordance with the station authorization no later than 12 years after the grant of the authorization, unless a different schedule is established by Title 47, Chapter 1 or by the Commission.

(iv) If the requirements in paragraphs (b)(1)(i), (ii) and (iii) are met, the licensee must launch the remaining satellites necessary to complete its authorized service constellation, place them in their assigned orbits, and operate each of them in accordance with the station authorization no later than 14 years after the grant of the authorization.

(2) *Compliance*. Licensees subject to the milestone requirements of paragraph (b)(1) must either demonstrate compliance with the applicable milestone or notify the Commission in writing that the milestone was not met, within 15 days of the specified deadline.

(i) Compliance with paragraph (b)(1)(i) of this section may be demonstrated by certifying that a satellite has been launched, placed in an authorized orbital location or non-geostationary orbit(s), and that in-orbit operation of the satellite has been tested, maintained, and found to be consistent with the terms of the authorization for a continuous period of 90 days.

(ii) Compliance with paragraphs (b)(1)(ii), (b)(1)(iii) and (b)(1)(iv) of this section may be demonstrated by certifying that the satellites have been launched and placed in the authorized non-geostationary orbit(s) and that in-orbit operation of the satellites have been tested and found to be consistent with the terms of the authorization.

(3) *Termination*. A space station authorization shall be automatically terminated, in whole or in part, without further notice to the licensee, in the following circumstances:

(i) If a licensee fails to meet the requirements in paragraph (b)(1)(i) of this section and no authorized space station is functional in orbit, the station authorization shall be automatically terminated in whole.

(ii) If the licensee fails to meet the milestone requirements in paragraphs (b)(1)(ii) or (b)(1)(iii) of this section, and at least one authorized space station is functional in orbit, the space station authorization shall be terminated in part, resulting in the termination of authority for any satellites not in orbit as of the milestone date, excluding replacements.

(iii) If the licensee fails to meet any other milestone imposed by the Commission as a condition of authorization.

(iv) After termination of a space station authorization under this section, licensees may continue to launch and operate technically identical replacements, such that the total number of satellites operating at any one time is not greater than the number of functional satellites in an authorized orbit at the time of the applicable milestone in paragraph (b)(1) of this section or as imposed as a condition to the license authorization.

(c) *MOSS*. Recipients of an initial license for a MOSS system or grant of U.S. market access must meet the applicable milestone requirements of this section for each type of satellite in its system.

(d) *NGSO systems in processing rounds.* The following provisions apply to recipients of an initial authorization for an NGSO system license or U.S. market access under the processing round procedures pursuant to section 100.140:

(1) *Deployment*. Licensees must comply with the following deployment requirements:

(i) Licensees must launch 50 percent of the maximum number of space stations authorized for

service, place them in their assigned orbits, and operate them in accordance with the grant of the authorization no later than six years after the grant of authorization, unless a different schedule is established by this chapter or the Commission. This paragraph does not apply to replacement satellites.

(ii) Licensees must launch the remaining space stations necessary to complete its authorized service constellation, place them in their assigned orbits, and operate each of them in accordance with the authorization no later than nine years after the grant of the authorization, unless a different schedule is established by this chapter or the Commission. This paragraph does not apply to replacement satellites.

(2) *Compliance*. Licensees must either demonstrate compliance with the requirements in paragraph (d) or notify the Commission in writing that the requirement was not met within 15 days of the specified deadline. Compliance may be demonstrated by certifying that the space station(s) in question, has, or have, been launched and placed in the authorized non-geostationary orbit(s) and that in-orbit operation of the satellites has been tested and found to be consistent with the terms of the authorization.

(3) *Termination of authority*. A station authorization shall be automatically terminated, in whole or in part, without further notice to the licensee, in the following circumstances:

(i) If a licensee fails to meet the applicable milestone specified in paragraph (d)(1)(i) and no authorized space station is functional in orbit, the station authorization shall be automatically terminated in whole.

(ii) If a licensee fails meet the applicable milestone specified in paragraph (d)(1)(ii), the station authorization will be terminated in part, resulting in the termination of authority for any satellites not in orbit as of the milestone date, excluding replacements.

(iii) If a licensee fails to meet any other milestone imposed by the Commission as a condition of authorization.

(iv) Failure to maintain 50% of the maximum number of NGSO space stations authorized for service as functional space stations in authorized orbits following the 9-year milestone in paragraph (d)(1)(ii) will result in termination of the authority for the space stations not in orbit as of the date of noncompliance, excluding replacements.

(v) After termination of a space station authorization under this section, licensees may continue to launch and operate technically identical replacements, such that the total number of satellites operating at any one time is not greater than the number of functional satellites in an authorized orbit at the time of the applicable milestone in paragraph (d)(2) of this section or as imposed as a condition to the license authorization.

(4) *Reassignment*. If a licensee fails to meet the milestone in paragraph (d)(1)(i) of this section, the authorized NGSO FSS system will be reassigned to a later processing round. The date of the missed milestone will determine the appropriate processing round to which the NGSO FSS system will be reassigned.

(i) Licensees that are reassigned to a later-round under paragraph (d)(4) must comply with all applicable NGSO FSS sharing requirements in § 100.241, with the exception that licensees are permitted to operate on a non-interference, unprotected basis in the reassigned round with respect to earlier-round systems until the licensee either certifies that it has completed a coordination agreement with any operational systems or submits a compatibility showing for Commission approval pursuant to § 100.241(d).

(ii) Licensees that are reassigned to a later processing round will not be considered as a new application or petition with respect to calculation of the sunsetting period in § 100.241(e).

(e) In cases where the Commission grants more than one space station authorization for the same NGSO

system, the milestone schedule as applied to the first issuance of license or authorization will be applied to the entire satellite system.

(f) *Conditional grants*. For recipients of a conditional grant of authorization pursuant to § 100.139, the applicable milestone deployment requirements will attach to the system on the date the conditional grant is issued. Any subsequent or final authorization for a space station license or authorization issued to the conditionally granted system will incorporate the original milestone deployment dates as established in the conditional grant.

§ 100.147 Surety bonds.

(a) A licensee or recipient of U.S. market access authorization for an NGSO or MOSS system licensed pursuant to § 100.140 must post a surety bond no later than 30 days from the date of initial authorization. Failure to post a bond will automatically render the licensee null and void.

(b) An NGSO licensee subject to paragraph (a) of this section must have on file with the Commission a surety bond requiring payment in the event of a default as defined in paragraph (e) of this section in an amount, at a minimum, determined by the applicable formula: B = $10,000,000 - $10,000,000 * (D/(0.9A)), with the resulting dollar amount rounded to the nearest $10,000, where B is the bond amount, D is the number of NGSO satellites deployed, and A is the number of NGSO satellites authorized, excluding replacements.

(c) A licensee may reduce the amount of the surety bond required, as determined by paragraph (b) of this section, upon written notification to the Commission providing an update on the total number of deployed satellites (D) in the authorized system. A revised surety bond amount reflecting an updated calculation determined by paragraph (b) will become effective upon filing with the Commission.

(d) A licensee will be relieved of its surety bond obligation under paragraph (a) of this section once the licensee demonstrates compliance with the milestone requirement in § 100.146(d)(1)(ii) or once the amount of the surety bond amounts to zero dollars, as calculated under paragraph (c) of this section.

(e) A licensee will be considered to be in default of its surety bond obligation under paragraph (a) of this section if the station authorization is subject to automatic termination under §§ 100.146(d)(3)(i), (d)(3)(ii), or (d)(3)(iii), or if the licensee surrenders the authorization before the amount of the bond required amounts to zero dollars, as calculated under paragraph (b) of this section.

(f) The licensee must obtain a surety bond issued by a surety company certified as an acceptable surety on Federal bonds by the U.S. Department of the Treasury in accordance with 31 U.S.C. 9304 *et seq.* and that is listed in the current Treasury Circular 570. The bond must name the U.S. Treasury as beneficiary in the event of the licensee's default. The licensee must provide the Commission with a copy of the performance bond, including all details and conditions.

§ 100.148 License and market access terms and renewals.

(a) *General*. The terms of licenses and authorizations for U.S. market access, and renewals of such licenses and authorizations, shall be as set forth in this section, unless a shorter term is specified by the Commission, in its discretion, or requested by the applicant.

(b) *GSO satellite systems*. Licenses and market access grants for GSO satellite system authorizations will be issued for a period of 20 years beginning on the date of grant of the license, except as follows:

(i) *Broadcast and SDARS*. Licenses and market access grants for DBS space stations and 17/24 GHz BSS space stations licensed as broadcast facilities, and for SDARS space stations and terrestrial repeaters, will be issued for a period of eight years.

(ii) *Non-broadcast DBS*. Licenses for DBS space stations not licensed as broadcast facilities will be issued for a period of 10 years.

(c) *NGSO satellite systems and VTSS.*

(1) *License terms*. Licenses and U.S. market access authorizations for NGSO satellite systems and VTSS authorizations will be issued for a period of 20 years beginning on the date of grant of the license or authorization.

(2) *Renewals*. Applications for renewals of authorizations for NGSO satellite systems or VTSS authorizations shall be filed no earlier than 12 months, and no later than 30 days, before the expiration date of the license.

(3) *NGSO replacement satellites*. Unless otherwise specified by the Commission, an NGSO satellite system licensee or recipient of U.S. market access operating pursuant to a blanket license may deploy and operate replacement satellites in an authorized orbit, up to the total number of satellites authorized, within the terms of the system authorization without prior Commission approval, provided that the replacement does not require a major modification under § 100.142(c).

(d) *Earth stations.*

(1) *Transmitting stations*. Licenses for transmitting earth stations will be issued for a period of 20 years beginning on the date of grant of the license. Earth station site registrations for Immovable earth stations will be valid until the date identified in the underlying Nationwide, Non-Site License grant.

(2) *Receive-only stations*. Licenses and registrations for receive-only earth stations will be issued for a period of 20 years from the date on which the application was filed.

(3) *Renewals*. Applications for renewals of earth station licenses or receive-only registrations must be submitted on FCC Form 312R no earlier than 12 months, and no later than 30 days, before the expiration date of the license. Immovable Earth Stations registered pursuant to § 100.120 will be renewed in conjunction with renewal of the underlying Nationwide, Non-Site License authorization.

Subpart C – Operational and Frequency Specific Requirements

§ 100.200 Licensee operations.

(a) Except as otherwise specified in this rule part, approval for orbital deployment and a station license or authorization (*i.e.*, operating authority) must be applied for and granted before a space station may be deployed and operated in orbit. Approval for orbital deployment may be requested in an application for a space station license.

(b) Licensees under this part may operate within the boundaries of their authorizations, the Commission's rules, and any other relevant provision of this Chapter, the Communications Act of 1934, as amended, or other statute, subject to any Commission action, coordination obligations, and any conditions or constraints placed on the license or licensee in any such grant of authority.

(c) If the Commission grants an authorization for an NGSO satellite system outside of a processing round, then the operations of the NGSO satellite system must be compatible with existing operations in the authorized frequency band(s) and must not materially constrain future space station entrants from using the authorized frequency band.

§ 100.201 Reporting requirements.

(a) *Point of contact*.

(1) *Space stations*.

(i) A space station licensee or market access recipient must provide, prior to commencing operation of a space station or with U.S. earth stations, a current listing of the names, titles, address, email addresses, and telephone numbers of the points of contact for resolution of interference problems and for emergency response. Contact personnel should include those responsible for resolution of short-term, immediate interference problems at the system control

center, and those responsible for long-term engineering and technical design issues.

(ii) A space station licensee or market access recipient must provide the point(s) of contact for personnel responsible for collision avoidance procedures, providing a listing of the name, title, address, email addresses, and telephone numbers for any listed individuals. The contact personnel must be authorized and capable of making operational decisions and must maintain 24/7 availability.

(iii) If, at any time, a space station licensee or market access recipient's submitted point of contact information changes, the licensee or market access recipient must file the updated information in ICFS within ten days of the effective date of change.

(2) *Earth stations*. The licensee of any transmitting earth station licensed under this part must update the contact information provided in the most recent license application for the station within 10 days of any change therein. The updated information must be filed in the station's current authorization file.

(b) *Space station control arrangements*. The operator of any space station licensed by the Commission or granted U.S. market access must file the following information with the Commission in ICFS prior to commencing operation with the space station, or, in the case of a non-U.S.-licensed space station, prior to commencing operation with U.S. earth stations.

(1) The call signs of any telemetry, tracking, and command earth station(s) communicating with the space station from any site in the United States.

(2) The location, by city and country, of any telemetry, tracking, and command earth station that communicates with the space station from any point outside the United States.

(3) Alternatively, instead of listing the call signs and/or locations of earth stations currently used for telemetry, tracking, and command, the space station operator may provide 24/7 contact information for a satellite control center and a list of the call signs of any U.S. earth stations, and the locations of any non-U.S. earth stations, that are used or may be used for telemetry, tracking, and command communication with the space station(s) in question.

(4) If call sign or location information provided pursuant to this paragraph becomes invalid due to a change of circumstances, the space station operator must file updated information in ICFS within 30 days, except with respect to changes less than 30 days in duration, for which no update is necessary.

(c) *Ephemeris data.*

(1) Space station licensees and market access recipients must submit accurate and timely ephemeris data for all spacecraft in their authorized system(s), including the propagated ephemeris data and covariance for any planned maneuvers, to the following:

(i) The 18th Space Defense Squadron or a successor entity as identified by the Commission; or

(ii) One or more U.S. space situational awareness systems which have been identified by the Commission as satisfying this requirement.

(2) Space station operators are responsible for ensuring the quality of data submitted to space situational awareness systems in accordance with the requirements of such systems.

(d) *Space system safety reports*. Beginning after the launch of the first satellite in an NGSO satellite system, space station operators must submit in ICFS a semi-annual report, by January 1 and July 1 each year, covering the preceding six-month period, respectively, from June 1 to November 30 and December 1 to May 31, that includes the following information:

(1) The number of conjunction events identified for satellites in the NGSO satellite system during the reporting period, including the number of events that resulted in an action such as maneuver or coordination with another operator;

(2) The number of satellites that were removed from operation or screened from further deployment;

and

(3) The number of satellites that re-entered the atmosphere.

§ 100.202 Duties regarding space communications transmissions and interference.

(a) *Unauthorized transmissions*. No person shall:

(1) Transmit to a space station unless the specific transmission is first authorized by the satellite network control center;

(2) Conduct transmissions over a space station unless the operator is authorized to transmit at that time by the space station licensee;

(3) Transmit communications to or from earth stations in the United States unless such communications are authorized under a service contract with the holder of a pertinent Commission earth station license or under a service contract with another party with authority for such operation delegated by such a licensee; or

(4) Transmit in any manner that causes harmful interference to the authorized transmission of another licensee unless that licensee is authorized on an unprotected basis.

(b) *Cessation of emissions*. Space stations and earth stations shall be made capable of ceasing radio emissions by the use of appropriate devices (battery life, timing devices, ground command, etc.) that will ensure definite cessation of emissions.

(c) *Operations at lowest level necessary to close the link.* Each earth and space station transmission shall be conducted at the lowest power level necessary to close the link for the required signal quality as indicated in the application and further amended by any coordination agreement(s).

(d) *Unauthorized access*. Licensees shall ensure that the licensed facilities are properly secured against unauthorized access or use. For space station operations, this includes securing satellite commands against unauthorized access and use.

(e) *ITU filings*. Space station licensees must operate in accordance with any filings submitted to the ITU by the Commission on behalf of the licensee, unless otherwise conditioned by the Commission. No protection from interference caused by radio stations authorized by other Administrations is guaranteed unless ITU procedures are timely completed or, with respect to individual Administrations, coordination agreements are successfully completed. A license for which such procedures have not been completed may be subject to additional terms and conditions required for coordination of the frequency assignments with other Administrations.

(f) *Coordination agreements*. Any coordination agreements, both domestic and international, concerning specific frequency usage constraints, including non-use of any particular frequencies within the frequency bands listed in the station authorization, are considered to be conditions of the station authorization.

(g) *Sharing of operational information and resolution of interference*.

(1) Space station licensees are responsible for maintaining complete and accurate technical details of current and planned transmissions over their satellites and shall require that authorized users of transponders on their satellites, whether by tariff or contract, provide any necessary technical information in this regard including that required by § 100.240.

(2) Based on this information, space station licensees shall exchange among themselves general technical information concerning current and planned transmission parameters as needed to identify and promptly resolve any potential cases of harmful interference between their satellite systems.

(3) Space station licensees shall provide upon request by the Commission, and by earth station licensees authorized to transmit on their satellites, relevant information needed to avoid harmful interference to other users, including the polarization angles for proper illumination of a given transponder.

(4) Where the operations of a space station or earth station are suspected of causing harmful interference, the station operator shall take reasonable measures to determine whether its operations are the source of interference, and if they are, shall take all measures necessary to resolve the interference.

(5) A record shall be maintained by the space station licensee and/or earth station licensee of all harmful interference incidents and their resolution. These records shall be made available to the Commission upon request.

(6) All licensees are required to cooperate fully with the Commission in any investigation of interference problems.

(h) *Station identification*. The requirement to transmit station identification is waived for all radio stations licensed under this part with the exception of earth stations subject to the requirements of § 100.233.

(i) *Procedures to be followed in the event of harmful interference.*

(1) A station operator whose transmission is suffering harmful interference shall first check all other stations within the licensee's network that could be causing the harmful interference to ensure that none of them is the source of the interference.

(2) After the station operator has determined that the source of the interference is not another station operating within the network, the station operator shall make reasonable efforts to determine the source of the interference including observing the date, time, and duration of each interference events along with spectrum analyzer measurements of the frequency and power level(s) of the interfering signal(s). A record shall be maintained of all harmful interference events. These records shall be made available to an FCC representative upon request and to any operators whose system may be suspected as the cause of the interference.

(3) A station licensee whose operations are suspected of causing harmful interference to the operations of another station shall take reasonable measures to determine whether its operations are the source of any harmful interference. Where the operations of the suspect station are the source of the interference, the licensee of that station shall take all measures necessary to resolve the interference including working closely with the operator of the station or system being interfered with to resolve the interference.

(4) At any point, the operator of a station or system being interfered with may contact the Commission's Columbia Operations Center in Columbia, Maryland, for assistance in resolving the matter. The 24/7 Operations Center office specializes in the resolution of satellite communications interference problems. All licensees are required to cooperate fully with the Commission in any investigation of interference problems.

§ 100.203 Telemetry, tracking, and command.

(a) Telemetry, tracking, and command signals may be transmitted in frequencies within the assigned bands that are not at a band edge only if the transmissions cause no greater interference and require no greater protection from harmful interference than the communications traffic on the satellite network or, for GSO space stations, have been coordinated with operators of authorized co-frequency space stations at orbital locations within six degrees of the assigned orbital location.

(b) Frequencies, polarization, and coding of telemetry, tracking, and command transmissions must be selected to minimize interference into other satellite networks.

§ 100.204 Default service rules.

(a) *Scope*. The technical rules in this section only apply to licenses to operate a satellite service in a frequency band granted after a domestic frequency allocation has been adopted for that band, but before any frequency band-specific rules have been adopted for that frequency band.

(b) *NGSO satellite systems*. For all NGSO satellite system licenses authorizing operations in a frequency band for which the Commission has not adopted frequency band-specific service rules at the time the

license is granted, the licensee will be required to comply with the applicable technical requirements of the Commission's rules.

(c) *GSO satellite systems*. For all GSO satellite system licenses authorizing operations in a frequency band for which the Commission has not adopted frequency band-specific service rules at the time the license is granted, the licensee will be required to comply with the applicable technical requirements in the Commission's rules.

(d) *Earth stations*.

(1) Earth station licensees authorized to operate with one or more space stations in this section shall comply with the earth station antenna performance standards specified in § 100.278.

(2) Earth station licensees with a gain equivalent or higher than the gain of a 1.2 meter antenna operating in the 14.0-14.5 GHz band, authorized to operate with one or more space in this section in frequency bands greater than 14.5 GHz shall be required to comply with the antenna input power density requirements set forth in § 100.279.

(3) Mobile earth station licensees authorized to operate with one or more space stations must comply with the requirements in § 100.120, § 100.113, §100.278, § 100.282 and § 100.283 as applicable. In addition, earth station licensees authorized to operate with one or more space stations in frequency bands shared with terrestrial wireless services shall comply with the requirements in § 100.275.

(e) *Later-adopted service rules*. In the event that the Commission adopts frequency band-specific service rules for a particular frequency band after it has granted one or more space station or earth station licenses for operations in that frequency band, those licensees will be required to come into compliance with the frequency band-specific service rules within 30 days of the effective date of those rules, unless otherwise specified by either the Commission or Space Bureau.

GENERAL SPACE STATION RULES

§ 100.210 Telemetry, Tracking, and Command Authority for Short Term Maneuvers.

(a) A space station authorized to operate under this part is also authorized to transmit in connection with the following short-term, transitory maneuvers:

(1) Maneuvers directly related to post-launch, orbit-raising operations;

(2) Orbit-lowering and de-orbit maneuvers;

(3) Maneuvers directly related to transferring between authorized orbital regimes or locations; or

(4) Reconfiguration of satellites within the parameters of an authorized constellation.

(b) Operations under this subpart must comply with the following conditions:

(1) Authority is limited to those tracking, telemetry, and control frequencies in which the space stations are authorized to operate at their assigned orbital location(s);

(2) The space station operator must coordinate in good faith on an operator-to-operator basis with any potentially affected satellite networks; and

(3) The space station licensee is required to accept interference from any lawfully operating satellite network or radio communication system.

§ 100.211 Frequency use generally.

(a) *Frequency-use restrictions*. In addition to the frequency-use restrictions set forth in § 2.106 of this chapter, the following restrictions apply:

(1) In the 27.5-28.35 GHz band, the FSS (Earth-to-space) is secondary to the Upper Microwave Flexible Use Service authorized pursuant to part 30 of this chapter, except for FSS operations associated with earth stations authorized pursuant to § 100.280.

(2) Use of the 37.5-40 GHz band by the FSS (space-to-Earth) is limited to individually licensed earth stations. Earth stations in this band must not be ubiquitously deployed and must not be used to serve individual consumers.

(3) The U.S. non-Federal Table of Frequency Allocations, in § 2.106 of this chapter, is applicable between Commission space station licensees relying on a U.S. ITU filing and transmitting to or receiving from anywhere on Earth, including airborne earth stations, in the 17.3-20.2 GHz or 27.5-30.0 GHz bands.

(b) *Frequency tolerance, space stations*. The carrier frequency of each space station transmitter authorized in these services shall be maintained within 0.002% of the reference frequency.

(c) *Cross-polarization isolation*. Space station antennas operating in the DBS including feeder links for DBS must be designed to provide a cross-polarization isolation such that the ratio of the on-axis co-polar gain to the cross-polar gain of the antenna in the assigned frequency band is at least 27 dB within the primary coverage area.

(d) *Full frequency re-use*. All space stations in the FSS operating in any portion of the 3600-4200 MHz, 5091-5250 MHz, 5850-7025 MHz, 10.7-12.7 GHz, 12.75-13.25 GHz, 13.75-14.5 GHz, 15.43-15.63 GHz, 17.3-17.8 GHz, 18.3-20.2 GHz, 24.75-25.25 GHz, or 27.5-30.0 GHz bands, including feeder links for other space services, and in the BSS in the 17.3-17.8 GHz band (space-to-Earth), shall employ state-of-the-art full frequency reuse, either through the use of orthogonal polarizations within the same beam and/or the use of spatially independent beams. This requirement does not apply to telemetry, tracking, and command operation.

§ 100.212 Field strength limits and Power flux-density.

(a) *Field strength limits; SCS*. The aggregate field strength at the earth's surface produced by all visible beams and satellites at of each satellite constellation providing SCS service as they move over any given point or area in bands authorized by NG33A in the United States Table of Frequency Allocations must not exceed:

(1) 40 dBμV/m for the 600 MHz, 700 MHz, and 800 MHz bands; and

(2) 47 dBμV/m for the AWS and PCS bands; and

(3) Licensees must comply with all applicable provisions and requirements of treaties and other international agreements between the United States Government and the governments of other countries, including Canada and Mexico. Absent specific international agreements regarding SCS, licensees must comply with the limits provided in this section.

(b) *Power flux density limits at the surface of the earth from space station. 2496-2500 MHz – NGSO*. In the 2496-2500 MHz band, the power flux-density at the Earth's surface produced by emissions from non-geostationary space stations for all conditions and all methods of modulation shall not exceed the following values (these values are obtained under assumed free-space propagation conditions):

(1) −144 dB (W/m^2) in 4 kHz for all angles of arrival between 0 and 5 degrees above the horizontal plane; −144 dB (W/m^2) + 0.65(δ −5) in 4 kHz for all angles of arrival between 5 and 25 degrees above the horizontal plane;

(2) −131 dB (W/m^2) in 4 kHz and for all angles of arrival between 25 and 90 degrees above the horizontal plane;

(3) −126 dB (W/m^2) in 1 MHz for all angles of arrival between 0 and 5 degrees above the horizontal plane; −126 dB (W/m^2) + 0.65(δ −5) in 1 MHz for all angles of arrival between 5 and 25 degrees above the horizontal plane; and

(4) −113 dB (W/m^2) in 1 MHz and for all angles of arrival between 25 and 90 degrees above the horizontal plane.

(c) *12.2-12.7 GHz – NGSO*. In the 12.2-12.7 GHz band, for NGSO FSS space stations, the specified low-angle power flux-density at the Earth's surface produced by emissions from a space station shall not be exceeded into an operational MVDDS receiver:

(1) −158 dB(W/m2) in any 4 kHz band for angles of arrival between 0 and 2 degrees above the horizontal plane; and

(2) −158 + 3.33(δ−2) dB(W/m2) in any 4 kHz band for angles of arrival (δ) (in degrees) between 2 and 5 degrees above the horizontal plane.

Note: These limits relate to the power flux density which would be obtained under assumed free-space propagation conditions.

(d) *17.7-24.75 GHz*. For a GSO space station in the 17.7-19.7 GHz, 22.55-23.55 GHz, or 24.45-24.75 GHz bands, or for an NGSO space station in the 22.55-23.55 GHz or 24.45-24.75 GHz bands, the PFD at the Earth's surface produced by emissions for all conditions and for all methods of modulation must not exceed the following values:

(1) −115 dB (W/m2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane.

(2) −115 + 0.5 (δ-5) dB (W/m2) in any 1 MHz band for angles of arrival d (in degrees) between 5 and 25 degrees above the horizontal plane.

(3) −105 dB (W/m2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

(e) *25.25-27.5 GHz*. The power flux-density at the Earth's surface produced by emissions from a space station in either the Earth exploration-satellite service in the 25.5-27 GHz band or the inter-satellite service in the 25.25-27.5 GHz band for all conditions and for all methods of modulation shall not exceed the following values:

(1) −115 dB(W/m2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

(2) −115 + 0.5(−5) dB(W/m2) in any 1 MHz band for angles of arrival between 5 and 25 degrees above the horizontal plane; and

(3) −105 dB(W/m2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

(4) These limits relate to the power flux-density which would be obtained under assumed free-space propagation conditions.

(f) *37.5-40 GHz – NGSO*. In the 37.5-40.0 GHz band, the power flux-density at the Earth's surface produced by emissions from a non-geostationary space station for all methods of modulation shall not exceed the following values:

(1) This limit relates to the power flux-density which would be obtained under assumed free space conditions (that is, when no allowance is made for propagation impairments such as rain-fade):

(i) −132 dB(W/m2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

(ii) −132 + 0.75 (δ−5) dB(W/m2) in any 1 MHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane; and

(iii) −117 dB(W/m2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane;

(2) This limit relates to the maximum power flux-density which would be obtained anywhere on the

surface of the Earth during periods when FSS system raises power to compensate for rain-fade conditions at the FSS earth station:

(i) −120 dB(W/m2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

(ii) −120 + 0.75 (δ−5) dB(W/m2) in any 1 MHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane; and

(iii) −105 dB(W/m2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

Note to paragraph (i): The conditions under which satellites may exceed these power flux-density limits for normal free space propagation described in this section to compensate for the effects of rain fading are under study and have therefore not yet been defined. Such conditions and the extent to which these limits can be exceeded will be the subject of a further rulemaking by the Commission on the satellite service rules.

(g) *37.5-40 GHz – GSO*. In the 37.5-40.0 GHz band, the power flux-density at the Earth's surface produced by emissions from a geostationary space station for all methods of modulation shall not exceed the following values.

(1) This limit relates to the power flux-density which would be obtained under assumed free space conditions (that is, when no allowance is made for propagation impairments such as rain-fade):

(i) −139 dB(W/m2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

(ii) −139 + 4/3 (δ−5) dB(W/m2) in any 1 MHz band for angles of arrival δ (in degrees) between 5 and 20 degrees above the horizontal plane;

(iii) −119 + 0.4 (δ−20) dB(W/m2) in any 1 MHz band for angles of arrival δ (in degrees) between 20 and 25 degrees above the horizontal plane; and

(iv) −117 dB(W/m2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane;

(2) This limit relates to the maximum power flux-density which would be obtained anywhere on the surface of the Earth during periods when FSS system raises power to compensate for rain-fade conditions at the FSS earth station:

(i) −127 dB(W/m2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

(ii) −127 + 4/3 (δ−5) dB(W/m2) in any 1 MHz band for angles of arrival δ (in degrees) between 5 and 20 degrees above the horizontal plane; and

(iii) −107 + 0.4 (δ−20) dB(W/m2) in any 1 MHz band for angles of arrival δ (in degrees) between 20 and 25 degrees above the horizontal plane;

(iv) −105 dB(W/m2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

Note to paragraph (h): The conditions under which satellites may exceed the power flux-density limits for normal free space propagation described in this section to compensate for the effects of rain fading are under study and have therefore not yet been defined. Such conditions and the extent to which these limits can be exceeded will be the subject of a further rulemaking by the Commission on the satellite service rules.

(h) *40-40.5 GHz*. In the 40.0-40.5 GHz band, the power flux density at the Earth's surface produced by emissions from a space station for all conditions and for all methods of modulation shall not exceed the following values (these values are obtained under assumed free-space propagation conditions):

(1) −115 dB(W/m2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

(2) −115 + 0.5 (δ−5) dB(W/m2) in any 1 MHz band for angles of arrival δ (indegrees) between 5 and 25 degrees above the horizontal plane; and

(3) −105 dB(W/m2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

(i) *40.5-42 GHz – NGSO*. In the 40.5-42.0 GHz band, the power flux density at the Earth's surface produced by emissions from a non-geostationary space station for all conditions and for all methods of modulation shall not exceed the following values (these values are obtained under assumed free-space propagation conditions):

(1) −115 dB(W/m2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

(2) −115 + 0.5 (δ−5) dB(W/m2) in any 1 MHz band for angles of arrival δ (in degrees) between 5 and 25 degrees above the horizontal plane; and

(3) −105 dB(W/m2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

(j) *40.5-42 GHz – GSO*. In the 40.5-42.0 GHz band, the power flux-density at the Earth's surface produced by emissions from a geostationary space station for all conditions and for all methods of modulation shall not exceed the following values (these values are obtained under assumed free-space propagation conditions):

(1) −120 dB(W/m2) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane;

(2) −120 + (δ−5) dB(W/m2) in any 1 MHz band for angles of arrival δ (in degrees) between 5 and 15 degrees above the horizontal plane;

(3) −110 + 0.5 (δ−15) dB(W/m2) in any 1 MHz band for angles of arrival δ (in degrees) between 15 and 25 degrees above the horizontal plane; and

(4) −105 dB(W/m2) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

§ 100.213 Unwanted emissions limits generally; space stations.

(a) *General*. The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the schedule set forth in paragraphs (a)(1)–(a)(4) of this section.

(1) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 50 percent up to and including 100 percent of the authorized bandwidth: 25 dB.

(2) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 100 percent up to and including 250 percent of the authorized bandwidth: 35 dB.

(3) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250 percent of the authorized bandwidth: an amount equal to 43 dB plus 10 times the logarithm (to the base 10) of the transmitter power in watts.

(4) In any event, when an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in paragraphs (a)(1) through (3) of this section.

(b) *23.6-24 GHz – NGSO*. The following unwanted emissions power limits for non-geostationary satellites operating in the inter-satellite service that transmit in the 22.55-23.55 GHz band shall apply in any 200 MHz of the 23.6-24 GHz passive band, based on the date that complete advance publication

information is received by the ITU's Radiocommunication Bureau:

(1) For information received before January 1, 2020: −36 dBW.

(2) For information received on or after January 1, 2020: −46 dBW.

(c) *SCS*. Space station downlinks operating as SCS under the provisions of § 100.113 and § 2.106(d)(33)(i) of this chapter are subject to the following rules.

(1) *Out of band emission limits*. Notwithstanding the emission limitations of § 100.213, the aggregation of all space station downlink emissions outside a licensee's SCS frequency band(s) of operation shall not exceed a power flux density of −120 dBW/m^2/MHz at 1.5 meters above ground level.

(2) *Interference caused by out of band emissions*. If any emission from a transmitter operating in the SCS service results in harmful interference to users of another radio service, the FCC may require a greater attenuation of the emission than specified in this section.

§ 100.214 Licensing provisions for the 1.6/2.4 GHz MSS and 2 GHz MSS.

(a) *Technical qualifications*. In addition to providing the information specified in §§ 100.110 through 100.112, each applicant and petitioner must demonstrate the following:

(1) That a proposed system in the 1.6/2.4 GHz MSS frequency bands employs a non-geostationary constellation or constellations of satellites;

(2) That a system proposed to operate using non-geostationary satellites be capable of providing MSS to all locations as far north as 70° North latitude and as far south as 55° South latitude for at least 75% of every 24-hour period, i.e., that at least one satellite will be visible above the horizon at an elevation angle of at least 5° for at least 18 hours each day within the described geographic area;

(3) That a system proposed to operate using non-geostationary satellites be capable of providing MSS on a continuous basis throughout the fifty states, Puerto Rico and the U.S. Virgin Islands, i.e., that at least one satellite will be visible above the horizon at an elevation angle of at least 5° at all times within the described geographic areas; and

(4) That a system only using geostationary orbit satellites, at a minimum, be capable of providing MSS on a continuous basis throughout the 50 states, Puerto Rico, and the U.S. Virgin Islands, if technically feasible.

(5) That operations will not cause harmful interference to other authorized users of the spectrum.

(b) *Safety and distress communications.*

(1) Stations operating in the 1.6/2.4 GHz MSS and 2 GHz MSS that are voluntarily installed on a U.S. ship or are used to comply with any statute or regulatory equipment carriage requirements may also be subject to the requirements of sections 321(b) and 359 of the Communications Act. Licensees are advised that these provisions give priority to radio communications or signals relating to ships in distress and prohibits a charge for the transmission of maritime distress calls and related traffic.

(2) Licensees offering distress and safety services should coordinate with the appropriate search and rescue organizations responsible for the licensees' service area.

§ 100.215 Geostationary satellite station-keeping.

(a) Space stations operated in the geostationary satellite orbit must be maintained within 0.05° of their assigned orbital longitude in the east/west direction, unless specifically authorized by the Commission to operate with a different longitudinal tolerance, and except as provided in section 100.260(c).

NGSO FREQUENCY-SPECIFIC RULES

§ 100.220 Requirements for the non-voice, non-geostationary MSS.

(a) *NVNG MSS space station application requirements*.

(1) *General*. Each application for a space station license in the non-voice, non-geostationary mobile-satellite service (NVNG MSS) shall describe in detail the proposed NVNG MSS system, setting forth all pertinent technical and operational aspects of the system, and the technical and legal qualifications of the applicant. In addition to the information specified in §§ 100.110 through 100.112, applicants must also file information demonstrating compliance with all requirements of this section, and showing, based on existing system information publicly available at the Commission at the time of filing, that they will not cause harmful interference to any NVNG MSS system authorized to construct or operate.

(2) *Power flux density*. Applicants for a NVNG MSS space station license must identify the power flux density produced at the Earth's surface by each space station of their system in the 137-138 MHz and 400.15-401 MHz bands, to allow determination of whether coordination with terrestrial services is required under any applicable footnote to the Table of Frequency Allocations in § 2.106 of this chapter. In addition, applicants must identify the measures they would employ to protect the radio astronomy service in the 150.05-153 MHz and 406.1-410 MHz bands from harmful interference from unwanted emissions.

(3) *Emission limitations*.

(i) Applicants in the NVNG MSS shall show that their space stations will not exceed the emission limitations of § 100.213, as calculated for a fixed point on the Earth's surface in the plane of the space station's orbit, considering the worst-case frequency tolerance of all frequency determining components, and maximum positive and negative Doppler shift of both the uplink and downlink signals, taking into account the system design.

(ii) Applicants in the NVNG MSS service shall show that no signal received by their space stations from sources outside of their system shall be retransmitted with a power flux density level, in the worst 4 kHz, higher than the level described by the applicants in paragraph (a)(2) of this section.

(b) *Operating conditions*. In order to ensure compatible operations with authorized users in the frequency bands to be utilized for operations in the NVNG MSS, NVNG MSS systems must operate in accordance with the conditions specified in this section.

(1) *Service limitation*. Voice services may not be provided.

(2) *Coordination among non-voice, non-geostationary mobile-satellite service systems*. All affected applicants, permittees, and licensees shall, at the direction of the Commission, cooperate fully and make every reasonable effort to resolve technical problems and conflicts that may inhibit effective and efficient use of the radio spectrum; however, the permittee or licensee being coordinated with is not obligated to suggest changes or re-engineer an applicant's proposal in cases involving conflicts.

(3) *Safety and distress communications*. Stations operating in the NVNG MSS that are used to comply with any statutory or regulatory equipment carriage requirements may also be subject to the provisions of sections 321(b) and 359 of the Communications Act. Licensees are advised that these provisions give priority to radio communications or signals relating to ships in distress and prohibit a charge for the transmission of maritime distress calls and related traffic.

§ 100.221 Obligation to remedy interference caused by NGSO MSS feeder downlinks in the 6700-6875 MHz band.

If an NGSO MSS satellite transmitting in the 6700-6875 MHz band causes harmful interference to previously licensed co-frequency Public Safety facilities, the satellite operator has an obligation to remedy the interference.

§ 100.222 Operating provisions for NGSO FSS space stations.

(a) NGSO FSS system licensees and market access recipients operating in the 10.7-30 GHz frequency range must comply with:

(1) Any applicable power flux-density levels in Article 21, Section V, Table 21-4 of the ITU Radio Regulations (incorporated by reference, § 100.4), except:

(i) In the 19.3-19.4 GHz and 19.6-19.7 GHz bands, applicants must comply with the ITU power flux-density limits governing NGSO FSS systems in the 17.7-19.3 GHz band; and

(ii) In the 17.3-17.7 GHz band, applicants must comply with the ITU power flux-density limits governing NGSO FSS systems in the 17.7-17.8 GHz band.

(2) Any applicable equivalent power flux-density levels in Article 22, Section II, and Resolution 76 of the ITU Radio Regulations (both incorporated by reference, § 100.4), except that for operations in the 17.3-17.8 GHz band, operators must comply with the ITU equivalent power flux-density limits applicable to NGSO FSS system operations in the 17.8-18.4 GHz band.

(b) For operation in the United States in the 10.7-12.7, 17.3-18.6, or 19.7-20.2 GHz bands, an NGSO FSS applicant may, as an alternative to compliance with equivalent power-flux density limits in these bands, apply the following procedure:

(1) Prior to commencing operations, an NGSO FSS applicant must either certify that it has completed a coordination agreement with any operational co-frequency GSO satellite network, or submit for Commission approval a compatibility showing which demonstrates by use of a degraded throughput methodology that it will not cause unacceptable interference to any such system with which coordination has not been completed.

(2) Compatibility showings must contain the following elements:

(i) A demonstration that the NGSO system will cause no more than 3% time-weighted average degraded throughput of any GSO reference link that uses adaptive coding and modulation;

(ii) A demonstration that the NGSO system will cause no more than 0.1% absolute change in link availability to any GSO reference link:

(iii) A demonstration that the NGSO system will cause no more than -10.5 dB I/N for 80% of time for any GSO reference link that does not use adaptive coding and modulation; and

(iv) A certification that the NGSO system will use a minimum GSO-arc avoidance angle of 3 degrees with respect to any operational co-frequency GSO space station serving the United States.

(3) While a compatibility showing remains pending before the Commission, the submitting NGSO licensee or market access recipient may commence operations on an unprotected, non-interference basis with respect to the operations of any co-frequency GSO network with which coordination has not been completed.

(c) Prior to the initiation of service, an NGSO FSS operator licensed or holding a market access authorization to operate in the 10.7-30 GHz frequency range must receive a “favorable” or “qualified favorable” finding by the ITU Radiocommunication Bureau, in accordance with Resolution 85 of the ITU Radio Regulations (incorporated by reference, § 100.4), regarding its compliance with applicable ITU EPFD limits. In addition, a market access holder in these bands must:

(1) Communicate the ITU finding to the Commission; and

(2) Submit the input data files used for the ITU validation software.

GSO FREQUENCY-SPECIFIC RULES

§ 100.230 Further requirements for license applications for GSO space station operation in the FSS and 17/24 GHz BSS.

(a) *Additional information requirements for GSO space stations.* In addition to the information required by §§ 100.110 through 100.112, an applicant for GSO FSS space station operation in the FSS and 17/24 GHz BSS must comply with the following:

(1) In addition to the information required by § 100.112, an applicant for GSO FSS space station operation involving transmission of analog video signals must certify that the proposed analog video operation has been coordinated with operators of authorized co-frequency space stations within six degrees of the requested orbital location.

(2) An applicant for GSO FSS space station operation, including applicants proposing feeder links for space stations operating in the 17/24 GHz BSS, that will be located at an orbital location less than two degrees from the assigned location of an authorized co-frequency GSO space station, must either certify that the proposed operation has been coordinated with the operator of the co-frequency space station or submit an interference analysis demonstrating the compatibility of the proposed system with the co-frequency space station. Such an analysis must include, for each type of radio frequency carrier, the link noise budget, modulation parameters, and overall link performance analysis. (See Appendices B and C to Licensing of Space Stations in the Domestic Fixed-Satellite Service, FCC 83-184, and the following public notices, copies of which are available in the Commission's EDOCS database, available at https://www.fcc.gov/edocs: DA 03-3863 and DA 04-1708.) The provisions in this paragraph (a)(2) do not apply to proposed analog video operation.

(3) An applicant for a GSO FSS space station, including applicants proposing feeder links for space stations operating in the 17/24 GHz BSS, must provide the following for operation other than analog video operation:

(i) With respect to proposed operation in the conventional or extended C-bands, a certification that downlink EIRP density will not exceed 3 dBW/4kHz for digital transmissions or 8 dBW/4kHz for analog transmissions and that associated uplink operation will not exceed applicable EIRP density envelopes in § 100.279 unless the non-compliant uplink and/or downlink operation is coordinated with operators of authorized co-frequency space stations at assigned locations within six degrees of the orbital location of the proposed space station and except as provided in paragraph (c) of this section.

(ii) With respect to proposed operation in the conventional or extended Ku-bands, a certification that downlink EIRP density will not exceed 13 dBW/4kHz for digital transmissions or 17 dBW/4kHz for analog transmissions and that associated uplink operation will not exceed applicable EIRP density envelopes in § 100.279 unless the non-compliant uplink and/or downlink operation is coordinated with operators of authorized co-frequency space stations at assigned locations within six degrees of the orbital location of the proposed space station and except as provided in paragraph (d) of this section.

(iii) With respect to proposed FSS operation in the conventional or extended Ka-bands, a certification that the proposed space station will not generate power flux density at the Earth's surface in excess of the limits in paragraphs (a)(3)(iii)(A) and (B) of this section, and that associated uplink operation will not exceed applicable EIRP density envelopes in § 100.279 unless the non-compliant uplink and/or downlink operation is coordinated with operators of authorized co-frequency space stations at assigned locations within six degrees of the orbital location and except as provided in paragraph (d) of this section.

(A) −118 dBW/m^2/MHz, except as provided in paragraph (a)(3)(iii)(B) of this section.

(B) For space-to-Earth FSS transmissions in the 17.3-17.8 GHz band in the region of the contiguous United States, located west of 100 West Longitude: −121 dBW/m^2/MHz.

(iv) With respect to proposed operation in the 24.75-25.25 GHz band (Earth-to-space), a certification that the proposed uplink operation will not exceed the applicable EIRP density envelopes in § 100.297 and that the associated space station will not generate a power flux density at the Earth's surface in excess of the applicable limits in this part, unless the non-compliant uplink and/or downlink FSS operation is coordinated with operators of authorized co-frequency space stations at assigned locations within six degrees of the orbital location and except as provided in paragraph (d) of this section.

(v) With respect to proposed operation in the 4500-4800 MHz (space-to-Earth), 6725-7025 MHz (Earth-to-space), 10.70-10.95 GHz (space-to-Earth), 11.20-11.45 GHz (space-to-Earth), and/or 12.75-13.25 GHz (Earth-to-space) bands, a statement that the proposed operation will take into account the applicable requirements of Appendix 30B of the ITU Radio Regulations (incorporated by reference, see § 100.4) and a demonstration that it is compatible with other U.S. ITU filings under Appendix 30B.

(vi) With respect to proposed operation in other FSS bands, an interference analysis demonstrating compatibility with any previously authorized co-frequency space station at a location two degrees away or a certification that the proposed operation has been coordinated with the operator(s) of the previously authorized space station(s). If there is no previously authorized space station at a location two degrees away, the applicant must submit an interference analysis demonstrating compatibility with a hypothetical co-frequency space station two degrees away with the same receiving and transmitting characteristics as the proposed space station.

(b) *Operations in the 17.3-17.8 GHz band.*

(1) Each applicant for a license to operate a space station transmitting in the 17.3-17.8 GHz band must provide the following information:

(2) An applicant for a license to operate a 17/24 GHz BSS space station transmitting in the 17.3-17.8 GHz band must certify that the downlink power flux density on the Earth's surface will not exceed the regional power flux density limits listed in paragraphs (b)(2)(i) through (iv) of this section:

(i) In the region of the contiguous United States, located south of 38° North Latitude and east of 100° West Longitude: −115 dBW/m^2/MHz.

(ii) In the region of the contiguous United States, located north of 38° North Latitude and east of 100° West Longitude: −118 dBW/m^2/MHz.

(iii) In the region of the contiguous United States, located west of 100° West Longitude: −121 dBW/m^2/MHz.

(iv) For all regions outside of the contiguous United States including Alaska and Hawaii: −115 dBW/m^2/MHz.

(3) Except as described in paragraph (b)(4) of this section, the following applicants must either certify that their proposed operations have been coordinated with the adjacent operator of a previously authorized or proposed co-frequency space station, or must provide an interference analysis of the kind described in this section, except that the applicant must demonstrate that its proposed network will not cause more interference to the adjacent space station transmitting in the 17.3-17.8 GHz band operating in compliance with the technical requirements of this part, than if the applicant were located at an orbital separation of four degrees from the previously licensed or proposed space station:

(i) Applicants for a 17/24 GHz BSS space station transmitting in the 17.3-17.8 GHz band to be located less than four degrees from a previously authorized or proposed co-frequency 17/24 GHz BSS space station;

(ii) Applicants for a FSS space station transmitting in the 17.3-17.8 GHz band to be located less than four degrees from a previously authorized or proposed co-frequency 17/24 GHz BSS space station; and

(iii) Applicants for a 17/24 GHz BSS space station transmitting in the 17.3-17.8 GHz band to be located less than four degrees from a previously authorized or proposed co-frequency FSS space station transmitting in the 17.3-17.8 GHz band.

(4) Where an authorized or proposed 17/24 GHz BSS or FSS space station is located within four degrees of a previously authorized or proposed 17/24 GHz BSS space station, no new third proposed 17/24 GHz BSS or FSS space station may be located within eight degrees of the first authorized or proposed space station in the same direction as the second authorized or proposed space station, unless the applicant for the third space station certifies that its proposed operation has been coordinated with the operator of the first previously authorized or proposed 17/24 GHz BSS space station, or the applicant for the third proposed space station provides an interference analysis of the kind described in this section, or the applicant for the third proposed space station demonstrates that its proposed network will not cause more interference to the first previously authorized or proposed space station than if the applicant for the third proposed space station were located at an orbital separation of eight degrees from the first previously authorized or proposed 17/ 24 GHz BSS space station.

(5) In addition to the requirements of paragraphs (b)(1)-(4) of this section, the link budget for any satellite transmitting in the 17.3-17.8 GHz band (space-to-Earth) must take into account longitudinal station-keeping tolerances. Any applicant for a space station transmitting in the 17.3-17.8 GHz band that has reached a coordination agreement with an operator of another space station to allow that operator to exceed the PFD levels specified in paragraph (a)(3)(iii) or (b)(2) of this section, must use those higher PFD levels for the purpose of this showing.

(c) *GSO FSS operations in certain bands.*

(1) An operator of a GSO FSS space station in the conventional or extended C-bands, conventional or extended Ku-bands, 24.75-25.25 GHz band (Earth-to-space), or conventional or extended Ka-bands may notify the Commission of its non-compliant transmission levels and be relieved of the obligation to coordinate such levels with later applicants and petitioners.

(2) The letter notification must include the downlink off-axis EIRP density levels or power flux density levels and/or uplink off-axis EIRP density levels, specified per frequency range and space station antenna beam, that exceed the relevant limits set forth in paragraphs (a)(3)(i) through (iii) of this section and § 100.279.

(3) Non-compliant transmissions notified pursuant to this section need not be coordinated with operators of authorized co-frequency space stations that filed their complete applications or petitions after the date of filing of the notification with the Commission. Such later applicants and petitioners must accept any additional interference caused by the notified non-routine transmissions.

(4) An operator of a replacement space station, may operate with non-compliant transmission levels to the extent permitted under this section for the replaced space station.

(d) *Geographic service requirements.*

(1) Each operator of a 17/24 GHz BSS space station that is used to provide video programming directly to consumers in the 48 contiguous United States (CONUS) must provide comparable service to Alaska and Hawaii, unless such service is not technically feasible or not economically reasonable from the authorized orbital location.

(2) Each operator of a 17/24 GHz BSS space station subject to paragraph (d)(1) of this section must design and configure its space station to be capable of providing service to Alaska and Hawaii, that is comparable to the service that such satellites will provide to CONUS subscribers, from any orbital location capable of providing service to either Alaska or Hawaii to which it may be located or relocated in the future.

(3) If an operator of a 17/24 GHz BSS space station that is used to provide video programming

directly to consumers in the United States relocates or replaces a 17/24 GHz BSS space station at a location from which service to Alaska and Hawaii had been provided by another 17/24 GHz BSS space station, the operator must use a space station capable of providing at least the same level of service to Alaska and Hawaii as previously provided from that location.

§ 100.231 Licensing and domestic coordination requirements for 17/24 GHz BSS space stations and FSS space stations transmitting in the 17.3-17.8 GHz band.

(a) A 17/24 GHz BSS or FSS applicant seeking to transmit in the 17.3-17.8 GHz band may be authorized to operate a space station at levels up to the maximum power flux density limits defined in paragraphs (a)(1) and (2) of this section without coordinating its power flux density levels with adjacent licensed or permitted operators, as follows:

(1) For 17/24 GHz BSS applicants, up to the power flux density levels specified in § 100.230 only if there is no licensed space station, or prior-filed application for a space station transmitting in the 17.3-17.8 GHz band at a location less than four degrees from the orbital location at which the applicant proposes to operate; and

(2) For FSS space station applicants transmitting in the 17.3-17.8 GHz band, up to the maximum power flux density levels in § 100.230, only if there is no licensed 17/24 GHz BSS space station, or prior-filed application for a 17/24 GHz BSS space station, at a location less than four degrees from the orbital location at which the FSS applicant proposes to operate, and there is no licensed FSS space station, or prior-filed application for an FSS space station transmitting in the 17.3-17.8 GHz band, at a location less than two degrees from the orbital location at which the applicant proposes to operate.

(b) Any U.S. licensee or permittee authorized to transmit in the 17.3-17.8 GHz band that does not comply with the applicable power flux-density limits set forth in § 100.230 shall bear the burden of coordinating with any future co-frequency licensees and permittees of a space station transmitting in the 17.3-17.8 GHz band.

(c) If no good faith agreement can be reached, the operator of the FSS space station transmitting in the 17.3-17.8 GHz band that does not comply with § 100.230 or the operator of the 17/24 GHz BSS space station that does not comply with § 100.230 shall reduce its power flux-density levels to be compliant with those specified in § 100.230 as appropriate.

(d) Any U.S. licensee or permittee of a space station transmitting in the 17.3-17.8 GHz band that is required to provide information in its application pursuant to § 100.230 must accept any increased interference that may result from adjacent space stations transmitting in the 17.3-17.8 GHz band that are operating in compliance with the rules for such space stations specified in this part.

(e) Notwithstanding the provisions of this section, licensees and permittees will be allowed to apply for a license or authorization for a replacement space stations that will be operated at the same power level and interference protection as the satellite to be replaced.

§ 100.232 Requirements to facilitate reverse-band operation in the 17.3-17.8 GHz band.

(a) Each applicant or licensee for a space station transmitting in the 17.3-17.8 GHz band must submit a series of tables or graphs containing predicted off-axis gain data for each antenna that will transmit in any portion of the 17.3-17.8 GHz band, in accordance with the following specifications. Using a Cartesian coordinate system wherein the X axis is tangent to the geostationary orbital arc with the positive direction pointing east, i.e., in the direction of travel of the satellite; the Y axis is parallel to a line passing through the geographic north and south poles of the Earth, with the positive direction pointing south; and the Z axis passes through the satellite and the center of the Earth, with the positive direction pointing toward the Earth, the applicant or licensee must provide the predicted transmitting antenna off-axis antenna gain information:

(1) In the X-Z plane, i.e., the plane of the geostationary orbit, over a range of ±30 degrees from the positive and negative X axes in increments of 5 degrees or less.

(2) In planes rotated from the X-Z plane about the Z axis, over a range of ±60 degrees relative to the equatorial plane, in increments of 10 degrees or less.

(3) In both polarizations.

(4) At a minimum of one measurement frequency at the center of the portion of the 17.3-17.8 GHz frequency band over which the space station is designed to transmit. Applicants or licensees must provide additional measurement data at 5 MHz above the lower edge of the band and/or at 5 MHz below the upper edge of the band, upon request by the Commission staff.

(5) Over a greater angular measurement range, if necessary, to account for any planned spacecraft orientation bias or change in operating orientation relative to the reference coordinate system. The applicant or licensee must state the reasons for including such additional information.

(b) A space station applicant or licensee transmitting in any portion of the 17.3-17.8 GHz band must submit PFD calculations based on the predicted gain data submitted in accordance with paragraph (a) of this section, as follows:

(1) The PFD calculations must be provided at the location of all prior-filed U.S. DBS space stations where the applicant's PFD level exceeds the coordination trigger of −117 dBW/m^2/100 kHz in the 17.3-17.8 GHz band. In this rule, the term prior-filed U.S. DBS space station refers to any co-frequency Direct Broadcast Satellite service space station for which an application was filed with the Commission, or an authorization was granted by the Commission, prior to the filing of the information and certifications required by paragraphs (a) and (b) of this section. The term prior-filed U.S. DBS space station does not include any applications (or authorizations) that have been denied, dismissed, or are otherwise no longer valid. Prior-filed U.S. DBS space stations may include foreign-licensed DBS space stations seeking authority to serve the United States market, but do not include foreign-licensed DBS space stations that have not filed applications with the Commission for market access in the United States.

(2) The calculations must take into account the aggregate PFD levels at the DBS receiver at each measurement frequency arising from all antenna beams on the space station transmitting in the 17.3-17.8 GHz band. They must also take into account the maximum permitted longitudinal station-keeping tolerance, orbital inclination and orbital eccentricity of both the space station transmitting in the 17.3-17.8 GHz band and DBS space stations, and must:

(i) Identify each prior-filed U.S. DBS space station at whose location the coordination threshold PFD level of −117 dBW/m^2/100 kHz is exceeded; and

(ii) Indicate the extent to which the calculated PFD of the space station's transmissions in the 17.3-17.8 GHz band exceed the threshold PFD level of −117 dBW/m^2/100 kHz at those prior-filed U.S. DBS space station locations.

(3) If the calculated PFD exceeds the threshold level of −117 dBW/m^2/100 kHz at the location of any prior-filed U.S. DBS space station, the applicant or licensee must also provide with the PFD calculations a certification that all affected DBS operators acknowledge and do not object to such higher off-axis PFD levels. No such certification is required in cases where the frequencies assigned to the DBS and to the space station transmitting in the 17.3-17.8 GHz band do not overlap.

(4) The information and any certification required by paragraph (b) of this section must be submitted to the Commission for each license application that is filed for a space station transmitting in any portion of the 17.3-17.8 GHz band no later than two years after license grant for the space station.

(c) No later than two months prior to launch, each licensee of a space station transmitting in any portion of the 17.3-17.8 GHz band must update the predicted transmitting antenna off-axis gain information provided in accordance with paragraph (a) of this section by submitting measured transmitting antenna off-axis gain information over the angular ranges, measurement frequencies and polarizations specified in paragraphs (a)(1) through (5) of this section. The transmitting antenna off-axis gain information should

be measured under conditions as close to flight configuration as possible. As an alternative, licensees authorized to operate at locations one degree or greater from a prior-filed DBS space station may submit simulated transmitting antenna off-axis gain data in lieu of measured data, over the same angular ranges, frequencies and polarizations.

(d) No later than two months prior to launch, or when applying for authority to change the location of a space station transmitting in any portion of the 17.3-17.8 GHz band that is already in orbit, each such space station licensee must provide PFD calculations based on the measured off-axis gain data submitted in accordance with paragraph (c) of this section, as follows:

(1) The PFD calculations must be provided:

(i) At the location of all prior-filed U.S. DBS space stations as defined in paragraph (b)(1) of this section, where the applicant's PFD level in the 17.3-17.8 GHz band exceeds the coordination trigger of −117 dBW/m^2/100 kHz; and

(ii) At the location of any subsequently filed U.S. DBS space station where the PFD level in the 17.3-17.8 GHz band calculated on the basis of measured gain data exceeds −117 dBW/m^2/100 kHz. In paragraph (d)(1)(ii) of this section, the term "subsequently filed U.S. DBS space station" refers to any co-frequency DBS service space station proposed in a license application filed with the Commission after the operator of a space station transmitting in any portion of the 17.3-17.8 GHz band submitted the predicted data required by paragraphs (a) and (b) of this section but before submission of the measured data required by this paragraph. Subsequently filed U.S. DBS space stations may include foreign-licensed DBS space stations seeking authority to serve the United States market. The term does not include any applications (or authorizations) that have been denied, dismissed, or are otherwise no longer valid, nor does it include foreign-licensed DBS space stations that have not filed applications with the Commission for market access in the United States.

(2) The PFD calculations must take into account the maximum permitted longitudinal station-keeping tolerance, orbital inclination and orbital eccentricity of both the transmitting 17.3-17.8 GHz and DBS space stations, and must:

(i) Identify each prior-filed U.S. DBS space station at whose location the coordination threshold PFD level of −117 dBW/m^2/100 kHz is exceeded; and

(ii) Demonstrate the extent to which the applicant's or licensee's transmissions in the 17.3-17.8 GHz band exceed the threshold PFD level of −117 dBW/m^2/100 kHz at those prior-filed U.S. DBS space station locations.

(e) If the aggregate PFD level calculated from the measured data submitted in accordance with paragraph (d) of this section is in excess of the threshold PFD level of −117 dBW/m^2/100 kHz:

(1) At the location of any prior-filed U.S. DBS space station as defined in paragraph (b)(1) of this section, then the operator of the space station transmitting in any portion of the 17.3-17.8 GHz band must either:

(i) Coordinate its operations that are in excess of the threshold PFD level of −117 dBW/m^2/100 kHz with the affected prior-filed U.S. DBS space station operator, or

(ii) Adjust its operating parameters so that at the location of the prior-filed U.S. DBS space station, the PFD level of −117 dBW/m^2/100 kHz is not exceeded.

(2) At the location of any subsequently filed U.S. DBS space station as defined in paragraph (d)(1) of this section, where the aggregate PFD level submitted in accordance with paragraph (d) of this section is also in excess of the PFD level calculated on the basis of the predicted data submitted in accordance with paragraph (a) of this section that were on file with the Commission at the time the DBS space station application was filed, then the operator of the space station transmitting in the 17.3-17.8 GHz band must either:

(i) Coordinate with the affected subsequently-filed U.S. DBS space station operator all of its operations that are either in excess of the PFD level calculated on the basis of the predicted antenna off-axis gain data, or are in excess of the threshold PFD level of −117 dBW/m^2/100 kHz, whichever is greater; or

(ii) Adjust its operating parameters so that at the location of the subsequently-filed U.S. DBS space station, either the PFD level calculated on the basis of the predicted off-axis transmitting antenna gain data, or the threshold PFD level of −117 dBW/m^2/100 kHz, whichever is greater, is not exceeded.

(3) No coordination or adjustment of operating parameters is required in cases where there is no overlap in frequencies assigned to the DBS and the space station transmitting in the 17.3-17.8 GHz band.

(f) The applicant or licensee for the space station transmitting in the 17.3-17.8 GHz band must modify its license, or amend its application, as appropriate, based upon new information:

(1) If the PFD levels submitted in accordance with paragraph (d) of this section, are in excess of those submitted in accordance with paragraph (b) of this section at the location of any prior-filed or subsequently-filed U.S. DBS space station as defined in paragraphs (b)(1) and (d)(1) of this section, or

(2) If the operator of the space station transmitting in the 17.3-17.8 GHz band adjusts its operating parameters in accordance with paragraph (e)(1)(ii) or (e)(2)(ii) or this section.

(g) Absent an explicit agreement between operators to permit more closely spaced operations, U.S. authorized 17/24 GHz BSS or FSS space stations transmitting in the 17.3-17.8 GHz band and U.S. authorized DBS space stations with co-frequency assignments may not be licensed to operate at locations separated by less than 0.2 degrees in orbital longitude.

(h) All operational space stations transmitting in the 17.3-17.8 GHz band must be maintained in geostationary orbits that:

(1) Do not exceed 0.075° of inclination.

(2) Operate with an apogee less than or equal to 35,806 km above the surface of the Earth, and with a perigee greater than or equal to 35,766 km above the surface of the Earth (i.e., an eccentricity of less than 4.7 × 10−4).

(i) U.S. authorized DBS networks may claim protection from space path interference arising from the reverse-band operations of U.S. authorized space stations transmitting in the 17.3-17.8 GHz band to the extent that the DBS space station operates within the bounds of inclination and eccentricity listed in paragraphs (i)(1) and (2) of this section. When the geostationary orbit of the DBS space station exceeds these bounds on inclination and eccentricity, it may not claim protection from any additional space path interference arising as a result of its inclined or eccentric operations and may only claim protection as if it were operating within the bounds listed in paragraphs (i)(1) and (2) of this section:

(1) The DBS space station's orbit does not exceed 0.075° of inclination; and

(2) The DBS space station's orbit maintains an apogee less than or equal to 35,806 km above the surface of the Earth, and a perigee greater than or equal to 35,766 km above the surface of the Earth (i.e., an eccentricity of less than 4.7 × 10−4).

§ 100.233 Provisions for direct broadcast satellite service.

(a) *Geographic service requirements.* Applicants for DBS service must provide DBS service to Alaska and Hawaii where such service is technically feasible from the authorized orbital location. This requirement does not apply to DBS satellites authorized to operate at the 61.5° W.L. orbital location. DBS applicants seeking to operate from locations other than 61.5° W.L. who do not provide service to Alaska and Hawaii must provide technical analyses to the Commission demonstrating that such service is

not feasible as a technical matter, or that while technically feasible such services would require so many compromises in satellite design and operation as to make it economically unreasonable.

(b) *Technical qualifications.* DBS operations must be in accordance with the sharing criteria and technical characteristics contained in Appendices 30 and 30A of the ITU's Radio Regulations. Operation of systems using differing technical characteristics may be permitted, with adequate technical showing, and if a request has been made to the ITU to modify the appropriate Plans to include the system's technical parameters.

§ 100.234 Inclined orbit operations.

Licensees operating in inclined-orbit are required to:

(a) Periodically correct the satellite attitude to achieve a stationary spacecraft antenna pattern on the surface of the Earth and centered on the satellite's designated service area;

(b) Control all electrical interference to adjacent satellites, as a result of operating in an inclined orbit, to levels not to exceed that which would be caused by the satellite operating without an inclined orbit;

(c) Not claim protection in excess of the protection that would be received by the satellite network operating without an inclined orbit; and

(d) Continue to maintain the space station at the authorized longitude orbital location in the geostationary satellite arc with the appropriate east-west station-keeping tolerance.

COORDINATION/INTERFERENCE/SHARING FOR SPACE STATIONS

§ 100.240 NGSO-GSO sharing.

(a) *Protection of GSO networks by NGSO systems*. Unless otherwise provided in this chapter, an NGSO system licensee must not cause harmful interference to, or claim protection from, a GSO FSS or GSO BSS network.

(1) An NGSO FSS licensee operating in compliance with the applicable equivalent power flux-density limits in Article 22, Section II of the ITU Radio Regulations (incorporated by reference, § 100.4) will be considered as having fulfilled this obligation with respect to any GSO network.

(2) An NGSO FSS licensee authorized pursuant to § 100.222(a)(3) will be considered as having fulfilled this obligation with respect to any GSO network.

(b) *Coordination*. GSO and NGSO satellite operators must coordinate in good faith the use of commonly authorized frequencies in the 10.7-12.7, 17.3-18.6, or 19.7-20.2 GHz bands in the United States.

(c) *10.7-12.75 GHz NGSO/GSO coordination*. Coordination will be required between NGSO FSS systems and GSO FSS earth stations in the 10.7-12.75 GHz band when:

(1) The GSO satellite network has receive earth stations with earth station antenna maximum isotropic gain greater than or equal to 64 dBi; G/T of 44 dB/K or higher; and emission bandwidth of 250 MHz; and

(2) The $EPFD_{down}$ radiated by the NGSO satellite system into the GSO specific receive earth station, either within the U.S. for domestic service or any points outside the U.S. for international service, as calculated using the ITU software for examining compliance with EPFD limits exceeds −174.5 dB(W/(m^2/40kHz)) for any percentage of time for NGSO systems with all satellites only operating at or below 2500 km altitude, or −202 dB(W/(m^2/40kHz)) for any percentage of time for NGSO systems with any satellites operating above 2500 km altitude.

(d) *Coordination among inter-satellite service systems.* Applicants for authority to establish inter-satellite service are encouraged to coordinate their proposed frequency usage with existing permittees and licensees in the inter-satellite service whose facilities could be affected by the new proposal in terms of frequency interference or restricted system capacity. All affected applicants, permittees, and licensees, shall at the direction of the Commission, cooperate fully and make every reasonable effort to resolve

technical problems and conflicts that may inhibit effective and efficient use of the radio spectrum; however, the permittee or licensee being coordinated with is not obligated to suggest changes or re-engineer an applicant's proposal in cases involving conflicts.

§ 100.241 Sharing among NGSO FSS space stations.

(a) *Scope*. This section applies to NGSO FSS operation with earth stations with directional antennas anywhere in the world under a Commission license or in the United States under a grant of U.S. market access.

(b) *Coordination*. NGSO FSS licensees and market access recipients must coordinate in good faith the use of commonly authorized frequencies regardless of their processing round status.

(c) *Default procedure for NGSO FSS space stations*. Absent coordination between two or more satellite systems, whenever the increase in system noise temperature of an earth station receiver, or a space station receiver for a satellite with on-board processing, of either system, $\Delta T/T$, exceeds six percent due to interference from emissions originating in the other system in a commonly authorized frequency band, such frequency band will be divided among the affected satellite networks in accordance with the following procedure:

(1) Each of n (number of) satellite networks involved that were licensed or granted market access through the same processing round, except as provided in paragraph (e) of this section, must select 1/n of the assigned spectrum available in each of these frequency bands. The selection order for each satellite network will be determined by the date that the first space station in each satellite system is launched and capable of operating in the frequency band under consideration;

(2) The affected station(s) of the respective satellite systems may operate in only the selected (1/n) spectrum associated with its satellite system while the $\Delta T/T$ of six percent threshold is exceeded;

(3) All affected station(s) may resume operations throughout the assigned frequency bands once the threshold is no longer exceeded.

(d) *Protection of earlier-round systems*. Prior to commencing operations, an NGSO FSS licensee or market access recipient must either certify that it has completed a coordination agreement with any operational NGSO FSS system licensed or granted U.S. market access in an earlier processing round, or submit for Commission approval a compatibility showing which demonstrates by use of a degraded throughput methodology that it will not cause harmful interference to any such system with which coordination has not been completed. If an earlier-round system becomes operational after a later-round system has commenced operations, the later-round licensee or market access recipient must submit a certification of coordination or a compatibility showing with respect to the earlier-round system no later than 60 days after the earlier-round system commences operations as notified pursuant to § 100.149 or otherwise.

(1) Compatibility showings must contain the following elements:

(i) A demonstration that the later-round system will cause no more than three percent time-weighted average degraded throughput of the link to the earlier-round system, for links with a baseline link availability of 99.0% or higher at a C/N threshold of 0 dB;

(ii) A demonstration that the later-round system will cause no more than 0.4% absolute change in link availability to the earlier-round system using a C/N threshold value of 0 dB, for links with a baseline link availability of 99.0% link availability or higher; and

(iii) With respect to an earlier-round system that has not yet satisfied its 50% deployment milestone pursuant to § 100.147, the compatibility showing may consider only 50% deployment of the earlier-round system; if the 50% deployment milestone has been satisfied, the showing must consider 100% deployment of the authorized system.

(2) Compatibility showings will be placed on public notice pursuant to § 100.132.

(3) While a compatibility showing remains pending before the Commission, the submitting NGSO FSS licensee or market access recipient may commence operations on an unprotected, non-interference basis with respect to the operations of the system that is the subject of the showing.

(4) A later-round NGSO FSS system will be required to conform its operations to its compatibility showing submitted for the protection of an earlier-round system to the extent necessary to protect the actual number of deployed and operating space stations of the earlier-round system.

(e) *Sunsetting*. Ten years after the first authorization or grant of market access in a processing round, the systems approved in that processing round will no longer be required to protect earlier-rounds systems under paragraph (d) of this section, and instead will be required to share spectrum with earlier-round systems under paragraph (c) of this section.

(f) *Milestone Compliance*. NGSO FSS system licensees or holders of a grant of U.S. market access under the processing round procedures in § 100.140 that fail to comply with the six-year milestone deployment requirement in § 100.146(h)(2) must comply with the coordination and compatibility requirements and procedures in paragraph (d) of this section.

§ 100.242 Time sharing between NOAA meteorological satellite systems and non-voice, non-geostationary satellite systems in the 137-138 MHz band.

(a) The space stations of a non-voice, non-geostationary Mobile-Satellite Service (NVNG MSS) system time-sharing downlink spectrum in the 137-138 MHz band with National Oceanic and Atmospheric Administration (NOAA) satellites shall not transmit signals into the "protection areas" of the NOAA satellites.

(1) With respect to transmission in the 137.333-137.367 MHz, 137.485-137.515 MHz, 137.605-137.635 MHz, and 137.753-137.787 MHz bands, the protection area for a NOAA satellite is the area on the Earth's surface in which the NOAA satellite is in line of sight from the ground at an elevation angle of five degrees or more above the horizon. No NVNG MSS satellite shall transmit in these bands when it is in line of sight at an elevation angle of zero degrees or more from any point on the ground within a NOAA satellite's protected area for that band.

(2) With respect to transmission in the 137.025-137.175 MHz and 137.825-138 MHz bands, the protection area for a NOAA satellite is the area on the Earth's surface in which the NOAA satellite is in line of sight from the ground at any elevation angle above zero degrees. No NVNG MSS satellite shall transmit in these bands when at a line-of-sight elevation angle of zero degrees or more from any point on the ground within a NOAA satellite's protected area for that band. In addition, such an NVNG MSS satellite shall cease transmitting when it is at an elevation angle of less than zero degrees from any such point, if reasonably necessary to protect reception of the NOAA satellite's signal.

(3) An NVNG MSS licensee is responsible for obtaining the ephemeris data necessary for compliance with these restrictions. The ephemeris information must be updated system-wide on at least a weekly basis. For calculation required for compliance with these restrictions an NVNG MSS licensee shall use an orbital propagator algorithm with an accuracy equal to or greater than the NORAD propagator used by NOAA.

(b) An NVNG licensee time sharing spectrum in the 137-138 MHz band must establish a 24-hour per day contact person and telephone number so that claims of harmful interference into NOAA earth stations and other operational issues can be reported and resolved expeditiously. This contact information must be made available to NOAA or its designee. If the NTIA notifies the Commission that NOAA is receiving harmful interference from a NVNG licensee, the Commission will require such NVNG licensee to terminate its interfering operations immediately unless it demonstrates to the Commission's reasonable satisfaction, and that of NTIA, that it is not responsible for causing harmful interference into the worldwide NOAA system. An NVNG licensee assumes the risk of any liability or damage that it and its directors, officers, employees, affiliates, agents and subcontractors may incur or suffer in connection with an interruption of its MSS, in whole or in part, arising from or relating to its compliance or

noncompliance with the requirements of this paragraph.

(c) Each satellite in a NVNG licensee's system time-sharing spectrum with NOAA in the 137-138 MHz band shall automatically turn off and cease satellite transmissions if, after 72 consecutive hours, no reset signal is received from the NVNG licensee's gateway earth station and verified by the satellite. All satellites in such NVNG licensee's system shall be capable of instantaneous shutdown on any sub-band upon command from such NVNG licensee's gateway earth station.

§ 100.243 Time sharing between DoD meteorological satellite systems and non-voice, non-geostationary satellite systems in the 400.15-401 MHz band.

(a) The space stations of a non-voice, non-geostationary Mobile-Satellite Service (NVNG MSS) system time-sharing downlink spectrum in the 400.15-401.0 MHz band with Department of Defense (DoD) satellites shall not transmit signals into the "protection areas" of the DoD satellites.

(1) The protection area for such a DoD satellite is the area on the Earth's surface in which the DoD satellite is in line of sight from the ground at an elevation angle of five degrees or more above the horizon.

(2) An NVNG MSS space station shall not transmit in the 400.15-401 MHz band when at a line-of-sight elevation angle of zero degrees or more from any point on the ground within the protected area of a DoD satellite operating in that band.

(3) An NVNG MSS licensee is responsible for obtaining the ephemeris data necessary for compliance with this restriction. The ephemeris information must be updated system-wide at least once per week. For calculation required for compliance with this restriction an NVNG MSS licensee shall use an orbital propagator algorithm with an accuracy equal to or greater than the NORAD propagator used by DoD.

(b) An NVNG licensee time sharing spectrum in the 400.15-401 MHz band must establish a 24-hour per day contact person and telephone number so that claims of harmful interference into DoD earth stations and other operational issues can be reported and resolved expeditiously. This contact information must be made available to DoD or its designee. If the NTIA notifies the Commission that DoD is receiving harmful interference from a NVNG licensee, the Commission will require such NVNG licensee to terminate its interfering operations immediately unless it demonstrates to the Commission's reasonable satisfaction, and that of NTIA, that it is not responsible for causing harmful interference into the worldwide DoD system. A NVNG licensee assumes the risk of any liability or damage that it and its directors, officers, employees, affiliates, agents and subcontractors may incur or suffer in connection with an interruption of its MSS, in whole or in part, arising from or relating to its compliance or noncompliance with the requirements of this paragraph.

(c) Each satellite in a NVNG licensee's system time-sharing spectrum with DoD in the 400.15-401 MHz band shall automatically turn off and cease satellite transmissions if, after 72 consecutive hours, no reset signal is received from the NVNG licensee's gateway earth station and verified by the satellite. All satellites in such NVNG licensee's system shall be capable of instantaneous shutdown on any sub-band upon command from such NVNG licensee's gateway earth station.

(d) Initially, a NVNG licensee time-sharing spectrum with DoD in the 400.15-401 MHz band shall be able to change the frequency on which its system satellites are operating within 125 minutes of receiving notification from a DoD required frequency change in the 400.15-401 MHz band. Thereafter, when an NVNG licensee constructs additional gateway earth stations located outside of North and South America, it shall use its best efforts to decrease to 90 minutes the time required to implement a DoD required frequency change. An NVNG licensee promptly shall notify the Commission and NTIA of any decrease in the time it requires to implement a DoD required frequency change.

(e) Once an NVNG licensee time-sharing spectrum with DoD in the 400.15-401 MHz band demonstrates to DoD that it is capable of implementing a DoD required frequency change within the time required under paragraph (d) of this section; thereafter, such NVNG licensee shall demonstrate its capability to

implement a DoD required frequency change only once per year at the instruction of DoD. Such demonstrations shall occur during off-peak hours, as determined by the NVNG licensee, unless otherwise agreed by the NVNG licensee and DoD. Such NVNG licensee will coordinate with DoD in establishing a plan for such a demonstration. In the event that an NVNG licensee fails to demonstrate to DoD that it is capable of implementing a DoD required frequency change in accordance with a demonstration plan established by DoD and the NVNG licensee, upon the Commission's receipt of a written notification from NTIA describing such failure, the Commission shall impose additional conditions or requirements on the NVNG licensee's authorization as may be necessary to protect DoD operations in the 400.15-401 MHz downlink band until the Commission is notified by NTIA that the NVNG licensee has successfully demonstrated its ability to implement a DoD required frequency change. Such additional conditions or requirements may include, but are not limited to, requiring such NVNG licensee immediately to terminate its operations interfering with the DoD system.

§ 100.244 Inter-service coordination requirements for the 1.6/2.4 GHz MSS.

(a) *Protection of the radio astronomy service in the 1610.6-1613.8 MHz band against interference from 1.6/2.4 GHz MSS systems*.

(1) All 1.6/2.4 GHz MSS systems shall be capable of determining the position of the user transceivers accessing the space segment through either internal radiodetermination calculations or external sources such as LORAN-C or the Global Positioning System.

(i) In the 1610.6-1613.8 MHz band, within a 160 km radius of the following radio astronomy sites:

Observatory	North Latitude (DMS)	West Longitude (DMS)
Arecibo, PR	18 20 46	66 45 11
Green Bank Telescope, WV	38 25 59	79 50 24
	38 26 09	79 49 42
Very Large Array, NM	34 04 43	107 37 04
Owens Valley, CA	37 13 54	118 17 36
Ohio State, OH	40 15 06	83 02 54

(ii) In the 1610.6-1613.8 MHz band, within a 50 km radius of the following radio astronomy sites:

Observatory	Latitude (DMS)	Longitude (DMS)
Pie Town, NM	34 18 04	108 07 07
Los Alamos, NM	35 46 30	106 14 42
Kitt Peak, AZ	31 57 22	111 36 42

Ft. Davis, TX	30 38 06	103 56 39
N. Liberty, IA	41 46 17	91 34 26
Brewster, WA	48 07 53	119 40 55
Owens Valley, CA	37 13 54	118 16 34
St. Croix, VI	17 45 31	64 35 03
Mauna Kea, HI	19 48 16	155 27 29
Hancock, NH	42 56 01	71 59 12

(iii) Out-of-band emissions of a mobile earth station licensed to operate within the 1610.0-1626.5 MHz band shall be attenuated so that the PFD it produces in the 1610.6-1613.8 MHz band at any radio astronomy site listed in paragraph (a)(1)(i) or (ii) of this section shall not exceed the emissions of a mobile earth station operating within the 1610.6-1613.8 MHz band at the edge of the protection zone applicable for that site. As an alternative, a mobile earth station shall not operate during radio astronomy observations within the 1613.8-1615.8 MHz band within 100 km of the radio astronomy sites listed in paragraph (a)(1)(i) of this section, and within 30 km of the sites listed in paragraph (a)(1)(ii) of this section, there being no restriction on a mobile earth station operating within the 1615.8-1626.5 MHz band.

(iv) For airborne mobile earth stations operating in the 1610.0-1626.5 MHz band, the separation distance shall be the larger of the distances specified in paragraph (a)(1)(i), (ii), or (iii) of this section, as applicable, or the distance, d, as given by the formula:

d (km) = 4.1 square root of (h)

where h is the altitude of the aircraft in meters above ground level.

(v) Smaller geographic protection zones may be used in lieu of the areas specified in paragraphs (a)(1)(i), (ii), (iii), and (iv) of this section if agreed to by the MSS licensee and the Electromagnetic Spectrum Management Unit (ESMU), National Science Foundation, Washington, D.C. (contact: esm@nsf.gov) upon a showing by the MSS licensee that the operation of a mobile earth station will not cause harmful interference to a radio astronomy observatory during periods of observation.

(vi) The ESMU shall notify MSS space station licensees authorized to operate mobile earth stations in the 1610.0-1626.5 MHz band of periods of radio astronomy observations. The MSS systems shall be capable of terminating operations within the frequency bands and protection zones specified in paragraphs (a)(1)(i) through (iv) of this section, as applicable, after the first position fix of the mobile earth station either prior to transmission or, based upon its location within the protection zone at the time of initial transmission of the mobile earth station. Once the Mobile-Satellite Service system determines that a mobile earth station is located within an RAS protection zone, the Mobile-Satellite Service system shall immediately initiate procedures to relocate the mobile earth station operations to a non-RAS frequency.

(vii) A beacon-actuated protection zone may be used in lieu of fixed protection zones in the 1610.6-1613.8 MHz band if a coordination agreement is reached between a MSS system licensee and the ESMU on the specifics of beacon operations.

(2) Additional radio astronomy sites, not located within 100 miles of the 100 most populous urbanized areas as defined by the United States Census Bureau at the time, may be afforded similar

protection one year after notice to the MSS system licensees by issuance of a public notice by the Commission.

(3) MSS space stations transmitting in the 1613.8-1626.5 MHz band shall take whatever steps necessary to avoid causing harmful interference to the radio astronomy facilities listed in paragraphs (a)(1)(i) and (ii) of this section during periods of observation.

(4) MSS space stations operating in the 2483.5-2500 MHz frequency band shall limit spurious emission levels in the 4990-5000 MHz band so as not to exceed −241 dB ($W/m^2/Hz$) at the surface of the Earth.

(5) The Radioastronomy Service shall avoid scheduling radio astronomy observations during peak MSS/RDSS traffic periods to the greatest extent practicable.

(b) If a MSS space station operator in the 2496-2500 MHz band intends to operate at powers levels that exceed the PFD limits in § 100.212, or if actual operations routinely exceed these PFD limits, the MSS operator must receive approval from each operational BRS system in the affected geographical region.

§ 100.245 Acceptance of interference in 2000-2020 MHz.

MSS receivers operating in the 2000-2020 MHz band must accept interference from lawful operations in the 1995-2000 MHz band, where such interference is due to:
(a) The in-band power of any operations in 1995-2000 MHz (i.e., the portion of transmit power contained in the 1995-2000 MHz band); or
(b) The portion of out-of-band emissions contained in 2000-2005 MHz.

SATELLITE DIGITAL AUDIO RADIO SERVICE

§ 100.250 Licensing provisions for the 2.3 GHz satellite digital audio radio service.

(a) *General requirements*. Each application for a system authorization in the satellite digital audio radio service in the 2310-2360 MHz band shall describe in detail the proposed satellite digital audio radio system, setting forth all pertinent technical and operational aspects of the system, and the technical, legal, and financial qualifications of the applicant.

(b) *Technical qualifications*. In addition to the information specified in paragraph (a)(1) of this section, each applicant shall:

(1) Demonstrate that its system will, at a minimum, service the 48 contiguous states of the United States (full CONUS); and

(2) Certify that its satellite DARS system includes a receiver that will permit end users to access all licensed satellite DARS systems that are operational or under construction.

(c) *Milestone requirements*. Each applicant for system authorization in the satellite digital audio radio service must demonstrate within 10 days after a required implementation milestone as specified in the system authorization, and on the basis of the documentation contained in its application, certify to the Commission by affidavit that the milestone has been met or notify the Commission by letter that it has not been met. At its discretion, the Commission may require the submission of additional information (supported by affidavit of a person or persons with knowledge thereof) to demonstrate that the milestone has been met. The satellite DARS milestones are as follows, based on the date of authorization:

(1) One year: complete contracting for construction of first satellite or begin satellite construction;

(2) Two years: if applied for, complete contracting for construction of second satellite or begin second satellite construction;

(3) Four years: in orbit operation of at least one satellite; and

(4) Six years: full operation of the satellite system.

§ 100.251 Out-of-band emission limitations and Information sharing requirements for SDARS terrestrial repeater operators.

(1) *Out-of-band emission limitations for SDARS terrestrial repeaters.*

(a) Any SDARS terrestrial repeater operating at a power level greater than 2-watt average EIRP is required to attenuate its out-of-band emissions below the transmitter power P by a factor of not less than 90 + 10 log (P) dB in a 1-megahertz bandwidth outside the 2320-2345 MHz band, where P is average transmitter output power in watts.

(b) Any SDARS terrestrial repeater operating at a power level equal to or less than 2-watt average EIRP is required to attenuate its out-of-band emissions below the transmitter power P by a factor of not less than 75 + 10 log (P) dB in a 1-megahertz bandwidth outside the 2320-2345 MHz band, where P is average transmitter output power in watts.

(2) *Information sharing requirements for SDARS terrestrial repeaters*. This section requires SDARS licensees in the 2320-2345 MHz band to share information regarding the location and operation of terrestrial repeaters with WCS licensees in the 2305-2320 MHz and 2345-2360 MHz bands. § 27.72 of this chapter requires WCS licensees to share information regarding the location and operation of base stations in the 2305-2320 MHz and 2345-2360 MHz bands with SDARS licensees in the 2320-2345 MHz band.

(a) *Site and frequency selection.* SDARS licensees must select terrestrial repeater sites and frequencies, to the extent practicable, to minimize the possibility of harmful interference to WCS base station operations in the 2305-2320 MHz and 2345-2360 MHz bands.

(b) *Notice requirements*. SDARS licensees that intend to operate a new terrestrial repeater must, before commencing such operation, provide 10 business days prior notice to all potentially affected Wireless Communications Service (WCS) licensees. SDARS licensees that intend to modify an existing repeater must, before commencing such modified operation, provide five business days prior notice to all potentially affected WCS licensees.

(1) For purposes of this section, a "potentially affected WCS licensee" is a WCS licensee that:

(i) Is authorized to operate a base station in the 2305-2315 MHz or 2350-2360 MHz bands in the same Major Economic Area (MEA) as that in which the terrestrial repeater is to be located;

(ii) Is authorized to operate base station in the 2315-2320 MHz or 2345-2350 MHz bands in the same Regional Economic Area Grouping (REAG) as that in which the terrestrial repeater is to be located;

(iii) In addition to the WCS licensees identified in paragraphs (b)(1)(i) and (ii) of this section, in cases in which the SDARS licensee plans to deploy or modify a terrestrial repeater within 5 kilometers of the boundary of an MEA or REAG in which the terrestrial repeater is to be located, a potentially affected WCS licensee is one that is authorized to operate a WCS base station in that neighboring MEA or REAG within 5 kilometers of the location of the terrestrial repeater.

(2) For modifications other than changes in location, a licensee may provide notice within 24 hours after the modified operation if the modification does not result in a predicted increase of the PFD at ground level by more than 1 dB since the last advance notice was given. If a demonstration is made by the WCS licensee that such modifications may cause harmful interference to WCS receivers, SDARS licensees will be required to provide notice five business days in advance of additional repeater modifications.

(3) SDARS repeaters operating below 2 watts EIRP are exempt from the notice requirements set forth in this paragraph.

(4) SDARS licensees are encouraged to develop separate coordination agreements with WCS licensees to facilitate efficient deployment of and coexistence between each service. To the extent the

provisions of any such coordination agreement conflict with the requirements set forth herein, the procedures established under a coordination agreement will control. SDARS licensees must maintain a copy of any coordination agreement with a WCS license in their station files and disclose it to prospective assignees, transferees, or spectrum lessees and, upon request, to the Commission.

(5) SDARS and WCS licensees may enter into agreements regarding alternative notification procedures.

(c) *Contents of notice*.

(1) Notification must specify relevant technical details, including, at a minimum:

(i) The coordinates of the proposed repeater to an accuracy of no less than ±1 second latitude and longitude;

(ii) The proposed operating power(s), frequency band(s), and emission(s);

(iii) The antenna center height above ground and ground elevation above mean sea level, both to an accuracy of no less than ±1 meter;

(iv) The antenna gain pattern(s) in the azimuth and elevation planes that include the peak of the main beam; and

(v) The antenna downtilt angle(s).

(2) An SDARS licensee operating terrestrial repeaters must maintain an accurate and up-to-date inventory of its terrestrial repeaters operating above 2 watts average EIRP, including the information set forth in this section which shall be available upon request by the Commission.

(d) *Calculation of notice period*. Notice periods are calculated from the date of receipt by the licensee being notified. If notification is by mail, the date of receipt is evidenced by the return receipt on certified mail. If notification is by fax, the date of receipt is evidenced by the notifying party's fax transmission confirmation log. If notification is by e-mail, the date of receipt is evidenced by a return e-mail receipt. If the SDARS licensee and all potentially affected WCS licensees reach a mutual agreement to provide notification by some other means, that agreement must specify the method for determining the beginning of the notice period.

(e) *Duty to cooperate*. SDARS licensees must cooperate in good faith in the selection and use of new repeater sites to reduce interference and make the most effective use of the authorized facilities. SDARS licensees should provide WCS licensees as much lead time as practicable to provide ample time to conduct analyses and opportunity for prudent repeater site selection prior to SDARS licensees entering into real estate and tower leasing or purchasing agreements. Licensees of stations suffering or causing harmful interference must cooperate in good faith and resolve such problems by mutually satisfactory arrangements. If the licensees are unable to do so, the Space Bureau, in consultation with the Office of Engineering and Technology and the Wireless Telecommunications Bureau, will consider the actions taken by the parties to mitigate the risk of and remedy any alleged interference. In determining the appropriate action, the Space Bureau will take into account the nature and extent of the interference and act promptly to remedy the interference. The Space Bureau may impose restrictions on SDARS licensees, including specifying the transmitter power, antenna height, or other technical or operational measures to remedy the interference, and will take into account previous measures by the licensees to mitigate the risk of interference.

ORBITAL DEBRIS

§ 100.260 Orbital debris and end-of-life disposal.

(a) *Orbital debris mitigation plans*.

(1) Space station operators must operate in accordance with the orbital debris mitigation plans, statements, disclosures and certifications provided to the Commission pursuant to §§ 100.110 through

100.111.

(2) Operators must notify the Commission of any significant changes to the orbital debris mitigation plans, statements, and disclosures, to the extent any such changes do not require modification of the authorization, within 30 days of the date the change is effective.

(b) *Geostationary orbit satellites*.

(1) *End-of-life perigee.* Unless otherwise explicitly specified in an authorization, a satellite authorized to operate in the geostationary satellite orbit under this part shall be relocated, at the end of its useful life, barring catastrophic failure of satellite components, to an orbit with a perigee with an altitude of no less than:

36,021 km + (1000·CR·A/m)

where CR is the solar radiation pressure coefficient of the spacecraft, and A/m is the Area to mass ratio, in square meters per kilogram, of the spacecraft.

(2) *End-of-life operations*. A space station authorized to operate in the geostationary satellite orbit under this part may operate using its authorized telemetry, tracking, and command frequencies, and outside of its assigned orbital location, for the purpose of removing the satellite from the geostationary satellite orbit at the end of its useful life, provided that the conditions of paragraph (b) of this section are met, and on the condition that the space station's telemetry, tracking, and command transmissions are planned so as to avoid radio frequency interference to other space stations, and coordinated with any potentially affected satellite networks.

(c) *All space stations*. Upon completion of any relocation authorized by paragraph (b) of this section, or any relocation at end-of-life specified in an authorization, or upon a spacecraft otherwise completing its authorized mission, a space station licensee shall ensure, unless prevented by technical failures beyond its control, that stored energy sources on board the spacecraft are discharged, by venting excess propellant, discharging batteries, relieving pressure vessels, or other appropriate measures.

(d) *Low-earth orbit space stations*. For spacecraft ending their mission in or passing through the low-Earth orbit region below 2000 km altitude and planning disposal through uncontrolled atmospheric re-entry, barring catastrophic failure of satellite components, disposal must be completed as soon as practicable following end of mission, and no later than five years after the end of the mission. For purposes of this paragraph (e), end of mission is defined as the time at which the individual spacecraft is no longer capable of conducting collision avoidance maneuvers. For spacecraft without collision avoidance capabilities, end of mission is defined as the point in which the individual spacecraft has completed its primary mission.

(e) *Debris generation.* A space station operator shall limit, during and after completion of mission operations, unnecessary operational debris, debris resulting from accidental explosions, or liquids released that will persist in droplet form.

§ 100.261 Space safety rules.

(a) *Trackability*. Each individual satellite in an NGSO satellite system, GSO satellite system, or VTSS authorized to operate in Earth orbit must be trackable. Satellites operating in or crossing low-Earth orbit will be presumed trackable if each individual satellite is 10 cm or larger in its smallest dimension, excluding deployable components when they are below 2,000km.

(b) *Conjunction warnings*. Upon receipt of a space situational awareness conjunction warning, the operator must review and take all possible steps to assess and mitigate the collision risk. These steps should include, but are not limited to: contacting the operator of any active spacecraft involved in such a warning, sharing ephemeris data and other appropriate operational information with any such operator, and modifying spacecraft attitude or operations.

GENERAL EARTH STATION RULES

§ 100.270 Responsibility of blanket licensed earth station licensees.

(a) The holder of a blanket earth station license is responsible for operation of any earth station or user terminal under that license.

(b) For purposes of this part, a blanket licensee for user terminals, ESIMs, or Mobile Earth Stations, does not need to maintain control over the specific device, but must be in control of the network and maintain the ability to cease transmissions from the device.

§ 100.271 Minimum elevation angle.

(a) Earth station antennas must not transmit at elevation angles less than five degrees, measured from the horizontal plane to the direction of maximum radiation, in a frequency band shared with terrestrial radio services or in a frequency band with an allocation to space services operating in both the Earth-to-space and space-to-Earth directions. In other bands, earth station antennas must not transmit at elevation angles less than three degrees. In some instances, it may be necessary to specify greater minimum elevation angles because of interference considerations.

(b) ESAAs in aircraft on the ground must not transmit at elevation angles less than three degrees. There is no minimum angle of antenna elevation for ESAAs while airborne.

§ 100.272 Receive-only earth stations.

(a) *17/24 GHz BSS*. Receive-only earth stations operating in the 17/24 GHz BSS can claim no greater protection from interference than they would receive if the equivalent antenna diameter were equal to or greater than 45 cm and the antenna meets the co-polar and cross-polar performance patterns represented by the following set of formulas (adopted in Recommendation ITU-R BO.1213-1, dated November 2005) that are valid for $D/\lambda \geq 11$:

(1) Co-polar pattern:

$$G_{co}(\varphi) = G_{max} - 2.5 \times 10^{-3}\left(\frac{D}{\lambda}\varphi\right)^2 \text{ for } 0 \le \varphi < \varphi_m$$

where:

$$\varphi_m = \frac{\lambda}{D}\sqrt{\frac{G_{max} - G_1}{0.0025}}$$

$$G_{max} = 10\log\left(\eta\left(\frac{\pi D}{\lambda}\right)^2\right)$$

$$G_1 = 29 - 25\log\varphi_r, \text{ and } \varphi_r = 95\frac{\lambda}{D}$$

$$G_{CO}(\varphi) = G_1 \quad \text{for } \varphi_m \le \varphi < \varphi_r$$

$$G_{CO}(\varphi) = 29 - 25\log\varphi \quad \text{for } \varphi_r \le \varphi < \varphi_b \text{ where } \varphi_b = 10^{(34/25)}$$

$$G_{CO}(\varphi) = -5\text{dBi} \quad \text{for } \varphi_b \le \varphi < 70°$$

$$G_{CO}(\varphi) = 0\text{dBi} \quad \text{for } 70° \le \varphi < 180°$$

(2) Cross-polar pattern:

$$G_{cross}(\varphi) = G_{max} - 25 \quad \text{for } 0 \le \varphi < 0.25\varphi_0$$

where:

$$\varphi_0 = 2\frac{\lambda}{D}\sqrt{\frac{3}{0.0025}} = 3\text{dB beamwidth}$$

$$G_{cross}(\varphi) = G_{max} - 25 + 8\left(\frac{\varphi - 0.25\varphi_0}{0.19\varphi_0}\right) \text{for } 0.25\varphi_0 \le \varphi < 0.44\varphi_0$$

$$G_{cross}(\varphi) = G_{max} - 17 \quad \text{for } 0.44\varphi_0 \le \varphi < \varphi_0$$

$$G_{cross}(\varphi) = G_{max} - 17 + C\left|\frac{\varphi - \varphi_0}{\varphi_1 - \varphi_0}\right| \text{for } \varphi_0 \le \varphi < \varphi_1 \text{ where } \varphi 0 = 10.1875$$

$$\text{and } C = 21 - 25\log\left(\varphi_1\right) - \left(G_{max} - 17\right)$$

$$G_{cross}(\varphi) = 21 - 25\log\varphi \quad \text{for } \varphi_1 \le \varphi < \varphi_2 \text{ where } \varphi_2 = 10^{(26/25)}$$

$$G_{cross}(\varphi) = -5\text{dBi} \quad \text{for } \varphi_2 \le \varphi < 70°$$

$$G_{cross}(\varphi) = 0\text{dBi} \quad \text{for } 70° \le \varphi < 180°$$

where:

D: equivalent antenna diameter

λ: wavelength expressed in the same unit as the diameter

φ: off-axis angle of the antenna relative to boresight (degrees)

η: antenna efficiency = 0.65

(b) *Applicability.* This paragraph does not apply to 17/24 GHz BSS telemetry earth stations.

(c) *Protection from interference*. Receive-only earth stations in the FSS that operate with U.S.-licensed space stations, or with non-U.S.-licensed space stations that have been duly approved for U.S. market access, may be registered with the Commission in order to protect them from interference from terrestrial microwave stations in bands shared co-equally with the Fixed Service. The registration of a receive-only earth station results in the listing of an authorized frequency band at the location specified in the registration. Interference protection levels are those agreed to during coordination. Unless otherwise specified a registration is not required for a receive-only earth station that does not seek protection.

(d) *Use of programming*. Licensing or registration of receive-only earth stations with the Commission confers no authority to receive and use signals or programming received from satellites. *See* Section 705 of the Communications Act, 47 U.S.C. 605.

(e) *Applications*. Applications for registration must be accompanied by the exhibits and certifications of § 100.120.

(f) *International agreements*. Reception of signals or programming from non-U.S. satellites may be subject to restrictions as a result of international agreements or treaties.

(g) *Modifications*. Applications for modification of license or registration of receive-only earth stations must be made in conformance with § 100.142. In addition, registrants are required to notify the Commission when a receive-only earth station is no longer operational or when it has not been used to provide any service during any six-month period.

(h) *Reception from non-U.S. licensed space stations*.

(1) Except as set forth in this section, operators of receive-only earth stations seeking to operate with non-U.S. licensed space stations must file an FCC Form 312 – Main Form requesting a license or license modification to operate such a station.

(2) Operators of receive-only earth stations need not apply for a license to receive transmissions from non-U.S.-licensed space stations that have been duly approved for U.S. market access, provided the space station operator and earth station operator comply with all applicable rules in this chapter and with applicable conditions in the Permitted Space Station List or market-access grant.

§ 100.273 Temporary-fixed earth station operations.

(a) When an earth station in the FSS is to remain at a single location for fewer than six months, the location may be considered to be temporary fixed. Services provided at a single location which are initially known to be of longer than six months' duration shall not be provided under a temporary fixed authorization.

(b) When a station, other than an ESV, authorized as a temporary fixed earth station, is to remain at a single location for more than six months, application for a regular station authorization at that location shall be filed at least thirty days prior to the expiration of the six-month period.

(c) The licensee of an earth station, other than an ESV, which is authorized to conduct temporary fixed operations in bands shared co-equally with terrestrial fixed stations shall provide the following information to the licensees of all terrestrial facilities lying within the coordination contour of the proposed temporary fixed earth station site before beginning transmissions:

(1) The name of the person operating the station and the telephone number at which the operator can be reached directly;

(2) The exact frequency or frequencies used and the type of emissions and power levels to be transmitted; and

(3) The commencement and anticipated termination dates of operation from each location.

(d) Transmissions may not be commenced until all affected terrestrial licensees have been notified and the earth station operator has confirmed that harmful interference will not be caused to such terrestrial stations.

(e) Operations of temporary fixed earth stations shall cease immediately upon notice of harmful interference from the Commission or the affected licensee.

(f) Filing requirements concerning applications for new temporary fixed earth station facilities operating in frequency bands shared co-equally with terrestrial fixed stations.

(i) When the initial location of the temporary fixed earth station's operation is known, the applicant shall provide, as part of the FCC Form 312 – Main Form application, a frequency coordination report in accordance with § 100.256 for the initial station location.

(ii) When the initial location of the temporary fixed earth station's operation is not known at the time the application is filed, the applicant shall provide, as part of FCC Form 312 – Main Form application, a statement by the applicant acknowledging its coordination responsibilities under § 100.275.

§ 100.274 Period of construction.

(a) A licensee for site specific earth stations must certify to commencement of operations within 365 days from grant.

(b) A Nationwide, Non-Site licensee that is required to register locations prior to operations must certify to the commencement of operations within 365 days from registration.

(c) A blanket licensee for user terminals, ESIMs, or Mobile Earth Stations, must certify to the commencement of operations within 365 days from license grant.

GENERAL EARTH STATION COORDINATION AND PERFORMANCE REQUIREMENTS

§ 100.275 Earth station coordination requirements.

(a) *Terrestrial coordination report*. An applicant for an earth station authorization, other than an ESV, in a frequency band shared with equal rights with terrestrial microwave services shall provide, as part of their application, a coordination report that demonstrates coordination with potentially impacted services and includes all relevant transmitting and/or receiving parameters necessary in assessing the likelihood of interference.

(b) *Requirements for coordination with terrestrial stations.*

(1) The administrative aspects of the coordination process are set forth in § 101.103 of this chapter in the case of coordination of terrestrial stations with earth stations and in this subpart in the case of earth station coordination with terrestrial stations.

(2) An applicant for an earth station authorization, other than an ESV, shall coordinate the proposed frequency usage with existing terrestrial users and with applicants for terrestrial station authorizations with previously filed applications in accordance with the following procedure:

(i) An applicant for an earth station authorization shall perform an interference analysis in accordance with the procedures set forth below for each terrestrial station, for which a license or construction permit has been granted or for which an application has been accepted for filing, which is or is to be operated in a shared frequency band to be used by the proposed earth station and which is located within the great circle coordination distance contour(s) of the proposed earth station.

(ii) The earth station applicant shall provide each such terrestrial station licensee, permittee, and prior grantee with the technical details of the proposed earth station and the relevant interference analyses that were made. At a minimum, the earth station applicant shall provide the terrestrial user with the following technical information:

(A) The geographical coordinates of the proposed earth station antenna(s),

(B) Proposed operating frequency band(s) and emission(s),

(C) Antenna center height above ground and ground elevation above mean sea level,

(D) Antenna gain pattern(s) in the plane of the main beam,

(E) Longitude range of GSO satellites at which antenna may be pointed, for proposed earth station antenna(s) accessing GSO satellites,

(F) Horizon elevation plot,

(G) Antenna horizon gain plot(s) for satellite longitude range specified in (b)(2)(ii)(E) of this section, taking into account the provisions of requirements for earth stations operating with NGSO satellites,

(H) Minimum elevation angle,

(I) Maximum equivalent isotropically radiated power (e.i.r.p.) density in the main beam in any 4 kHz band, (dBW/4 kHz) for frequency bands below 15 GHz or in any 1 MHz band (dBW/MHz) for frequency band above 15 GHz,

(J) Maximum available RF transmit power density in any 1 MHz band and in any 4 kHz band at the input terminals of the antenna(s),

(K) Maximum permissible RF interference power level as determined in accordance with (a)(1) of this section for all applicable percentages of time, and

(L) A plot of great circle coordination distance contour(s) and rain scatter coordination distance contour(s).

(3) The coordination procedures specified in § 101.103 of this chapter shall be applicable except that the information to be provided shall be that set forth in paragraph (b)(2)(ii) of this section, and that the 30-day period allowed for response to a request for coordination may be increased to a maximum of 45 days by mutual consent of the parties.

(4) Where technical problems are resolved by an agreement or operating arrangement between the parties that would require special procedures be taken to reduce the likelihood of harmful interference (such as the use of artificial site shielding) or would result in lessened quality or capacity of either system, the details thereof shall be contained in the application.

(5) Multiple antennas in an NGSO FSS gateway earth station complex located within an area bounded by one second of latitude and one second of longitude may be regarded as a single earth station for purposes of coordination with terrestrial services.

(c) *Technical aspects of coordination*. The technical aspects of coordination are based on Appendix 7 of the International Telecommunication Union Radio Regulations (incorporated by reference, *see* § 100.4) and certain recommendations of the ITU Radiocommunication Sector (available at the address in § 0.445 of this chapter).

(d) *Coordination across international boundaries*. An applicant for operation of an earth station, other than an ESV, VMES or an ESAA, shall also ascertain whether the great circle coordination distance contours and rain scatter coordination distance contours, computed for those values of parameters indicated in Appendix 7 of the ITU RR (incorporated by reference, see § 100.4 for international coordination across the boundaries of another Administration). In this case, the applicant shall furnish the Commission copies of these contours on maps drawn to appropriate scale for use by the Commission in effecting coordination of the proposed earth station with the Administration(s) affected.

(e) *Protection for Table Mountain Radio Receiving Zone, Boulder County, Colorado*. Applicants for a station authorization to operate in the vicinity of Boulder County, Colorado under this part are advised to give due consideration, prior to filing applications, to the need to protect the Table Mountain Radio Receiving Zone from harmful interference. These are the research laboratories of the Department of Commerce, Boulder County, Colorado. To prevent degradation of the present ambient radio signal level at the site, the Department of Commerce seeks to ensure that the field strengths of any radiated signals (excluding reflected signals) received on this 1800 acre site (in the vicinity of coordinates 40°07′50″ N Latitude, 105°14′40″ W Longitude) resulting from new assignments (other than mobile stations) or from the modification or relocation of existing facilities do not exceed the following values:

Frequency range	In authorized bandwidth of service	
	Field strength (mV/m)	Power flux density[1] (dBW/m^2)
Below 540 kHz	10	−65.8
540 to 1600 kHz	20	−59.8
1.6 to 470 MHz	10	−65.8[2]
470 to 890 MHz	30	−56.2[2]
Above 890 MHz	1	−85.8[2]

[1] Equivalent values of power flux density are calculated assuming free space characteristic impedance of 376.7 = 120π ohms.

[2] Space stations shall conform to the power flux density limits at the earth's surface specified in appropriate parts of the FCC rules, but in no case should exceed the above levels in any 4 kHz band for all angles of arrival.

(f) *Notification to the National Radio Astronomy Observatory in West Virginia*. In order to minimize possible harmful interference at the National Radio Astronomy Observatory site at Green Bank, Pocahontas County, W. Va., and at the Sugar Grove Research Station site at Sugar Grove, Pendleton County, W. Va., any applicant for operating authority under this part for a new transmit or transmit-receive earth station, other than a mobile or temporary fixed station, within the area bounded by 39°15′ N. on the north, 78°30′ W. on the east, 37°30′ N. on the south and 80°30′ W. on the west or for modification of an existing license for such station to change the station's frequency, power, antenna height or directivity, or location must, when filing the application with the Commission, simultaneously notify the Director, National Radio Astronomy Observatory, nrqz@nrao.edu / P.O. Box No. 2, Green Bank, W. Va. 24944, in writing, of the technical particulars of the proposed station. Such notification shall include the geographical coordinates of the antenna, antenna height, antenna directivity if any, proposed frequency, type of emission, and power. In addition, the applicant shall indicate in his application to the Commission the date notification was made to the observatory. After receipt of such applications, the Commission will allow a period of 20 days for comments or objections in response to the notifications indicated. If an objection to the proposed operation is received during the 20-day period from the National Radio Astronomy Observatory for itself or on behalf of the Sugar Grove Research Station, the Commission will consider all aspects of the problem and take whatever action is deemed appropriate.

(g) *Protection for Federal Communications Commission monitoring stations.*

(1) Applicants for authority to operate a new transmitting earth station in the vicinity of an FCC monitoring station or to modify the operation of a transmitting earth station in a way that would increase the field strength produced at such a monitoring station above that previously authorized should consider the possible need to protect the FCC stations from harmful interference. Geographic coordinates of the facilities that require protection are listed in § 0.121(c) of this chapter.

(2) Applications for fixed stations that will produce field strength greater than 10 mV/m or power flux density greater than −65.8 dBW/m^2 in the authorized emission bandwidth at any of the referenced coordinates may be examined to determine the extent of possible interference. Depending on the theoretical field strength value and existing root-sum-square or other ambient radio field signal levels at the referenced coordinates, a condition to protect the monitoring station may be included in the station authorization.

(3) In the event that the calculated value of the expected field strength exceeds 10 mV/m (−65.8 dBW/m^2) at the reference coordinates, or if there is any question whether field strength levels might exceed the threshold value, advance consultation with the FCC to discuss any protection necessary should be considered. See § 0.401 of this chapter for contact information

(h) *Puerto Rico, Desecheo, Mona, Vieques, or Culebra Site Requirements.*

(1) Any applicant for a new permanent transmitting fixed earth station to be located on the island of Puerto Rico, Desecheo, Mona, Vieques, or Culebra, or for modification of an existing authorization to change the frequency, power, antenna height, directivity, or location of such a station on one of these islands in a way that would increase the likelihood of causing interference, must notify the Interference Office, Arecibo Observatory, HC3 Box 53995, Arecibo, Puerto Rico 00612, in writing or electronically, of the technical parameters of the proposal. Applicants may wish to consult interference guidelines,

which will be provided by Cornell University. Applicants who choose to transmit information electronically should e-mail to: *prcz@naic.edu*.

(2) The notification to the Interference Office, Arecibo Observatory shall be made prior to, or simultaneously with, the filing of the application with the Commission. The notification must specify the geographical coordinates of the antenna (NAD-83 datum), antenna height above ground, ground elevation at the antenna, antenna directivity and gain, proposed frequency, relevant FCC rule part, type of emission, effective radiated power, and whether the proposed use is itinerant. Generally, submission of the information in the technical portion of the FCC license application is adequate notification. In addition, the applicant shall indicate in its application to the Commission the date notification was made to the Arecibo Observatory.

(3) After receipt of such applications, the Commission will allow the Arecibo Observatory a period of 20 days for comments or objections in response to the notification indicated. The applicant will be required to make reasonable efforts in order to resolve or mitigate any potential interference problem with the Arecibo Observatory and to file either an amendment to the application or a modification application, as appropriate. If the Commission determines that an applicant has satisfied its responsibility to make reasonable efforts to protect the Observatory from interference, its application may be granted.

(4) The provisions of this paragraph do not apply to operations that transmit on frequencies above 15 GHz.

(i) *Co-primary GSO and NGSO system earth station coordination*. Prior to filing for an earth station application, in bands with co-primary allocations to GSO and NGSO system earth stations, the applicant shall coordinate the proposed site and frequency usage with existing earth station licensees and with current earth station authorization applicants. An applicant for operation of an earth station, other than an ESIM, that will operate with a geostationary satellite or non-geostationary satellite in a shared frequency band in which the non-geostationary system is (or is proposed to be) licensed for feeder links, shall demonstrate in its applications that its proposed earth station will not cause unacceptable interference to any other satellite network that is authorized to operate in the same frequency band, or certify that the operations of its earth station shall conform to established coordination agreements between the operator(s) of the space station(s) with which the earth station is to communicate and the operator(s) of any other space station licensed to use the band.

(j) *Coordination obligations for NGSO and GSO Satellite Systems in frequencies allocated to the FSS.* Licensees of non-geostationary satellite systems that use frequency bands allocated to the Fixed-Satellite Service for their feeder link operations shall coordinate their operations with licensees of geostationary Fixed-Satellite Service systems licensed by the Commission for operation in the same frequency bands. Licensees of geostationary Fixed-Satellite Service systems in the frequency bands that are licensed to non-geostationary satellite systems for feeder link operations shall coordinate their operations with the licensees of such non-geostationary satellite systems.

(k) *Special operational requirements of the 3.65-3.7 GHz band*. Upon request from a terrestrial licensee authorized under part 90, subpart Z that seeks to place base and fixed stations in operation within 150 km of a primary earth station, licensees of earth stations operating on a primary basis in the FSS in the 3.65-3.7 GHz band must negotiate in good faith with that terrestrial licensee to arrive at mutually agreeable operating parameters to prevent harmful interference.

(l) *Earth stations in the 3.7-4.2 GHz band.*

(1) Applications for new, modified, or renewed earth station licenses and registrations in the 3.7-4.0 GHz portion of the band in CONUS are no longer accepted.

(2) Applications for new earth station licenses or registrations within CONUS in the 4.0-4.2 GHz portion of the band will not be accepted until the transition is completed and upon announcement by the Space Bureau via public notice that applications may be filed.

(3) Fixed and temporary fixed earth stations operating in the 3.7-4.0 GHz portion of the band within CONUS will be protected from interference by licensees in the 3.7 GHz Service subject to the deadlines set forth in § 27.1412 of this chapter and are eligible for transition into the 4.0-4.2 GHz band so long as they:

(i) Were operational as of April 19, 2018 and continue to be operational;

(ii) Were licensed or registered (or had a pending application for license or registration) in the ICFS database on November 7, 2018; and

(iii) Timely certified the accuracy of the information on file with the Commission by May 28, 2019.

(4) Fixed and temporary earth station licenses and registrations that meet the criteria in paragraph (c) of this section may be renewed or modified to maintain operations in the 4.0-4.2 GHz band

(5) Applications for new, modified, or renewed licenses and registrations for earth stations outside CONUS operating in the 3.7-4.2 GHz band will continue to be accepted.

(m) From December 5, 2021 until December 5, 2030, consolidated telemetry, tracking, and control (TT&C) operations at no more than four locations may be authorized on a primary basis to support space station operations, and no other TT&C operations shall be entitled to interference protection in the 3.7-4.0 GHz band.

§ 100.276 Frequency tolerance.

The carrier frequency of each earth station transmitter authorized in these services shall be maintained within 0.001% of the reference frequency.

§ 100.277 Emissions limits generally; earth stations.

(a) *General.* Except for SDARS terrestrial repeaters, the mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the schedule set forth in this section.

(1) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 50% up to and including 100% of the authorized bandwidth: 25 dB.

(2) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 100% up to and including 250% of the authorized bandwidth: 35 dB.

(3) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250% of the authorized bandwidth: An amount equal to 43 dB plus 10 times the logarithm (to the base 10) of the transmitter power in watts.

(4) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

(b) *Emission limits in shared bands between 1 and 15 GHz.* In bands shared coequally with terrestrial radio communication services, the equivalent isotropically radiated power transmitted in any direction towards the horizon by an earth station, other than an ESV, operating in frequency bands between 1 and 15 GHz, shall not exceed the following limits:

(1) + 40 dBW in any 4 kHz band for $\theta \leq 0°$;

(2) + 40 + 3θ dBW in any 4 kHz band for $0° < \theta \leq 5°$; and

(3) where θ is the angle of elevation of the horizon viewed from the center of radiation of the antenna of the earth station and measured in degrees as positive above the horizontal plane and negative below it.

(c) *Emission limits in shared bands above 15 GHz.* In bands shared coequally with terrestrial radiocommunication services, the equivalent isotropically radiated power transmitted in any direction towards the horizon by an earth station operating in frequency bands above 15 GHz shall not exceed the following limits:

(1) + 64 dBW in any 1 MHz band for $\theta \leq 0°$;

(2) + 64 + 3 θ dBW in any 1 MHz band for $0° < \theta \leq 5°$; and

(3) where θ is the angle of elevation of the horizon viewed from the center of radiation of the antenna of the earth station and measured in degrees as positive above the horizontal plane and negative below it.

(d) *Emissions limits in the 50.2-50.4 GHz band.* For earth stations in the FSS (Earth-to-space) that transmit in the 49.7-50.2 GHz and 50.4-50.9 GHz bands, the unwanted emission power in the 50.2-50.4 GHz band shall not exceed −20 dBW/200 MHz (measured at the input of the antenna), except that the maximum unwanted emission power may be increased to −10 dBW/200 MHz for earth stations having an antenna gain greater than or equal to 57 dBi. These limits apply under clear-sky conditions. During fading conditions, the limits may be exceeded by earth stations when using uplink power control.

(e) *Angles of elevation greater than 5°.* For angles of elevation of the horizon greater than 5° there shall be no restriction as to the equivalent isotropically radiated power transmitted by an earth station towards the horizon.

(f) *Fade compensation limits.* Earth stations in the FSS may employ uplink adaptive power control or other methods of fade compensation to facilitate transmission of uplinks at power levels required for desired link performance while minimizing interference between networks.

(1) Transmissions from FSS earth stations in frequencies above 10 GHz may exceed the uplink EIRP and EIRP density limits specified in the station authorization under conditions of uplink fading due to precipitation by an amount not to exceed 1 dB above the actual amount of monitored excess attenuation over clear sky propagation conditions. EIRP levels must be returned to normal as soon as the attenuating weather pattern subsides.

(2) An FSS earth station transmitting to a geostationary space station in the 13.77-13.78 GHz band must not generate more than 71 dBW EIRP in any 6 MHz band.

(3) An FSS earth station transmitting to a non-geostationary space station in the 13.77-13.78 GHz band must not generate more than 51 dBW EIRP in any 6 MHz band.

(4) Automatic power control may be used to increase the EIRP density in a 6 MHz uplink band in this frequency range to compensate for rain fade, provided that the power flux-density at the space station does not exceed the value that would result when transmitting with an EIRP of 71 dBW or 51 dBW, as appropriate, in that 6 MHz band in clear-sky conditions.

(g) *Emission limits on SCS earth stations.* SCS earth stations providing SCS pursuant to § 100.120 shall comply with the power requirements and out-of-band emission limits corresponding to devices operating in part 22, 24, or 27 of this chapter, as required for their operating frequencies.

(h) *Limits on emissions from 1.6 GHz mobile earth stations for protection of aeronautical radionavigation-satellite service.*

(1) The e.i.r.p. density of emissions from mobile earth stations placed in service on or before July 21, 2002 with assigned uplink frequencies between 1610 MHz and 1660.5 MHz shall not exceed −70 dBW/MHz, averaged over any 2 millisecond active transmission interval, in the band 1559-1587.42 MHz. The e.i.r.p. of discrete emissions of less than 700 Hz bandwidth generated by such stations shall not exceed −80 dBW, averaged over any 2 millisecond active transmission interval, in that band.

(2) The e.i.r.p. density of emissions from mobile earth stations placed in service on or before July 21, 2002 with assigned uplink frequencies between 1610 MHz and 1626.5 MHz shall not exceed −64 dBW/MHz, averaged over any 2 millisecond active transmission interval, in the band 1587.42-1605 MHz. The e.i.r.p. of discrete emissions of less than 700 Hz bandwidth generated by such stations shall not exceed −74 dBW, averaged over any 2 millisecond active transmission interval, in the 1587.42-1605 MHz band.

(3) The e.i.r.p. density of emissions from mobile earth stations placed in service after July 21, 2002 with assigned uplink frequencies between 1610 MHz and 1660.5 MHz shall not exceed −70 dBW/MHz, averaged over any 2 millisecond active transmission interval, in the band 1559-1605 MHz. The e.i.r.p. of discrete emissions of less than 700 Hz bandwidth from such stations shall not exceed −80 dBW, averaged over any 2 millisecond active transmission interval, in the 1559-1605 MHz band.

(4) As of January 1, 2005, the e.i.r.p. density of emissions from mobile earth stations placed in service on or before July 21, 2002 with assigned uplink frequencies between 1610 MHz and 1660.5 MHz shall not exceed −70 dBW/MHz, averaged over any 2 millisecond active transmission interval, in the 1559-1605 MHz band. The e.i.r.p. of discrete emissions of less than 700 Hz bandwidth from such stations shall not exceed −80 dBW, averaged over any 2 millisecond active transmission interval, in the 1559-1605 MHz band. Inmarsat-B terminals manufactured more than six months after *Federal Register* publication of the rule changes adopted in FCC 03-283 must meet these limits.

(5) The e.i.r.p. density of emissions from mobile earth stations with assigned uplink frequencies between 1990 MHz and 2025 MHz shall not exceed −70 dBW/MHz, averaged over any 2 millisecond active transmission interval, in frequencies between 1559 MHz and 1610 MHz. The e.i.r.p. of discrete emissions of less than 700 Hz bandwidth from such stations between 1559 MHz and 1605 MHz shall not exceed −80 dBW, averaged over any 2 millisecond active transmission interval. The e.i.r.p. of discrete emissions of less than 700 Hz bandwidth from such stations between 1605 MHz and 1610 MHz manufactured more than six months after *Federal Register* publication of the rule changes adopted in FCC 03-283 shall not exceed −80 dBW, averaged over any 2 millisecond active transmission interval.

(6) Mobile earth stations placed in service after July 21, 2002 with assigned uplink frequencies in the 1610-1660.5 MHz band shall suppress the power density of emissions in the 1605-1610 MHz band to an extent determined by linear interpolation from −70 dBW/MHz at 1605 MHz to −10 dBW/MHz at 1610 MHz.

(7) Mobile earth stations manufactured more than six months after Federal Register publication of the rule changes adopted in FCC 03-283 with assigned uplink frequencies in the 1610-1626.5 MHz band shall suppress the power density of emissions in the 1605-1610 MHz band-segment to an extent determined by linear interpolation from −70 dBW/MHz at 1605 MHz to −10 dBW/MHz at 1610 MHz averaged over any 2 millisecond active transmission interval. The e.i.r.p. of discrete emissions of less than 700 Hz bandwidth from such stations shall not exceed a level determined by linear interpolation from −80 dBW at 1605 MHz to −20 dBW at 1610 MHz, averaged over any 2 millisecond active transmission interval.

(8) Mobile earth stations manufactured more than six months after *Federal Register* publication of the rule changes adopted in FCC 03-283 with assigned uplink frequencies in the 1626.5-1660.5 MHz band shall suppress the power density of emissions in the 1605-1610 MHz band-segment to an extent determined by linear interpolation from −70 dBW/MHz at 1605 MHz to −46 dBW/MHz at 1610 MHz, averaged over any 2 millisecond active transmission interval. The e.i.r.p. of discrete emissions of less than 700 Hz bandwidth from such stations shall not exceed a level determined by linear interpolation from −80 dBW at 1605 MHz to −56 dBW at 1610 MHz, averaged over any 2 millisecond active transmission interval.

(9) The e.i.r.p. density of carrier-off state emissions from mobile earth stations manufactured more than six months after Federal Register publication of the rule changes adopted in FCC 03-283 with assigned uplink frequencies between 1 and 3 GHz shall not exceed −80 dBW/MHz in the 1559-1610 MHz band averaged over any two millisecond interval.

(10) A Root-Mean-Square detector shall be used for all power density measurements.

§ 100.278 Earth station antenna performance standards.

(a) Except as provided in paragraph (e) of this section, the co-polarization gain of any earth station antenna operating in the FSS and transmitting to a GSO satellite, including earth stations providing feeder links for satellite services other than FSS, may not exceed the following limits:

(1) In the plane tangent to the GSO arc, as defined in § 100.3, for earth stations not operating in the conventional Ku-band, the 24.75-25.25 GHz band, or the 27.5-30 GHz band:

$29-25\log_{10}\theta$	dBi	for $1.5° \leq \theta \leq 7°$.
8	dBi	for $7° < \theta \leq 9.2°$.
$32-25\log_{10}\theta$	dBi	for $9.2° < \theta \leq 48°$.
−10	dBi	for $48° < \theta \leq 180°$.

Where θ is the angle in degrees from a line from the earth station antenna to the assigned orbital location of the target satellite, and dBi refers to dB relative to an isotropic radiator. This envelope may be exceeded by up to 3 dB in 10% of the range of θ angles from ±7-180°, and by up to 6 dB in the region of main reflector spillover energy.

(2) In the plane tangent to the GSO arc, for earth stations operating in the conventional Ku-band:

$29-25\log_{10}\theta$	dBi	for $1.5° \leq \theta \leq 7°$.
8	dBi	for $7° < \theta \leq 9.2°$.
$32-25\log_{10}\theta$	dBi	for $9.2° < \theta \leq 19.1°$.
0	dBi	for $19.1° < \theta \leq 180°$.

Where θ and dBi are as defined in paragraph (a)(1) of this section. This envelope may be exceeded by up to 3 dB in 10% of the range of θ angles from ±7-180°, and by up to 6 dB in the region of main reflector spillover energy.

(3) In the plane tangent to the GSO arc, for earth stations operating in the 24.75-25.25 GHz or 27.5-30 GHz bands:

$29-25\log_{10}\theta$	dBi	for $2° \leq \theta \leq 7°$.
8	dBi	for $7° < \theta \leq 9.2°$.
$32-25\log_{10}\theta$	dBi	for $9.2° < \theta \leq 19.1°$.
0	dBi	for $19.1° < \theta \leq 180°$.

Where θ and dBi are as defined in paragraph (a)(1) of this section. This envelope may be exceeded by up to 3 dB in 10% of the range of θ angles from ±7-180°, and by up to 6 dB in the region of main reflector spillover energy.

(4) In the plane perpendicular to the GSO arc, as defined in § 100.3, for earth stations not operating in the conventional Ku-band, the 24.75-25.25 GHz band, or the 27.5-30 GHz band:

$32-25\log_{10}\theta$	dBi	for $3° < \theta \leq 48°$.
−10	dBi	for $48° < \theta \leq 180°$.

Where θ and dBi are as defined in paragraph (a)(1) of this section. This envelope may be exceeded by up to 6 dB in 10% of the range of θ angles from ±3-180°, and by up to 6 dB in the region of main reflector spillover energy.

(5) In the plane perpendicular to the GSO arc, for earth stations operating in the conventional Ku-band: Outside the main beam, the gain of the antenna shall lie below the envelope defined by:

$32-25\log_{10}\theta$	dBi	for $3° < \theta \leq 19.1°$.
0	dBi	for $19.1° < \theta \leq 180°$.

Where θ and dBi are as defined in paragraph (a)(1) of this section. This envelope may be exceeded by up to 6 dB in 10% of the range of θ angles from ±3-180°, and by up to 6 dB in the region of main reflector spillover energy.

(6) In the plane perpendicular to the GSO arc, for earth stations operating in the 24.75-25.25 GHz or 27.5-30 GHz bands:

$32-25\log_{10}\theta$	dBi	for $3.5° < \theta \leq 7°$.
10.9	dBi	for $7° < \theta \leq 9.2°$.
$35-25\log_{10}\theta$	dBi	for $9.2° < \theta \leq 19.1°$.
3	dBi	for $19.1° < \theta \leq 180°$.

Where θ and dBi are as defined in paragraph (a)(1) of this section. This envelope may be exceeded by up to 6 dB in 10% of the range of θ angles from ±3-180°, and by up to 6 dB in the region of main reflector spillover energy.

(b) Except as provided in paragraph (e) of this section, the off-axis cross-polarization gain of any antenna used for transmission from an FSS earth station to a GSO satellite, including earth stations providing feeder links for satellite services other than FSS, may not exceed the following limits:

(1) In the plane tangent to the GSO arc, for earth stations not operating in the 24.75-25.25 GHz or 27.5-30 GHz bands:

$19-25\log_{10}\theta$	dBi	for $1.8° < \theta \leq 7°$.

Where θ and dBi are as defined in paragraph (a)(1) of this section.

(2) In the plane perpendicular to the GSO arc, for earth stations not operating in the 24.75-25.25 GHz or 27.5-30 GHz bands:

$19-25\log_{10}\theta$	dBi	for $3° < \theta \leq 7°$.

Where θ and dBi are as defined in paragraph (a)(1) of this section.

(3) In the plane tangent to the GSO arc or in the plane perpendicular to the GSO arc, for earth stations operating in the 24.75-25.25 GHz or 27.5-30 GHz bands:

$19-25\log_{10}\theta$	dBi	for $2° < \theta \leq 7°$.

Where θ and dBi are as defined in paragraph (a)(1) of this section.

(c) (1) An earth station licensed for operation with a GSO FSS space station or registered for reception of transmissions from such a space station pursuant to § 100.272 is not entitled to protection from interference from authorized operation of other stations that would not cause harmful interference to that earth station if it were using an antenna with receive-band gain patterns conforming to the levels specified in paragraphs (a) and (b) of this section.

(2) A 17/24 GHz BSS telemetry earth station is not entitled to protection from harmful interference from authorized space station operation that would not cause harmful interference to that earth station if it were using an antenna with receive-band gain patterns conforming to the levels specified in paragraphs (a) and (b) of this section. Receive-only earth stations in the 17/24 GHz BSS are entitled to protection from harmful interference caused by other space stations to the extent indicated in § 100.272.

(d) An earth station using asymmetrical antennas without skew angle adjustment capability must comply

with the gain values specified in paragraph (a)(1) of this section, in the plane orthogonal to the to the main plane of the antenna, or, alternatively, in the plane corresponding to the maximum skew angle experienced at any location at which the earth station may be located.

(e) A GSO FSS earth station with an antenna that does not conform to the applicable standards in paragraphs (a) and (b) of this section will be authorized only if the applicant demonstrates that the antenna will not cause unacceptable interference. This demonstration must show that the transmissions of the earth station comport with the requirements in § 100.279 or the applicant must demonstrate that the operations of the earth station have been coordinated under § 100.275.

(g) The gain of any transmitting antenna in a gateway earth station communicating with NGSO FSS satellites in the 10.7-11.7 GHz, 12.75-13.15 GHz, 13.2125-13.25 GHz, 13.8-14.0 GHz, and/or 14.4-14.5 GHz bands must lie below the envelope defined as follows:

$29-25\log_{10}(\theta)$	dBi	for $1° \leq \theta \leq 36°$.
−10	dBi	for $36° \leq \theta \leq 180°$.

Where θ and dBi are as defined in paragraph (a)(1) of this section. This envelope may be exceeded by up to 3 dB in 10% of the range of θ angles from ±7-180°.

§ 100.279 Off-axis EIRP density envelopes for FSS earth stations transmitting in certain frequency bands.

(a) Applicability. This section applies to applications for fixed and temporary-fixed FSS earth stations transmitting to geostationary space stations in the conventional C-band, extended C-band, conventional Ku-band, extended Ku-band, conventional Ka-band, extended Ka-band, or 24.75-25.25 GHz, and applications for ESIMs transmitting in the conventional C-band, conventional Ku-band, conventional Ka-band, except for applications proposing transmission of analog command signals at a band edge with bandwidths greater than 1 MHz or transmission of any other type of analog signal with bandwidths greater than 200 kHz.

(b) *Demonstration of Compliance.* Earth station applications subject to this section must demonstrate compliance with this section pursuant to §§ 100.120-100.121.

(c) *Analog earth station operation in the conventional or extended C-bands.*

(1) For co-polarized transmissions in the plane tangent to the GSO arc, as defined in § 100.3

$29.5-25\log_{10}\theta$	dBW/4 kHz	for $1.5° \leq \theta \leq 7°$.
s8.5	dBW/4 kHz	for $7° < \theta \leq 9.2°$.
$32.5-25\log_{10}\theta$	dBW/4 kHz	for $9.2° < \theta \leq 48°$.
−9.5	dBW/4 kHz	for $48° < \theta \leq 180°$.

Where θ is the angle in degrees from a line from the earth station antenna to the assigned orbital location of the target satellite. The EIRP density levels specified for $\theta > 7°$ may be exceeded by up to 3 dB in up to 10% of the range of theta (θ) angles from ±7-180°, and by up to 6 dB in the region of main reflector spillover energy.

(2) For co-polarized transmissions in the plane perpendicular to the GSO arc, as defined in § 100.3:

$32.5-25\log_{10}\theta$	dBW/4 kHz	for $3° \leq \theta \leq 48°$.
−9.5	dBW/4 kHz	for $48° < \theta \leq 180°$.

Where θ is as defined in paragraph (c)(1) of this section. These EIRP density levels may be exceeded by up to 6 dB in the region of main reflector spillover energy and in up to 10% of the range of θ angles not included in that region, on each side of the line from the earth station to the target satellite.

(3) For cross-polarized transmissions in the plane tangent to the GSO arc and in the plane perpendicular to the GSO arc:

$19.5-25\log_{10}\theta$	dBW/4 kHz	for $1.5° \leq \theta \leq 7°$.

Where θ is as defined in paragraph (c)(1) of this section.

(d) *Digital earth station operation in the conventional or extended C-bands.*

(1) For co-polarized transmissions in the plane tangent to the GSO arc:

$26.3-25\log_{10}\theta$	dBW/4 kHz	for $1.5° \leq \theta \leq 7°$.
5.3	dBW/4 kHz	for $7° < \theta \leq 9.2°$.
$29.3-25\log_{10}\theta$	dBW/4 kHz	for $9.2° < \theta \leq 48°$.
−12.7	dBW/4 kHz	for $48° < \theta \leq 180°$.

Where θ is as defined in paragraph (c)(1) of this section. The EIRP density levels specified for $\theta > 7°$ may be exceeded by up to 3 dB in up to 10% of the range of theta (θ) angles from ±7-180°, and by up to 6 dB in the region of main reflector spillover energy.

(2) For co-polarized transmissions in the plane perpendicular to the GSO arc:

$29.3-25\log_{10}\theta$	dBW/4 kHz	for $3° \leq \theta \leq 48°$.
−12.7	dBW/4 kHz	for $48° < \theta \leq 180°$.

Where θ is as defined in paragraph (c)(1) of this section. These EIRP density levels may be exceeded by up to 6 dB in the region of main reflector spillover energy and in up to 10% of the range of θ angles not included in that region, on each side of the line from the earth station to the target satellite.

(3) For cross-polarized transmissions in the plane tangent to the GSO arc and in the plane perpendicular to the GSO arc:

$16.3-25\log_{10}\theta$	dBW/4 kHz	for $1.5° \leq \theta \leq 7°$.

Where θ is as defined in paragraph (c)(1) of this section.

(4) A license application for earth station operation in a network using variable power density control of earth stations transmitting simultaneously in shared frequencies to the same target satellite receiving beam may be processed if the applicant certifies that the aggregate off-axis EIRP density from all co-frequency earth stations transmitting simultaneously to the same target satellite receiving beam, not resulting from colliding data bursts transmitted pursuant to a contention protocol, will not exceed the off-axis EIRP density limits permissible for a single earth station, as specified in paragraphs (d)(1) through (d)(3) of this section.

(e) *Analog earth station operation in the conventional Ku-band.*

(1) For co-polarized transmissions in the plane tangent to the GSO arc:

$21-25\log_{10}\theta$	dBW/4 kHz	for $1.5° \leq \theta \leq 7°$.
0	dBW/4 kHz	for $7° < \theta \leq 9.2°$.
$24-25\log_{10}\theta$	dBW/4 kHz	for $9.2° < \theta \leq 19.1°$.
−8	dBW/4 kHz	for $19.1° < \theta \leq 180°$.

Where θ is as defined in paragraph (c)(1) of this section. The EIRP density levels specified for $\theta > 7°$ may be exceeded by up to 3 dB in up to 10% of the range of theta (θ) angles from ±7-180°, and by up to 6 dB in the region of main reflector spillover energy.

(2) For co-polarized transmissions in the plane perpendicular to the GSO arc:

$24-25\log_{10}\theta$	dBW/4 kHz	for $3° \leq \theta \leq 19.1°$.
−8	dBW/4 kHz	for $19.1° < \theta \leq 180°$.

Where θ is as defined in paragraph (c)(1) of this section. These EIRP density levels may be exceeded by up to 6 dB in the region of main reflector spillover energy and in up to 10% of the range of θ angles not included in that region, on each side of the line from the earth station to the target satellite.

(3) For cross-polarized transmissions in the plane tangent to the GSO arc and in the plane perpendicular to the GSO arc:

$11-25\log_{10}\theta$	dBW/4 kHz	for $1.5° \leq \theta \leq 7°$.

Where θ is as defined in paragraph (c)(1) of this section.

(f) *Digital earth station operation in the conventional Ku-band.*

(1) For co-polarized transmissions in the plane tangent to the GSO arc:

$15-25\log_{10}\theta$	dBW/4 kHz	for $1.5° \leq \theta \leq 7°$.
−6	dBW/4 kHz	for $7° < \theta \leq 9.2°$.
$18-25\log_{10}\theta$	dBW/4 kHz	for $9.2° < \theta \leq 19.1°$.
−14	dBW/4 kHz	for $19.1° < \theta \leq 180°$.

Where θ is as defined in paragraph (c)(1) of this section. The EIRP density levels specified for $\theta > 7°$ may be exceeded by up to 3 dB in up to 10% of the range of theta (θ) angles from ±7-180°, and by up to 6 dB in the region of main reflector spillover energy.

(2) For co-polarized transmissions in the plane perpendicular to the GSO arc:

$18-25\log_{10}\theta$	dBW/4 kHz	for $3° \leq \theta \leq 19.1°$.
−14	dBW/4 kHz	for $19.1° < \theta \leq 180°$.

Where θ is as defined in paragraph (c)(1) of this section. These EIRP density levels may be exceeded by up to 6 dB in the region of main reflector spillover energy and in up to 10% of the range of θ angles not included in that region, on each side of the line from the earth station to the target satellite.

(3) For cross-polarized transmissions in the plane tangent to the GSO arc and in the plane perpendicular to the GSO arc:

$5-25\log_{10}\theta$	dBW/4 kHz	for $1.5° \leq \theta \leq 7°$.

Where θ is as defined in paragraph (c)(1) of this section.

(4) A license application for earth station operation in a network using variable power density control of earth stations transmitting simultaneously in shared frequencies to the same target satellite receiving beam may be processed if the applicant certifies that the aggregate off-axis EIRP density from all co-frequency earth stations transmitting simultaneously to the same target satellite receiving beam, not resulting from colliding data bursts transmitted pursuant to a contention protocol, will not exceed the off-axis EIRP density limits permissible for a single earth station, as specified in paragraphs (f)(1) through -(f)(3) of this section.

(g) *Analog earth station operation in the extended Ku-band.*

(1) For co-polarized transmissions in the plane tangent to the GSO arc:

$21-25\log_{10}\theta$	dBW/4 kHz	for $1.5° \leq \theta \leq 7°$.
0	dBW/4 kHz	for $7° < \theta \leq 9.2°$.
$24-25\log_{10}\theta$	dBW/4 kHz	for $9.2° < \theta \leq 48°$.
−18	dBW/4 kHz	for $48° < \theta \leq 180°$.

Where θ is as defined in paragraph (c)(1) of this section. The EIRP density levels specified for $\theta > 7°$ may be exceeded by up to 3 dB in up to 10% of the range of theta (θ) angles from ±7-180°, and by up to 6 dB in the region of main reflector spillover energy.

(2) For co-polarized transmissions in the plane perpendicular to the GSO arc:

$24-25\log_{10}\theta$	dBW/4 kHz	for $3° \leq \theta \leq 48°$.
−18	dBW/4 kHz	for $48° < \theta \leq 180°$.

Where θ is as defined in paragraph (c)(1) of this section. These EIRP density levels may be exceeded by up to 6 dB in the region of main reflector spillover energy and in up to 10% of the range of θ angles not included in that region, on each side of the line from the earth station to the target satellite.

(3) For cross-polarized transmissions in the plane tangent to the GSO arc and in the plane perpendicular to the GSO arc:

$11-25\log_{10}\theta$	dBW/4 kHz	for $1.5° \leq \theta \leq 7°$.

Where θ is as defined in paragraph (c)(1) of this section.

(h) *Digital earth station operation in the extended Ku-band.*

(1) For co-polarized transmissions in the plane tangent to the GSO arc:

$15-25\log_{10}\theta$	dBW/4 kHz	for $1.5° \leq \theta \leq 7°$.
−6	dBW/4 kHz	for $7° < \theta \leq 9.2°$.
$18-25\log_{10}\theta$	dBW/4 kHz	for $9.2° < \theta \leq 48°$.
−24	dBW/4 kHz	for $48° < \theta \leq 180°$.

Where θ is as defined in paragraph (c)(1) of this section. The EIRP density levels specified for $\theta > 7°$ may be exceeded by up to 3 dB in up to 10% of the range of theta (θ) angles from ±7-180°, and by up to 6 dB in the region of main reflector spillover energy.

(2) For co-polarized transmissions in the plane perpendicular to the GSO arc:

$18-25\log_{10}\theta$	dBW/4 kHz	for $3° \leq \theta \leq 48°$.
−24	dBW/4 kHz	for $48° < \theta \leq 85°$.

Where θ is as defined in paragraph (c)(1) of this section. These EIRP density levels may be exceeded by up to 6 dB in the region of main reflector spillover energy and in up to 10% of the range of θ angles not included in that region, on each side of the line from the earth station to the target satellite.

(3) For cross-polarized transmissions in the plane tangent to the GSO arc and in the plane perpendicular to the GSO arc:

$5-25\log_{10}\theta$	dBW/4 kHz	for $1.5° \leq \theta \leq 7°$.

Where θ is as defined in paragraph (c)(1) of this section.

(4)A license application for earth station operation in a network using variable power density control of earth stations transmitting simultaneously in shared frequencies to the same target satellite receiving beam may be processed if the applicant certifies that the aggregate off-axis EIRP density from all co-frequency

earth stations transmitting simultaneously to the same target satellite receiving beam, not resulting from colliding data bursts transmitted pursuant to a contention protocol, will not exceed the off-axis EIRP density limits permissible for a single earth station, as specified in paragraphs (h)(1) through (h)(3) of this section.

(i) *Digital earth station operation in the conventional or extended Ka-band.*

(1) For co-polarized transmissions in the plane tangent to the GSO arc:

32.5-25log(θ)	dBW/MHz	for	2.0° ≤ θ ≤ 7°.
11.5	dBW/MHz	for	7° ≤ θ ≤ 9.2°.
35.5-25log(θ)	dBW/MHz	for	9.2° ≤ θ ≤ 19.1°.
3.5	dBW/MHz	for	19.1° < θ ≤ 180°.

where θ is as defined in paragraph (c)(1) of this section.

(2) For co-polarized transmissions in the plane perpendicular to the GSO arc:

35.5-25log(θ)	dBW/MHz	for	3.5° ≤ θ ≤ 7°.
14.4	dBW/MHz	for	7° < θ ≤ 9.2°.
38.5-25log(θ)	dBW/MHz	for	9.2° < θ ≤ 19.1°.
6.5	dBW/MHz	for	19.1° < θ ≤ 180°.

where θ is as defined in paragraph (c)(1) of this section.

(3) The EIRP density levels specified in paragraphs (i)(1) and (2) of this section may be exceeded by up to 3 dB, for values of θ > 7°, over 10% of the range of theta (θ) angles from 7-180° on each side of the line from the earth station to the target satellite.

(4) For cross-polarized transmissions in the plane tangent to the GSO arc and in the plane perpendicular to the GSO arc:

22.5-25log(θ)	dBW/MHz	for	2.0° < θ ≤ 7.0°.

where θ is as defined in paragraph (c)(1) of this section.

(5) A license application for earth station operation in a network using variable power density control of earth stations transmitting simultaneously in shared frequencies to the same target satellite receiving beam may be processed if the applicant certifies that the aggregate off-axis EIRP density from all co-frequency earth stations transmitting simultaneously to the same target satellite receiving beam, not resulting from colliding data bursts transmitted pursuant to a contention protocol, will not exceed the off-axis EIRP density limits permissible for a single earth station, as specified in paragraphs (i)(1) through (4) of this section.

FREQUENCY-SPECIFIC EARTH STATION RULES

§ 100.280 Earth stations in the 24.75-25.25 GHz, 27.5-28.35 GHz, 37.5-40 GHz, 47.2-48.2 GHz, and 50.4-51.4 GHz bands.

(a) FSS is secondary to the UMFUS in the 27.5-28.35 GHz band. Notwithstanding that secondary status, an applicant for a license for a transmitting earth station in the 27.5-28.35 GHz band that meets one of the following criteria may be authorized to operate without providing interference protection to stations in the UMFUS:

(1) The FSS licensee also holds the relevant UMFUS license(s) for the area in which the earth station

generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m^2/MHz;

(2) The FSS earth station was authorized prior to July 14, 2016;

(3) The application for the FSS earth station was filed prior to July 14, 2016 and has been subsequently granted; or

(4) The applicant demonstrates compliance with all of the following criteria in its application:

(i) There are no more than two other authorized earth stations operating in the 27.5-28.35 GHz band within the county where the proposed earth station is located that meet the criteria contained in either paragraph (a)(1), (2), (3), or (4) of this section. For purposes of this requirement, multiple earth stations that are collocated with or at a location contiguous to each other shall be considered as one earth station;

(ii) The area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m^2/MHz, together with the similar area of any other earth station authorized pursuant to paragraph (a) of this section, does not cover, in the aggregate, more than the amount of population of the UMFUS license area within which the earth station is located as noted in table 1 to this paragraph (a)(4)(ii):

Table 1 to Paragraph (a)(4)(ii)

Population within UMFUS license area	**Maximum permitted aggregate population within −77.6 dBm/m ^{2}/MHz PFD contour of earth stations**
Greater than 450,000	0.1 percent of population in UMFUS license area.
Between 6,000 and 450,000	450 people.
Fewer than 6,000	7.5 percent of population in UMFUS license area.

(iii) The area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m^2/MHz does not contain any major event venue, urban mass transit route, passenger railroad, or cruise ship port. In addition, the area mentioned in paragraph (a)(4)(ii) of this section shall not cross any of the following types of roads, as defined in functional classification guidelines issued by the Federal Highway Administration pursuant to 23 CFR 470.105(b): Interstate, Other Freeways and Expressways, or Other Principal Arterial. The Federal Highway Administration Office of Planning, Environment, and Realty Executive Geographic Information System (HEPGIS) map contains information on the classification of roads. For purposes of this rule, an urban area shall be an Adjusted Urban Area as defined in 21 U.S.C. 101(a)(37).

(iv) The applicant has successfully completed frequency coordination with the UMFUS licensees within the area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m^2/MHz with respect to existing facilities constructed and in operation by the UMFUS licensee. In coordinating with UMFUS licensees, the applicant shall use the applicable processes contained in § 101.103(d) of this chapter.

(v) NGSO FSS Earth Stations cannot be blanket licensed in the 27.5-28.35 GHz band.

(b) Applications for earth stations in the 37.5-40 GHz band shall provide an exhibit describing the zone within which the earth station will require protection from transmissions of UMFUS licensees. For purposes of this rule, the protection zone shall consist of the area where UMFUS licensees may not locate facilities without the consent of the earth station licensee. The earth station applicant shall demonstrate in its application, using reasonable engineering methods, that the requested protection zone is necessary in order to protect its proposed earth station.

(c) The protection zone (as defined in paragraph (b) of this section) shall comply with the following criteria. The applicant must demonstrate compliance with all of the following criteria in its application:

(1) There are no more than two other authorized earth stations operating in the 37.5-40 GHz band within the county within which the proposed earth station is located that meet the criteria contained in paragraph (c) of this section, and there are no more than 14 other authorized earth stations operating in the 37.5-40 GHz band within the PEA within which the proposed earth station is located that meet the criteria contained in paragraph (c) of this section. For purposes of this requirement, multiple earth stations that are collocated with or at a location contiguous to each other shall be considered as one earth station;

(2) The protection zone, together with the protection zone of other earth stations in the same PEA authorized pursuant to this, does not cover, in the aggregate, more than the amount of population of the PEA within which the earth station is located as noted in table 2 to this paragraph (c)(2):

Table 2 to Paragraph (c)(2)

Population within Partial Economic Area (PEA) where earth station is located	**Maximum permitted aggregate population within protection zone of earth stations**
Greater than 2,250,000	0.1 percent of population in PEA.
Between 60,000 and 2,250,000	2,250 people.
Fewer than 60,000	3.75 percent of population in PEA.

(3) The protection zone does not contain any major event venue, urban mass transit route, passenger railroad, or cruise ship port. In addition, the area mentioned in the preceding sentence shall not cross any of the following types of roads, as defined in functional classification guidelines issued by the Federal Highway Administration pursuant to 23 CFR 470.105(b): Interstate, Other Freeways and Expressways, or Other Principal Arterial. The Federal Highway Administration Office of Planning, Environment, and Realty Executive Geographic Information System (HEPGIS) map contains information on the classification of roads. For purposes of this rule, an urban area shall be an Adjusted Urban Area as defined in 21 U.S.C. 101(a)(37).

(4) The applicant has successfully completed frequency coordination with the UMFUS licensees within the protection zone with respect to existing facilities constructed and in operation by the UMFUS licensee. In coordinating with UMFUS licensees, the applicant shall use the applicable processes contained in § 101.103(d) of this chapter.

(d) Notwithstanding that FSS is co-primary with the UMFUS in the 47.2-48.2 GHz band, earth stations in the 47.2-48.2 GHz band shall be limited to individually licensed earth stations. An applicant for a license for a transmitting earth station in the 47.2-48.2 GHz band must meet one of the following criteria to be authorized to operate without providing any additional interference protection to stations in the UMFUS:

(1) The FSS licensee also holds the relevant UMFUS license(s) for the area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m^2/MHz;

(2) The earth station in the 47.2-48.2 GHz band was authorized prior to February 1, 2018;

(3) The application for the earth station in the 47.2-48.2 GHz band was filed prior to February 1, 2018; or

(4) The applicant demonstrates compliance with all of the following criteria in its application:

(i) There are no more than two other authorized earth stations operating in the 47.2-48.2 GHz band within the county where the proposed earth station is located that meet the criteria contained in paragraphs (d)(1), (2), (3), or (4) of this section, and there are no more than 14 other authorized earth stations operating in the 47.2-48.2 GHz band within the PEA where the proposed earth station is located that meet the criteria contained in paragraphs (d)(1), (2), (3), or (4) of this section. For purposes of this requirement, multiple earth stations that are collocated with or at a location contiguous to each other shall be considered as one earth station;

(ii) The area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m^2/MHz, together with the similar area of any other earth station authorized pursuant to paragraph (d) of this section, does not cover, in the aggregate, more than the amount of population of the PEA within which the earth station is located as noted in table 3 to this paragraph (d)(4)(ii):

Table 3 to Paragraph (d)(4)(ii)

Population within Partial Economic Area (PEA) where earth station is located	**Maximum permitted aggregate population within −77.6 dBm/m ^{2}/MHz PFD contour of earth stations**
Greater than 2,250,000	0.1 percent of population in PEA.
Between 60,000 and 2,250,000	2,250 people.
Fewer than 60,000	3.75 percent of population in PEA.

(iii) The area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m^2/MHz does not contain any major event venue, any highway classified by the U.S. Department of Transportation under the categories Interstate, Other Freeways and Expressways, or Other Principal Arterial, or an urban mass transit route, passenger railroad, or cruise ship port; and

(iv) The applicant has successfully completed frequency coordination with the UMFUS licensees within the area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m^2/MHz with respect to existing facilities constructed and in operation by the UMFUS licensee. In coordinating with UMFUS licensees, the applicant shall use the applicable processes contained in § 101.103(d) of this chapter.

(e) Notwithstanding that FSS is co-primary with the UMFUS in the 24.75-25.25 GHz and 50.4-51.4 GHz bands, earth stations in these bands shall be limited to individually licensed earth stations. An applicant for a license for a transmitting earth station in the 24.75-25.25 GHz or 50.4-51.4 GHz band must meet one of the following criteria to be authorized to operate without providing any additional interference protection to stations in the UMFUS:

(1) The FSS licensee also holds the relevant UMFUS license(s) for the area in which the earth station generates a power flux density (PFD), at 10 meters above ground level, of greater than or equal to −77.6dBm/m^2/MHz;

(2) The earth station in the 24.75-25.25 GHz band was authorized prior to August 20, 2018; or the earth station in the 50.4-51.4 GHz band was authorized prior to June 12, 2019;

(3) The application for the earth station in the 24.75-25.25 GHz band was filed prior to August 20, 2018; or the application for the earth station in the 50.4-51.4 GHz band was filed prior to June 12, 2019; or

(4) The applicant demonstrates compliance with all of the following criteria in its application:

(i) There are no more than two other authorized earth stations operating in the same frequency band within the county where the proposed earth station is located that meet the criteria contained in either paragraph (e)(1), (2), (3), or (4) of this section, and there are no more than 14 other authorized earth stations operating in the same frequency band within the Partial Economic Area where the proposed earth station is located that meet the criteria contained in paragraph (e)(1), (2), (3), or (4) of this section. For purposes of the requirement in this paragraph (e)(4), multiple earth stations that are collocated with or at a location contiguous to each other shall be considered as one earth station;

(ii) The area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m^2/MHz, together with the similar area of any other earth station operating in the same frequency band authorized pursuant to paragraph (e) of this section, does not cover, in the aggregate, more than the amount of population of the county within which the earth station is located as noted in table 4 to this paragraph (e)(4)(ii):

Table 4 to Paragraph (e)(4)(ii)

Population within the County where earth station is located	**Maximum permitted aggregate population within −77.6 dBm/m ^{2}/MHz PFD contour of earth stations**
Greater than 450,000	0.1 percent of population in county.
Between 6,000 and 450,000	450 people.
Fewer than 6,000	7.5 percent of population in county.

(iii) The area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m^2/MHz does not contain any major event venue, urban mass transit route, passenger railroad, or cruise ship port. In addition, the area mentioned in paragraph (e)(4)(ii) of this section shall not cross any of the following types of roads, as defined in functional classification guidelines issued by the Federal Highway Administration pursuant to 23 CFR 470.105(b): Interstate, Other Freeways and Expressways, or Other Principal Arterial. The Federal Highway Administration Office of Planning, Environment, and Realty Executive Geographic Information System (HEPGIS) map contains information on the classification of roads. For purposes of this paragraph (e)(4), an urban area shall be an Adjusted Urban Area as defined in 21 U.S.C. 101(a)(37); and

(iv) The applicant has successfully completed frequency coordination with the UMFUS licensees within the area in which the earth station generates a PFD, at 10 meters above ground level, of greater than or equal to −77.6 dBm/m^2/MHz with respect to existing facilities constructed and in operation by the UMFUS licensee. In coordinating with UMFUS licensees, the applicant shall use the applicable processes contained in § 101.103(d) of this chapter.

(f) If an earth station applicant or licensee in the 24.75-25.25 GHz, 27.5-28.35 GHz, 37.5-40 GHz, 47.2-48.2 GHz and/or 50.4-51.4 GHz bands enters into an agreement with an UMFUS licensee, their operations shall be governed by that agreement, except to the extent that the agreement is inconsistent with the Commission's rules or the Communications Act.

(g) Any earth station authorizations issued pursuant to §§ 100.120–100.121 and 100.281 shall be conditioned upon operation being in compliance with the criteria contained in the applicable paragraph.

(h) *Re-coordination.* An earth station licensed under this section that is brought into operation later than one year after the date of the license grant must be re-coordinated with UMFUS stations using the applicable processes in § 101.103(d) of this chapter. The earth station licensee must complete re-coordination within one year before its commencement of operation. The re-coordination should account for any demographic or geographic changes as well as changes to the earth station equipment or configuration. A re-coordination notice must be filed in ICFS before commencement of earth station operations.

§ 100.281 User terminals and earth stations in motion.

(a) *User Terminals Generally.* Unless otherwise stated, User Terminals must adhere to the applicable technical rules for fixed earth stations described in §§ 100.270 through 100.281.

(b) *Self-monitoring*. Each FSS ESIM must be self-monitoring and, should a condition occur that would cause the ESIMs to exceed its authorized off-axis EIRP density limits in the case of GSO FSS ESIMs or any emission limits included in the licensing conditions in the case of NGSO FSS ESIMs, the ESIM must automatically cease transmissions within 100 milliseconds, and not resume transmissions until the condition that caused the ESIM to exceed those limits is corrected.

(c) *NCMC*. Each FSS ESIM must be monitored and controlled by a network control and monitoring center (NCMC) or equivalent facility. Each terminal must comply with a "disable transmission" command from the NCMC within 100 milliseconds of receiving the command. In addition, the NCMC must monitor the operation of each terminal in its network, and transmit a "disable transmission" command to any terminal that operates in such a way as to exceed the authorized off-axis EIRP density limit described in § 100.279 or any emission limits included in the licensing conditions. The NCMC must not allow the terminal(s) under its control to resume transmissions until the condition that caused the terminals(s) to exceed the authorized EIRP density limits is corrected.

(d) *Installation and radiofrequency exposure*. ESIM must ensure installation of terminals on vehicles by qualified installers who have an understanding of the antenna's radiation environment and the measures best suited to maximize protection of the general public and persons operating the vehicle and equipment. A terminal exhibiting radiofrequency exposure levels exceeding 1.0 mW/cm^2 in accessible areas (or the appropriate limit pursuant to § 1.1310 of this chapter), such as at the exterior surface of the radome, must have a label attached to the surface of the terminal warning about the radiofrequency exposure and must include thereon a diagram showing the regions around the terminal where the radiation levels could exceed the maximum radiofrequency exposure limit specified in Table 1 in § 1.1310 of this chapter.

(e) *NGSO FSS ESIM Operations in the 28.35-28.4 GHz band.* NGSO FSS ESIMs cannot operate in the 28.35-28.4 GHz band.

(f) *ESVs on vessels of foreign registry*. ESV NCMC operators communicating with ESVs on vessels of foreign registry must maintain detailed information on each such vessel's country of registry and a point of contact for the relevant administration responsible for licensing those ESVs.

(g) *ESVs operating in 3700-4200 MHz and 5925-6425 MHz*. The following requirements govern all operations in the 3700-4200 MHz (space-to-Earth) and 5925-6425 MHz (Earth-to-space) frequency bands of ESVs receiving from or transmitting to GSO satellites in the FSS:

(1) ESVs must not operate in the 5925-6425 MHz (Earth-to-space) and 3700-4200 MHz (space-to-Earth) frequency bands on vessels smaller than 300 gross tons.

(2) ESV operators transmitting in the 5925-6425 MHz (Earth-to-space) frequency band to GSO satellites in the FSS must not seek to coordinate, in any geographic location, more than 36 megahertz of uplink bandwidth on each of no more than two GSO FSS satellites.

(3) ESVs, operating while docked, for which coordination with terrestrial stations in the 3700-

4200 MHz band is completed in accordance with § 100.275, will receive protection from such terrestrial stations in accordance with the coordination agreements, for 180 days, renewable for 180 days.

(4) ESVs in motion must not claim protection from harmful interference from any authorized terrestrial stations to which frequencies are already assigned, or any authorized terrestrial station to which frequencies may be assigned in the future in the 3700-4200 MHz (space-to-Earth) frequency band.

(5) ESVs operating within 200 km from the baseline of the United States, or within 200 km from a U.S.- licensed fixed service offshore installation, must complete coordination with potentially affected U.S.-licensed fixed service operators prior to operation. The coordination method and the interference criteria objective will be determined by the frequency coordinator. The details of the coordination must be maintained and available at the frequency coordinator, and must be filed with the Commission electronically via ICFS or successor system to be placed on public notice. The coordination notifications must be filed in the form of a statement referencing the relevant call signs and file numbers. Operation of each individual ESV may commence immediately after the public notice that identifies the notification sent to the Commission is released. Continuance of operation of that ESV for the duration of the coordination term must be dependent upon successful completion of the normal public notice process. If, prior to the end of the 30-day comment period of the public notice, any objections are received from U.S.-licensed Fixed Service operators that have been excluded from coordination, the ESV licensee must immediately cease operation of that particular station on frequencies used by the affected U.S.-licensed Fixed Service station until the coordination dispute is resolved and the ESV licensee informs the Commission of the resolution. As used in this section, "baseline" means the line from which maritime zones are measured. The baseline is a combination of the low-water line and closing lines across the mouths of inland water bodies and is defined by a series of baseline points that include islands and "low-water elevations," as determined by the U.S. Department of State's Baseline Committee.

(6) An ESV must automatically cease transmission if the ESV operates in violation of the terms of its coordination agreement, including, but not limited to, conditions related to speed of the vessel or if the ESV travels outside the coordinated area, if within 200 km from the baseline of the United States, or within 200 km from a U.S.-licensed fixed service offshore installation. Transmissions may be controlled by the ESV network control and monitoring center. The frequency coordinator may decide whether ESV operators should automatically cease transmissions if the vessel falls below a prescribed speed within a prescribed geographic area.

(7) ESV transmissions in the 5925-6425 MHz (Earth-to-space) band shall not exceed an EIRP spectral density towards the radio-horizon of 17 dBW/MHz, and shall not exceed an EIRP towards the radio-horizon of 20.8 dBW. The ESV network shall shut-off the ESV transmitter if either the EIRP spectral density towards the radio-horizon or the EIRP towards the radio-horizon is exceeded.

(h) *ESAAs*. The following requirements govern all ESAA operations:

(1) All ESAA terminals operated in U.S. airspace, whether on U.S.-registered civil aircraft or non-U.S.- registered civil aircraft, must be licensed by the Commission. All ESAA terminals on U.S.-registered civil aircraft operating outside of U.S. airspace must be licensed by the Commission, except as provided by section 303(t) of the Communications Act.

(2) Prior to operations within a foreign nation's airspace, the ESAA operator must ascertain whether the relevant administration has operations that could be affected by ESAA terminals, and must determine whether that administration has adopted specific requirements concerning ESAA operations. When the aircraft enters foreign airspace, the ESAA terminal must operate under the Commission's rules, or those of the foreign administration, whichever is more constraining. To the extent that all relevant administrations have identified geographic areas from which ESAA operations would not affect their radio operations, ESAA operators may operate within those

identified areas without further action. To the extent that the foreign administration has not adopted requirements regarding ESAA operations, ESAA operators must coordinate their operations with any potentially affected operations.

(3) For ESAA transmissions in the 14.0-14.5 GHz band from international airspace within line-of-sight of the territory of a foreign administration where fixed service networks have primary allocation in this band, the maximum PFD produced at the surface of the Earth by emissions from a single aircraft carrying an ESAA terminal must not exceed the following values unless the foreign Administration has imposed other conditions for protecting its fixed service stations:

$-132 + 0.5 \cdot \theta$	dB(W/(m ^{2} · MHz))	For	$\theta \leq 40°$.
−112	dB(W/(m ^{2} · MHz))	For	$40° < \theta \leq 90°$.

Where: θ is the angle of arrival of the radio-frequency wave (degrees above the horizontal) and the aforementioned limits relate to the PFD under free-space propagation conditions.

(i) The following requirements govern all ESIMs transmitting to GSO or NGSO satellites in the Fixed-Satellite Service in the 14.0-14.5 GHz band:

(1) Operations of ESIMs in the 14.0-14.2 GHz (Earth-to-space) frequency band within 125 km (for ESVs and VMESs) or within radio line of sight (for ESAAs) of the NASA TDRSS facilities on Guam (latitude 13°36′55″ N, longitude 144°51′22″ E), White Sands, New Mexico (latitude 32°20′59″ N, longitude 106°36′31″ W and latitude 32°32′40″ N, longitude 106°36′48″ W), or Blossom Point, Maryland (latitude 38°25′44″ N, longitude 77°05′02″ W) are subject to coordination with the National Aeronautics and Space Administration (NASA) through the National Telecommunications and Information Administration (NTIA) Interdepartment Radio Advisory Committee (IRAC). Licensees must notify the Space Bureau once they have completed coordination. Upon receipt of such notification from a licensee, the Space Bureau will issue a public notice stating that the licensee may commence operations within the coordination zone in 30 days if no party has opposed the operations. When NTIA seeks to provide similar protection to future TDRSS sites that have been coordinated through the IRAC Frequency Assignment Subcommittee process, NTIA will notify the Commission's Space Bureau that the site is nearing operational status. Upon public notice from the Space Bureau, all Ku-band ESIM licensees must cease operations in the 14.0-14.2 GHz band within 125 km (for ESVs and VMESs) or within radio line of sight (for ESAAs) of the new TDRSS site until the licensees complete coordination with NTIA/IRAC for the new TDRSS facility. Licensees must notify the Space Bureau once they have completed coordination for the new TDRSS site. Upon receipt of such notification from a licensee, the Space Bureau will issue a public notice stating that the licensee may commence operations within the coordination zone in 30 days if no party has opposed the operations. The ESIM licensee then will be permitted to commence operations in the 14.0-14.2 GHz band within 125 km (for ESVs and VMESs) or within radio line of sight (for ESAAs) of the new TDRSS site, subject to any operational constraints developed in the coordination process.

(2) Within 125 km (for ESVs and VMESs) or within radio line of sight (for ESAAs) of the NASA TDRSS facilities identified in paragraph (j)(1) of this section, ESIM transmissions in the 14.0-14.2 GHz (Earth-to-space) band shall not exceed an EIRP spectral density towards the horizon of 12.5 dBW/MHz, and shall not exceed an EIRP towards the horizon of 16.3 dBW.

(3) Operations of ESIMs in the 14.47-14.5 GHz (Earth-to-space) frequency band in the vicinity (for ESVs and VMESs) or within radio line of sight (for ESAAs) of radio astronomy service (RAS) observatories observing in the 14.47-14.5 GHz band are subject to coordination with the National Science Foundation (NSF). The appropriate NSF contact point to initiate coordination is Electromagnetic Spectrum Management Unit, NSF, 2415 Eisenhower Avenue, Arlington VA 22314; Email: esm@nsf.gov. Licensees must notify the Space Bureau once they have completed coordination. Upon receipt of the coordination agreement from a licensee, the Space Bureau will issue a public notice stating that the licensee may commence operations within the coordination zone

in 30 days if no party has opposed the operations. Table 1 provides a list of each applicable RAS site, its location, and the applicable coordination zone.

Table 1
Applicable Radio Astronomy Service (RAS) Facilities and Associated Coordination Distances

Observatory	Latitude (north)	Longitude (west)	Radius (km) of coordination zone
Arecibo, Observatory, Arecibo, PR	18°20′37″	66°45′11″	Island of Puerto Rico.
Green Bank, WV	38°25′59″	79°50′23″	160.
Very Large Array, near Socorro, NM	34°04′44″	107°37′06″	160.
Pisgah Astronomical Research Institute, Rosman, NC	35°11′59″	82°52′19″	160.
U of Michigan Radio Astronomy Observatory, Stinchfield Woods, MI	42°23′56″	83°56′11″	160.
Very Long Baseline Array (VLBA) stations:			
Owens Valley, CA	37°13′54″	118°16′37″	160 *.
Mauna Kea, HI	19°48′05″	155°27′20″	50.
Brewster, WA	48°07′52″	119°41′00″	50.
Kitt Peak, AZ	31°57′23″	111°36′45″	50.
Pie Town, NM	34°18′04″	108°07′09″	50.
Los Alamos, NM	35°46′30″	106°14′44″	50.
Fort Davis, TX	30°38′06″	103°56′41″	50.
North Liberty, IA	41°46′17″	91°34′27″	50.
Hancock, NH	42°56′01″	71°59′12″	50.
St. Croix, VI	17°45′24″	64°35′01″	50.
* Owens Valley, CA operates both a VLBA station and single-dish telescopes.			

(4) When NTIA seeks to provide similar protection to future RAS sites that have been coordinated through the IRAC Frequency Assignment Subcommittee process, NTIA will notify the Commission's Space Bureau that the site is nearing operational status. Upon public notice from the Space Bureau, all Ku-band ESIMs licensees must cease operations in the 14.47-14.5 GHz band within the relevant geographic zone (160 kms for single-dish radio observatories and Very Large Array antenna systems and 50 kms for Very Long Baseline Array antenna systems for ESVs and VMESs, radio line of sight for ESAAs) of the new RAS site until the licensees complete coordination for the new RAS facility. Licensees must notify the Space Bureau once they have completed coordination for the new RAS site and must submit the coordination agreement to the Commission. Upon receipt of such notification from a licensee, the Space Bureau will issue a public notice stating that the licensee may commence operations within the coordination zone in 30 days if no party opposed the operations. The ESIMs licensee then will be permitted to commence operations in the 14.47-14.5 GHz band within the relevant coordination distance around the new RAS site, subject to any operational constraints developed in the coordination process.

(5) ESIMs licensees must use Global Positioning Satellite-related or other similar position location

technology to ensure compliance with the provisions of subparagraphs 1-3 of this paragraph.

§ 100.282 MSS and ATC requirements.

(a) *Construction and pre-operational testing*.

(1) *No construction permit required*. Construction permits are not required for Ancillary Terrestrial Component (ATC) stations. A party with licenses issued under this part for launch and operation of 1.5/1.6 GHz or 1.6/2.4 GHz Mobile-Satellite Service space stations and operation of associated ATC facilities may commence construction of ATC base stations at its own risk after commencing physical construction of the space stations, subject to the requirements of § 1.1312 and part 17 of this chapter.

(2) *Equipment tests*. Such an MSS/ATC licensee may also conduct equipment tests for the purpose of making adjustments and measurements necessary to ensure compliance with the terms of its ATC license, applicable rules in this part, and technical design requirements.

(3) *Notification*. Prior to commencing such construction and pre-operational testing, an MSS/ATC licensee must notify the Commission of the commencement of physical satellite construction and the licensee's intention to construct and test ATC facilities. This notification must be filed electronically in the appropriate file in the ICFS database. The notification must specify the frequencies the licensee proposes to use for pre-operational testing and the name, address, and telephone number of a representative for the reporting and mitigation of any interference resulting from such testing.

(4) *Experimental requirements*. MSS/ATC licensees engaging in pre-operational testing must comply with §§ 5.83, 5.85(c), 5.111, and 5.117 of this chapter regarding experimental operations.

(5) *Compensation*. An MSS/ATC licensee may not offer ATC service to the public for compensation during pre-operational testing.

(b) *Special Requirements for ATC operations in the 1626.5-1660.5 MHz/1525-1559 MHz bands.*

(1) An ancillary terrestrial component in these bands shall:

(i) In any band segment coordinated for the exclusive use of an MSS applicant within the land area of the U.S., where there is no other L-band MSS satellite making use of that band segment within the visible portion of the geostationary arc as seen from the ATC coverage area, the ATC system will be limited by the in-band and out-of-band emission limitations contained in this section and the requirement to maintain a substantial MSS service.

(ii) In any band segment that is coordinated for the shared use of the applicant's MSS system and another MSS operator, where the coordination agreement existed prior to February 10, 2005 and permits a level of interference to the other MSS system of less than 6% $\Delta T/T$, the applicant's combined ATC and MSS operations shall increase the system noise level of the other MSS to no more then 6% $\Delta T/T$. Any future coordination agreement between the parties governing ATC operation will supersede this paragraph.

(iii) In any band segment that is coordinated for the shared use of the applicant's MSS system and another MSS operator, where a coordination agreement existed prior to February 10, 2005 and permits a level of interference to the other MSS system of 6% $\Delta T/T$ or greater, the applicant's ATC operations may increase the system noise level of the other MSS system by no more than an additional 1% $\Delta T/T$. Any future coordination agreement between the parties governing ATC operations will supersede this paragraph.

(iv) In a band segment in which the applicant has no rights under a coordination agreement, the applicant may not implement ATC in that band.

(2) ATC base stations shall not exceed an out-of-channel emissions measurement of −57.9 dBW/MHz at the edge of a MSS licensee's authorized and internationally coordinated MSS frequency assignment.

(3) An applicant for an ancillary terrestrial component in these bands shall:

(i) Demonstrate, at the time of application, how its ATC network will comply with the requirements of footnotes US308 and US315 to the Table of Frequency Allocations contained in § 2.106 of this chapter regarding priority and preemptive access to the L-band MSS spectrum by the aeronautical mobile-satellite en-route service (AMS(R)S) and the global maritime distress and safety system (GMDSS).

(ii) Coordinate with the terrestrial CMRS operators prior to initiating ATC transmissions when co-locating ATC base stations with terrestrial commercial mobile radio service (CMRS) base stations that make use of Global Positioning System (GPS) time-based receivers.

(iii) Provide, at the time of application, calculations that demonstrate the ATC system conforms to the ΔT/T requirements of this section, if a coordination agreement that incorporates the ATC operations does not exist with other MSS operators.

(4) Applicants for an ATC in these bands must demonstrate that ATC base stations shall not:

(i) Exceed a peak EIRP of 31.9-10*log (number of carriers) dBW/200kHz, per sector, for each carrier in the 1525-1541.5 MHz and 1547.5-1559 MHz frequency bands;

(ii) Exceed an EIRP in any direction toward the physical horizon (not to include man-made structures) of 26.9-10*log (number of carriers) dBW/200 kHz, per sector, for each carrier in the 1525-1541.5 MHz and 1547.5-1559 MHz frequency bands;

(iii) Exceed a peak EIRP of 23.9 −10*log(number of carriers) dBW/200 kHz, per sector, for each carrier in the 1541.5-1547.5 MHz frequency band;

(iv) Exceed an EIRP toward the physical horizon (not to include man-made structures) of 18.9-10*log(number of carriers) dBW/200 kHz, per sector, for each carrier in the 1541.5-1547.5 MHz frequency band;

(v) Exceed a total PFD level of −56.8 dBW/m^2/200 kHz at the edge of all airport runways and aircraft stand areas, including takeoff and landing paths from all carriers operating in the 1525-1559 MHz frequency bands. The total PFD here is the sum of all power flux density values associated with all carriers in a sector in the 1525-1559 MHz frequency band, expressed in dB(Watts/m^2/200 kHz). Free-space loss must be assumed if this requirement is demonstrated via calculation;

(vi) Exceed a total PFD level of −56.6 dBW/ m^2/200 kHz at the water's edge of any navigable waterway from all carriers operating in the 1525-1541.5 MHz and 1547.5-1559 MHz frequency bands. The total PFD here is the sum of all power flux density values associated with all carriers in a sector in the 1525-1541.5 MHz and 1547.5-1559 MHz frequency bands, expressed in dB(Watts/m^2/200 kHz). Free-space loss must be assumed if this requirement is demonstrated via calculation;

(vii) Exceed a total PFD level of −64.6 dBW/ m^2/200 kHz at the water's edge of any navigable waterway from all carriers operating in the 1541.5-1547.5 MHz frequency band. The total PFD here is the sum of all power flux density values associated with all carriers in a sector in the 1541.5-1547.5 MHz frequency band, expressed in dB(Watts/m^2/200 kHz). Free-space loss must be assumed if this requirement is demonstrated via calculation;

(viii) Exceed a peak antenna gain of 16 dBi;

(ix) Generate EIRP density, averaged over any two-millisecond active transmission interval, greater than −70 dBW/MHz in the 1559-1605 MHz band or greater than a level determined by linear interpolation in the 1605-1610 MHz band, from −70 dBW/MHz at 1605 MHz to −46 dBW/MHz at 1610 MHz. The EIRP, averaged over any two-millisecond active transmission interval, of discrete out-of-band emissions of less than 700 Hz bandwidth from such base

stations shall not exceed −80 dBW in the 1559-1605 MHz band or exceed a level determined by linear interpolation in the 1605-1610 MHz band, from −80 dBW at 1605 MHz to −56 dBW at 1610 MHz. A root-mean-square detector function with a resolution bandwidth of one megahertz or equivalent and no less video bandwidth shall be used to measure wideband EIRP density for purposes of this rule, and narrowband EIRP shall be measured with a root-mean-square detector function with a resolution bandwidth of one kilohertz or equivalent.

(5) Applicants for an ancillary terrestrial component in these bands must demonstrate, at the time of the application, that ATC base stations shall use left-hand-circular polarization antennas with a maximum gain of 16 dBi and overhead gain suppression according to the following:

Angle from direction of maximum gain, in vertical plane, above antenna (degrees)	Antenna discrimination pattern (dB)
0	Gmax
5	Not to Exceed Gmax −5
10	Not to Exceed Gmax −19
15 to 55	Not to Exceed Gmax −27
55 to 145	Not to Exceed Gmax −30
145 to 180	Not to Exceed Gmax −26

Where Gmax is the maximum base station antenna gain in dBi

(6) Prior to operation, ancillary terrestrial component licensees shall:

(i) Provide the Commission with sufficient information to complete coordination of ATC base stations with Search-and-Rescue Satellite-Aided Tracking (SARSAT) earth stations operating in the 1544-1545 MHz band for any ATC base station located either within 27 km of a SARSAT station, or within radio horizon of the SARSAT station, whichever is less.

(ii) Take all practicable steps to avoid locating ATC base stations within radio line of sight of Mobile Aeronautical Telemetry (MAT) receive sites in order to protect U.S. MAT systems consistent with ITU-R Recommendation ITU-R M.1459. MSS ATC base stations located within radio line of sight of a MAT receiver must be coordinated with the Aerospace and Flight Test Radio Coordinating Council (AFTRCC) for non-Government MAT receivers on a case-by-case basis prior to operation. For government MAT receivers, the MSS licensee shall supply sufficient information to the Commission to allow coordination to take place. A listing of current and planned MAT receiver sites can be obtained from AFTRCC for non-Government sites and through the FCC's IRAC Liaison for Government MAT receiver sites.

(7) ATC mobile terminals shall:

(i) Be limited to a peak EIRP level of 0 dBW and an out-of-channel emissions of −67 dBW/4 kHz at the edge of an MSS licensee's authorized and internationally coordinated MSS frequency assignment.

(ii) Be operated in a fashion that takes all practicable steps to avoid causing interference to U.S. radio astronomy service (RAS) observations in the 1660-1660.5 MHz band.

(iii) Not generate EIRP density, averaged over any two-millisecond active transmission interval, greater than −70 dBW/MHz in the 1559-1605 MHz band or greater than a level determined by linear interpolation in the 1605-1610 MHz band, from −70 dBW/MHz at 1605 MHz to −46 dBW/MHz at 1610 MHz. The EIRP, averaged over any two-millisecond active transmission interval, of discrete out- of-band emissions of less than 700 Hz bandwidth from such mobile terminals shall not exceed −80 dBW in the 1559-1605 MHz band or exceed

a level determined by linear interpolation in the 1605-1610 MHz band, from −80 dBW at 1605 MHz to −56 dBW at 1610 MHz. The EIRP density of carrier-off-state emissions from such mobile terminals shall not exceed −80 dBW/MHz in the 1559-1610 MHz band, averaged over a two-millisecond interval. A root-mean-square detector function with a resolution bandwidth of one megahertz or equivalent and no less video bandwidth shall be used to measure wideband EIRP density for purposes of this rule, and narrowband EIRP shall be measured with a root-mean-square detector function with a resolution bandwidth of one kilohertz or equivalent.

(8) When implementing multiple base stations and/or base stations using multiple carriers, where any third- order intermodulation product of these base stations falls on an L-band MSS band coordinated for use by another MSS operator with rights to the coordinated band, the MSS ATC licensee must notify the MSS operator. The MSS operator may request coordination to modify the base station carrier frequencies, or to reduce the maximum base station EIRP on the frequencies contributing to the third-order intermodulation products. The threshold for this notification and coordination is when the sum of the calculated signal levels received by an MSS receiver exceeds −70 dBm. The MSS receiver used in these calculations can be assumed to have an antenna with 0 dBi gain. Free-space propagation between the base station antennas and the MSS terminals can be assumed and actual signal polarizations for the ATC signals and the MSS system may be used.

(c) *Special requirements for ATC operations in the 1610-1626.5 MHz/2483.5-2500 MHz bands.*

(1) An applicant for an ATC in these bands must demonstrate that ATC base stations shall:

(i) Not exceed a peak EIRP of 32 dBW in 1.25 MHz;

(ii) Not cause harmful interference to systems identified in paragraph (c) of this section and, in any case, shall not exceed out-of-channel emissions of −44.1 dBW/30 kHz at the edge of the MSS licensee's authorized frequency assignment;

(iii) At the time of application, that it has taken, or will take steps necessary to avoid causing interference to other services sharing the use of the 2450-2500 MHz band through frequency coordination; and

(iv) Base stations operating in frequencies above 2483.5 MHz shall not generate EIRP density, averaged over any two-millisecond active transmission interval, greater than −70 dBW/MHz in the 1559-1610 MHz band. The EIRP, averaged over any two-millisecond active transmission interval, of discrete out- of-band emissions of less than 700 Hz bandwidth from such base stations shall not exceed −80 dBW in the 1559-1610 MHz band. A root-mean-square detector function with a resolution bandwidth of one megahertz or equivalent and no less video bandwidth shall be used to measure wideband EIRP density for purposes of this rule, and narrowband EIRP shall be measured with a root-mean-square detector function with a resolution bandwidth of one kilohertz or equivalent.

(2) An applicant for an ancillary terrestrial component in these bands must demonstrate that mobile terminals shall:

(i) Meet the requirements contained in section 100.244(a) to protect radio astronomy service (RAS) observations in the 1610.6-1613.8 MHz band from harmful interference;

(ii) Observe a peak EIRP limit of 1.0 dBW in 1.25 MHz;

(iii) Observe an out-of-channel EIRP limit of −57.1 dBW/30 kHz at the edge of the licensed MSS frequency assignment; and

(iv) For ATC mobile terminals operating in assigned frequencies in the 1610-1626.5 MHz band, not generate EIRP density, averaged over any two-millisecond active transmission interval, greater than −70 dBW/MHz in the 1559-1605 MHz band or greater than a level

determined by linear interpolation in the 1605-1610 MHz band, from −70 dBW/MHz at 1605 MHz to −10 dBW/MHz at 1610 MHz. The EIRP, averaged over any two-millisecond active transmission interval, of discrete out-of-band emissions of less than 700 Hz bandwidth from such mobile terminals shall not exceed −80 dBW in the 1559-1605 MHz band or exceed a level determined by linear interpolation in the 1605-1610 MHz band, from −80 dBW at 1605 MHz to −20 dBW at 1610 MHz. The EIRP density of carrier-off-state emissions from such mobile terminals shall not exceed −80 dBW/MHz in the 1559-1610 MHz band, averaged over a two-millisecond interval. A root-mean-square detector function with a resolution bandwidth of one megahertz or equivalent and no less video bandwidth shall be used to measure wideband EIRP density for purposes of this rule, and narrowband EIRP shall be measured with a root-mean-square detector function with a resolution bandwidth of one kilohertz or equivalent.

(3) Applicants for an ancillary terrestrial component to be used in conjunction with an MSS system using CDMA technology shall coordinate the use of the 1.6/2.4 GHz MSS spectrum designated for CDMA systems using the framework established by the ITU in Recommendation ITU-R M.1186.

(4) To avoid interference to an adjacent channel licensee in the Broadband Radio Service (BRS), the power of any ATC base station emission above 2495 MHz shall be attenuated below the transmitter power (P) measured in watts in accordance with the standards below.

(i) For base stations, the attenuation shall be not less than 43 + 10 log (P) dB at the upper edge of the authorized ATC band, unless a documented interference complaint is received from an adjacent channel licensee in the BRS. Provided that a documented interference complaint cannot be mutually resolved between the parties, the following additional attenuation requirements shall apply:

(ii) If a pre-existing BRS base station suffers harmful interference from emissions caused by a new or modified ATC base station located 1.5 km or more away, within 24 hours of the receipt of a documented interference complaint the ATC licensee must attenuate its emissions by at least 67 + 10 log (P) dB measured at 3 megahertz above the edge of the authorized ATC band, and shall immediately notify the complaining licensee upon implementation of the additional attenuation.

(iii) If a pre-existing BRS base station suffers harmful interference from emissions caused by a new or modified ATC base station located less than 1.5 km away, within 24 hours of the receipt of a documented interference complaint the ATC licensee must attenuate its emissions by at least 67 + 10 log (P) −20 log(D_{km}/1.5) dB measured at 3 megahertz above the edge of the authorized ATC band, or if both base stations are co-located, limit its undesired signal level at the pre-existing BRS base station receiver(s) to no more than −107 dBm measured in a 5.5 megahertz bandwidth and shall immediately notify the complaining licensee upon such reduction in the undesired signal level.

(iv) If a new or modified BRS base station suffers harmful interference from emissions caused by a pre-existing ATC base station located 1.5 km or more away, within 60 days of receipt of a documented interference complaint the licensee of the ATC base station must attenuate its base station emissions by at least 67 + 10 log (P) dB measured at 3 megahertz above the edge of the authorized ATC band.

(v) If a new or modified BRS base station suffers harmful interference from emissions caused by a pre-existing ATC base station located less than 1.5 km away, within 60 days of receipt of a documented interference complaint:

(A) the ATC licensee must attenuate its base station emissions by at least 67 + 10 log (P) −20 log(D_{km}/1.5) dB measured 3 megahertz above the edge of the authorized ATC band, or

(B) if both base stations are co-located, the ATC licensee must limit its undesired signal level at the new or modified BRS base station receiver(s) to no more than −107 dBm measured in a 5.5 megahertz bandwidth.

(vi) Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately above and adjacent to the 2495 MHz a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy, provided the measured power is integrated over the full required measurement bandwidth (i.e., 1 MHz or 1 percent of emission bandwidth, as specified). 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. When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

(5) Licensees of terrestrial low-power systems operating in the 2483.5-2495 MHz band shall operate consistent with the technical limits and other requirements

Note to § 100.283: The requirements adopt in this section are based on cdma2000 and IS-95 system architecture. A licensee may use different system architecture upon demonstration that it will produce no greater potential interference than would be produced in a cdma2000 and IS-95 system architecture.

(d) *Requirements for MES operations in the NVNG, 1.5/1.6 GHz, 1.6/2.4 GHz and 2 GHz MSS bands.*

(1) Any mobile earth station (MES) operating in the 1530-1544 MHz and 1626.5-1645.5 MHz bands must have the following minimum set of capabilities to ensure compliance with Footnote 5.353A in § 2.106 of this chapter and the priority and real-time preemption requirements imposed by Footnote US315 in § 2.106 of this chapter.

(i) All MES transmissions must have a priority assigned to them that preserves the priority and preemptive access given to maritime distress and safety communications sharing the band.

(ii) Each MES with a requirement to handle maritime distress and safety data communications must be capable of either:

(A) Recognizing message and call priority identification when transmitted from its associated Land Earth Station (LES), or

(B) Accepting message and call priority identification embedded in the message or call when transmitted from its associated LES and passing the identification to shipboard data message processing equipment.

(iii) Each MES must be assigned a unique terminal identification number that will be transmitted upon any attempt to gain access to a system.

(iv) After an MES has gained access to a system, the mobile terminal must be under control of an LES and must obtain all channel assignments from it.

(v) All MESs that do not continuously monitor a separate signaling channel or signaling within the communications channel must monitor the signaling channel at the end of each transmission.

(vi) Each MES must automatically inhibit its transmissions if it is not correctly receiving separate signaling channel or signaling within the communications channel from its associated LES.

(vii) Each MES must automatically inhibit its transmissions on any or all channels upon receiving a channel-shut-off command on a signaling or communications channel it is receiving from its associated LES.

(viii) Each MES with a requirement to handle maritime distress and safety communications must have the capability within the station to automatically preempt lower precedence traffic.

(2) Any LES for an MSS system operating in the 1530-1544 MHz and 1626.5-1645.5 MHz bands must have the following minimum set of capabilities to ensure compliance with Footnote 5.353A and the priority and real-time preemption requirements imposed by Footnote US315 in § 2.106 of this chapter. An LES fulfilling these requirements must not have any additional priority with respect to FSS stations operating with other systems.

(i) LES transmissions to MESs must have a priority assigned to them that preserves the priority and preemptive access given to maritime distress and safety communications pursuant to paragraph (a) of this section.

(ii) The LES must recognize the priority of calls to and from MESs and make channel assignments taking into account the priority access that is given to maritime distress and safety communications.

(iii) The LES must be capable of receiving the MES identification number when transmitted and verifying that it is an authorized user of the system to prohibit unauthorized access.

(iv) The LES must be capable of transmitting channel assignment commands to the MESs.

(v) The communications channels used between the LES and the MES shall have provision for signaling within the voice/data channel, for an MES that does not continuously monitor the LES signaling channel during a call.

(vi) The LES must transmit periodic control signals to MESs that do not continuously monitor the LES signaling channel.

(vii) The LES must automatically inhibit transmissions to an MES to which it is not transmitting in a signaling channel or signaling within the communications channel.

(viii) The LES must be capable of transmitting channel-shut-off commands to MESs on signaling or communications channels.

(ix) Each LES must be capable of interrupting, and if necessary, preempting ongoing routine traffic from an MES in order to complete a maritime distress, urgency or safety call to that MES.

(x) Each LES must be capable of automatically turning off one or more of its associated channels in order to complete a maritime distress, urgency or safety call.

(3) No person without an FCC license for such operation may transmit to a space station in the NVNG, 1.5/1.6 GHz, 1.6/2.4 GHz, or 2 GHz MSS from anywhere in the United States except to receive service from the holder of a pertinent FCC blanket license or from another party with the permission of such a blanket licensee.

(e) *Operations of MES and ATC transmitters or transceivers on board civil aircraft.*

(1) Operation of any of the following devices aboard civil aircraft is prohibited, unless the device is installed in a manner approved by the Federal Aviation Administration or is used by the pilot or with the pilot's consent:

(i) Earth stations capable of transmitting in the 1.5/1.6 GHz, 1.6/2.4 GHz, or 2 GHz MSS frequency bands;

(ii) ATC terminals capable of transmitting in the 1.5/1.6 GHz or 1.6/2.4 GHz MSS bands;

(iii) Earth stations used for non-voice, non-geostationary MSS communication that can emit radiation in the 108-137 MHz band.

(2) No portable device of any type identified in paragraph (a) of this section (including transmitter or transceiver units installed in other devices that are themselves portable) may be sold or distributed to users unless it conspicuously bears the following warning: "This device must be turned off at all times while on board aircraft." For purposes of this part, a device is portable if it is a "portable device" as defined in § 2.1093(b) of this chapter or is designed to be carried by hand.

(f) Except as expressly permitted by § 2.803 or § 2.1204 of this chapter, prior authorization must be obtained pursuant to the equipment certification procedure in part 2, subpart J of this chapter for importation, sale or lease in the United States, or offer, shipment, or distribution for sale or lease in the United States of portable earth-station transceivers, as defined in § 2.1093(b) of this chapter, subject to regulation under part 100. This requirement does not apply, however, to devices imported, sold, leased, or offered, shipped, or distributed for sale or lease before November 20, 2004.

(1) Earth stations defined as mobile devices as defined in § 2.1091 of this chapter must comply with the requirements of part 2, subpart J of this chapter.

(2) Applicants for certification required by this section shall submit any additional equipment test data necessary to demonstrate compliance with pertinent standards for transmitter performance prescribed in part 100. Licensees and manufacturers shall ensure compliance with the Commission's radio frequency exposure requirements in §§ 1.1307(b), 2.1091, and 2.1093 of this chapter, as appropriate and comply with all part 2 of the Commission's rules equipment certification requirements. An Environmental Assessment may be required if RF radiation from the proposed facilities would, in combination with radiation from other sources, cause RF power density or field strength in an accessible area to exceed the applicable limits specified in § 1.1310 of this chapter. Applications for equipment authorization of mobile or portable devices operating under this section must contain a statement confirming compliance with these requirements and with part 100. Technical information showing the basis for this statement must be submitted to the Commission upon request.

(3) Licensees and manufacturers must demonstrate compliance with all relevant operational rules of part 100 as part of the equipment certification process.

§ 100.283 Requirements for ancillary terrestrial components in Mobile-Satellite Service networks operating in the 1.5./1.6 GHz and 1.6/2.4 GHz Mobile-Satellite Service.

(a) *Technical certifications or showings.* Applicants for ancillary terrestrial component authority shall demonstrate that the applicant does or will comply with the following through certification or explanatory technical exhibit, as appropriate:

(1) ATC shall be deployed in the forward-band mode of operation whereby the ATC mobile terminals transmit in the MSS uplink bands and the ATC base stations transmit in the MSS downlink bands in portions of the 1626.5-1660.5 MHz/1525-1559 MHz bands (L-band) and the 1610-1626.5 MHz/2483.5-2500 MHz bands.

Note to paragraph (a)(1):

An L-band MSS licensee is permitted to apply for ATC authorization based on a non-forward-band mode of operation provided it is able to demonstrate that the use of a non-forward-band mode of operation would produce no greater potential interference than that produced as a result of implementing the rules of this section. A 1.6/2.4 GHz band licensee is permitted to apply for ATC authorization on a non-forward-band mode of operation where the equipment deployed will meet the requirements of paragraph (c)(4) of this section.

(2) ATC operations shall be limited to certain frequencies:

(i) In the 1626.5-1660.5 MHz/1525-1559 MHz bands (L-band), ATC operations are limited to the frequency assignments authorized and internationally coordinated for the MSS system of the MSS licensee that seeks ATC authority.

(ii) In the 1610-1626.5 MHz/2483.5-2500 MHz bands, ATC operations are limited to the 1610-1617.775 MHz, 1621.35-1626.5 MHz, and 2483.5-2495 MHz bands and to the specific frequencies authorized for use by the MSS licensee that seeks ATC authority.

(3) ATC operations shall not exceed the geographical coverage area of the Mobile-Satellite Service network of the applicant for ATC authority.

(4) ATC base stations shall comply with all applicable antenna and structural clearance requirements established in part 17 of this chapter.

(5) ATC base stations and mobile terminals shall comply with part 1 of this chapter, Subpart I—Procedures Implementing the National Environmental Policy Act of 1969, including the guidelines for human exposure to radio frequency electromagnetic fields as defined in §§ 1.1307(b) and 1.1310 of this chapter for PCS networks.

(6) ATC base station operations shall use less than all available MSS frequencies when using all available frequencies for ATC base station operations would exclude otherwise available signals from MSS space-stations.

(b) *Additional certifications.* Applicants for an ATC shall demonstrate that the applicant does or will comply with the following criteria through certification:

(1) *Geographic and temporal coverage*.

(i) For the L-band, an applicant must demonstrate that it can provide space-segment service covering all 50 states, Puerto Rico, and the U.S. Virgin Islands one-hundred percent of the time, unless it is not technically possible for the MSS operator to meet the coverage criteria from its orbital position.

(ii) For the 1.6/2.4 GHz Mobile-Satellite Service bands, an applicant must demonstrate that it can provide space-segment service to all locations as far north as 70° North latitude and as far south as 55° South latitude for at least 75% of every 24-hour period, i.e., that at least one satellite will be visible above the horizon at an elevation angle of at least 5° for at least 18 hours each day, and on a continuous basis throughout the fifty states, Puerto Rico and the U.S. Virgin Islands, i.e., that at least one satellite will be visible above the horizon at an elevation angle of at least 5° at all times.

(2) *Replacement satellites*.

(i) Operational NGSO MSS ATC systems shall maintain an in-orbit spare satellite.

(ii) Operational GSO MSS ATC systems shall maintain a spare satellite on the ground within one year of commencing operations and launch it into orbit during the next commercially reasonable launch window following a satellite failure.

(iii) All MSS ATC licensees must report any satellite failures, malfunctions or outages that may require satellite replacement within ten days of their occurrence.

(3) *Commercial availability.* Mobile-satellite service must be commercially available (viz., offering services for a fee) in accordance with the coverage requirements that pertain to each band as a prerequisite to an MSS licensee's offering ATC service.

(4) *Integrated services.* MSS ATC licensees shall offer an integrated service of MSS and MSS ATC. Applicants for MSS ATC may establish an integrated service offering by affirmatively demonstrating that:

(i) The MSS ATC operator will use a dual-mode handset that can communicate with both the MSS

network and the MSS ATC component to provide the proposed ATC service; or

(ii) Other evidence establishing that the MSS ATC operator will provide an integrated service offering to the public.

(5) *In-band operation*.

(i) In the 1.6/2.4 GHz Mobile-Satellite Service bands, MSS ATC is limited to no more than 7.775 MHz of spectrum in the L-band and 11.5 MHz of spectrum in the S-band. Licensees in these bands may implement ATC only on those channels on which MSS is authorized, consistent with the 1.6/2.4 GHz MSS band-sharing arrangement.

(ii) In the L-band, MSS ATC is limited to those frequency assignments available for MSS use in accordance with the Mexico City Memorandum of Understanding, its successor agreements or the result of other organized efforts of international coordination.

(c) *Equipment certification*.

(1) Each ATC mobile station utilized for operation under this part and each transmitter marketed, as set forth in § 2.803 of this chapter, must be of a type that has been authorized by the Commission under its certification procedure for use under this part.

(2) Any manufacturer of radio transmitting equipment to be used in these services may request equipment authorization following the procedures set forth in subpart J of part 2 of this chapter. Equipment authorization for an individual transmitter may be requested by an applicant for a station authorization by following the procedures set forth in part 2 of this chapter.

(3) Licensees and manufacturers shall ensure compliance with the Commission's radio frequency exposure requirements in §§ 1.1307(b), 2.1091, and 2.1093 of this chapter, as appropriate. An Environmental Assessment may be required if RF radiation from the proposed facilities would, in combination with radiation from other sources, cause RF power density or field strength in an accessible area to exceed the applicable limits specified in § 1.1310 of this chapter. Applications for equipment authorization of mobile or portable devices operating under this section must contain a statement confirming compliance with these requirements. Technical information showing the basis for this statement must be submitted to the Commission upon request. Licensees and manufacturers must demonstrate compliance with all relevant operational rules of this part as part of the equipment certification process.

(4) Applications for equipment authorization of terrestrial low-power system equipment that will operate in the 2483.5-2495 MHz band shall demonstrate the following:

(i) The transmitted signal is digitally modulated;

(ii) The 6 dB bandwidth is at least 500 kHz;

(iii) The maximum transmit power is no more than 1 W with a peak EIRP of no more than 6 dBW;

(iv) The maximum power spectral density conducted to the antenna is not greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission;

(v) Emissions below 2483.5 MHz are attenuated below the transmitter power (P) measured in watts by a factor of at least 40 + 10 log (P) dB at the channel edge at 2483.5 MHz, 43 + 10 log (P) dB at 5 MHz from the channel edge, and 55 + 10 log (P) dB at X MHz from the channel edge where X is the greater of 6 MHz or the actual emission bandwidth;

(vi) Emissions above 2495 MHz are attenuated below the transmitter power (P) measured in watts by a factor of at least 43 + 10 log (P) dB on all frequencies between the channel edge at 2495 MHz and X MHz from this channel edge and 55 + 10 log (P) dB on all frequencies more than X MHz from this channel edge, where X is the greater of 6 MHz or the actual emission bandwidth; and

(vii) Compliance with these rules is based on the use of measurement instrumentation employing a

resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately above and adjacent to the 2495 MHz a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. If 1 percent of the emission bandwidth of the fundamental emission is less than 1 MHz, the power measured must be integrated over the required measurement bandwidth of 1 MHz. A resolution bandwidth narrower than 1 MHz is permitted to improve measurement accuracy, provided the measured power is integrated over the full required measurement bandwidth (i.e., 1 MHz). The emission bandwidth of the fundamental emission of a transmitter 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. When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

(d) *Compliance with other rules.* Applicants for an ancillary terrestrial component authority shall demonstrate that the applicant does or will comply with the provisions of § 1.924 of this chapter and § 100.276 and with this section, as appropriate, through certification or explanatory technical exhibit.

(e) *Limitations on grant timing.* Except as provided for in paragraphs (f) and (g) of this section, no application for an ancillary terrestrial component shall be granted until the applicant has demonstrated actual compliance with the provisions of paragraph (b) of this section. Upon receipt of ATC authority, all ATC licensees shall ensure continued compliance with this section, as appropriate.

(f) *Special provision for operational MSS systems*. Applicants for MSS ATC authority with operational MSS systems that are in actual compliance with the requirements prescribed in paragraphs (b)(1), (b)(2), and (b)(3) of this section at the time of application may elect to satisfy the requirements of paragraphs (b)(4) and (b)(5) of this section prospectively by providing a substantial showing in its certification regarding how the applicant will comply with the requirements of paragraphs (b)(4) and (b)(5) of this section. Notwithstanding paragraph (e) of this section, the Commission may grant an application for ATC authority based on such a prospective substantial showing if the Commission finds that operations consistent with the substantial showing will result in actual compliance with the requirements prescribed in paragraphs (b)(4) and (b)(5) of this section. An MSS ATC applicant that receives a grant of ATC authority pursuant to this paragraph (f) shall notify the Commission within 30 days once it begins providing ATC service. This notification must take the form of a letter formally filed with the Commission in the appropriate MSS license docket and shall contain a certification that the MSS ATC service is consistent with its ATC authority.

(g) *Special provisions for terrestrial low-power systems in the 2483.5-2495 MHz band*.

(1) An operational MSS system that applies for authority to deploy ATC in the 2483.5-2495 MHz band for terrestrial low-power operations satisfying the equipment certification requirements of paragraph (c)(4) of this section is not required to demonstrate compliance with paragraph (b) of this section, except to demonstrate the commercial availability of MSS, without regard to coverage requirements.

(2) An ATC licensee seeking to modify its license to add authority to operate a terrestrial low-power network shall certify in its modification application that its operations will utilize a Network Operating System (NOS), consisting of a network management system located at an operations center or centers. The NOS shall have the technical capability to address and resolve interference issues related to the licensee's network operations by reducing operational power; adjusting operational frequencies; shutting off operations; or any other appropriate means. The NOS shall also have the ability to resolve interference from the terrestrial low-power network to the licensee's MSS operations and to authorize access points to the network, which in turn may authorize access to the network by end-user devices. The NOS operations center shall have a point of contact in the United States available twenty-four hours a day, seven days a week, with a phone number and address made publicly-available by the licensee.

(3) All access points operating in the 2483.5-2495 MHz band shall only operate when authorized by the ATC licensee's NOS, and all client devices operating in the 2483.5-2495 MHz band shall only operate when under the control of such access points.

(h) *Spectrum leasing*. Leasing of spectrum rights by MSS licensees or system operators to spectrum lessees for ATC use is subject to the rules for spectrum manager leasing arrangements (see § 1.9020) as set forth in part 1, subpart X of this chapter (see § 1.9001 *et seq.*). In addition, at the time of the filing of the requisite notification of a spectrum manager leasing arrangement using Form 608 (see §§ 1.9020(e) and 1.913(a)(5)), both parties to the proposed arrangement must have a complete and accurate Form 602 (see § 1.913(a)(2)) on file with the Commission.

§ 100.284 Procedures for resolving harmful interference related to ATC in the 1.5/1.6 GHz and 1.6/2.4 GHz bands.

If harmful interference is caused to other services by ancillary MSS ATC operations, either from ATC base stations or mobile terminals, the MSS ATC operator must resolve any such interference. If the MSS ATC operator claims to have resolved the interference and other operators claim that interference has not been resolved, then the parties to the dispute may petition the Commission for a resolution of their claims.

MISCELLANEOUS RULES

§ 100.290 Satellite Emergency Notification Devices (SENDs).

No device described by the marketer or seller using the terms "SEND" or "Satellite Emergency Notification Device" may be marketed or sold in the United States unless it complies with the requirements of RTCM 12800.0.

Subpart D – Compliance

§ 100.300 Temporary Measures for Non-Compliance

(a) A space station or earth station operator may be required to temporarily cease radio emissions upon a Commission determination of:

(1) failure to operate in conformance with the Commission's rules or conditions on a license authorization;

(2) failure to timely pay any regulatory fee debts without prior Commission approval or request for waiver in advance of the payment deadline; or

(3) during the pendency of an investigation into any potential violation of the Commission's rules or conditions on a license as directed by the Commission.

(b) If an applicant for a space or earth station authorization has a history of operations not in conformance with certifications made as part of the application process, or other noncompliance with the Commission's rules under a prior Commission authorization, the Commission may make a finding that any future applications filed by that entity do not qualify for the public interest presumption in § 100.136. The applicant will be able to provide evidence to rebut this finding.

§ 100.301 Administrative sanctions.

(a) Subject to section 503 of the Communications Act, a forfeiture may be imposed for failure to operate in conformance with the Communications Act, license or authorization terms, any conditions imposed on an authorization, or any of the Commission's rules and regulations; or for failure to comply with Commission requests for information needed to complete international coordination or for failure to cooperate in Commission investigations with respect to international coordination.

(b) Subject to section 503 of the Communications Act, a forfeiture will be imposed and the station license may be terminated for malicious transmission of any signal that causes harmful interference with any other radio communications or signals.

(c) Subject to section 312 of the Communications Act, a station license may be revoked for any reason stated in section 312(a) of the Communications Act, including repeated or willful violation of the kind set forth in paragraphs (a) and (b) of this section. The operator of a space station, spacecraft, or satellite license that has been revoked under this rule Part must maintain control of each authorized space station,

spacecraft, or satellite until it has deorbited.

(d) The Commission may prevent a licensee from launching or operating additional satellites or space stations under a space station license for any violation of the kind set forth in paragraphs (a) and (b) of this section until such violation is cured.

(e) The Commission may place a licensee into an authorization freeze status preventing a licensee from receiving any new or additional licenses or authorizations for any violation of the kind set forth in paragraphs (a) and (b) of this section.

(f) Subject to sections 312(a)(1) and 316 of the Communications Act, the Commission may revoke or modify a station license if the grant of the operations requested in the station license was predicated on statements subsequently found to be intentionally false or misleading.

(g) The sanctions specified in paragraphs (a) through (f) of this section will be imposed pursuant to such notice and an opportunity to be heard as is required pursuant to Titles III and V of the Communications Act, the Administrative Procedure Act, and the requirements of due process.

(h) For purposes of this section, the term "repeated" and "willful" are defined as set out in section 312(f) of the Communications Act, 47 U.S.C. 312(f).

§ 100.302 Automatic termination of station authorization.

(a) All space and earth station authorizations shall be automatically terminated in whole or in part without further notice to the licensee or market access grantee upon:

(1) The failure to meet any applicable milestone requirement as specified in § 100.146;

(2) The failure to meet any registration and coordination requirements as specified in § 100.120(b)(2);

(3) The failure to meet any operational requirements for earth stations as specified in §§ 100.270 through 100.284;

(4) The expiration of the license or authorization term, unless an application for extension of the license or authorization term has been filed with the Commission pursuant to § 100.148,

(5) The removal or alteration of earth station equipment or antennas that renders the earth station not operational for more than 90 days, or upon the occurrence of a failure or anomaly that renders a space station permanently unable to conduct any radiocommunications.

(6) The failure to provide any SCS on all or some of the SCS authorized frequencies for more than 90 days, for an SCS space station licensee authorized pursuant to § 100.113. In this instance, the authorization will be terminated in whole or in part with respect to the relevant frequencies on which SCS has not be operational for more than 90 days in the United States, unless specific authority is requested.

(7) For a grant of U.S. market access, if the space station is no longer in-orbit and operational or if the associated license from another administration is cancelled or no longer valid.

(8) The failure to comply with or operate in accordance with the conditions or requirements of a conditional grant as specified in § 100.139.

(b) The operator of a space station, spacecraft, or satellite license that has been terminated under this rule Part must maintain control of each authorized space station, spacecraft, or satellite until it has deorbited.

§ 100.303 Reinstatement.

(a) A station authorization terminated in whole or in part under the provisions of § 100.302 may be reinstated upon petition to the Commission, if the Commission, in its discretion, determines that reinstatement would best serve the public interest, convenience, and necessity.

(b) Petitions for reinstatement for failure to timely file a notification or renewal application will be

considered only if:

(1) The petition is filed within 30 days after the expiration date set forth in § 100.301, whichever is applicable;

(2) The petition explains the failure to file a timely notification or renewal application; and

(3) The petition sets forth with specificity the procedures that have been established to ensure timely filings in the future.

§ 100.304 Cause for termination of interference protection for registered receiving earth stations.

The protection from interference afforded by the registration of a receiving earth station shall be automatically terminated if:

(a) The request for registration is not submitted to the Commission within three months of the completion of the frequency coordination process, except for as provided in § 100.276;

(b) The receiving earth station is not constructed and placed into service within six months after completion of coordination;

(c) The Commission finds that the station has been used less than 50% of the time during any 12 month period;

(d) The Commission finds that the station has been used for an unlawful purpose or otherwise in violation of the Commission's rules, regulations or policies;

(e) The Commission finds that the actual use of the facility is inconsistent with what was set forth in the registrant's application; or

(f) The Commission finds that the frequency coordination exhibit, upon which the granted registration is based, is incomplete or does not conform with established coordination procedures. § 100.305 Removal of Application Requirements.

The Space Bureau may remove any application requirements outlined in §§ 100.100 – 100.121 pursuant to the following:

(a) The Space Bureau must provide notice and seek comment on the removal of any specific application requirements. This notice must identify the specific requirement(s) that the Bureau proposes to remove, along with the relevant rule sections, and provide justification for the proposed removal;

After the notice and comment period, the Space Bureau must issue an Order that clearly states any application requirements that will be removed and addresses all proposals made in the notice and any comments received.

APPENDIX B

Regulatory Impact Analysis

A. Need for Regulatory Action

1. The United States space economy is experiencing rapid growth, with American companies leading the way in innovation, exploration, and the deployment of advanced space-based technologies. As the number and complexity of space and earth station applications have increased, the existing regulatory framework has struggled to keep pace, resulting in slow decision timelines, unpredictable outcomes, and unnecessary regulatory burdens. The expansion of the commercial space sector, including new entrants and novel activities such as non-geostationary satellite constellations, lunar missions, and in-space servicing, has created new demands on the Commission's resources and raised questions about how to apply legacy licensing rules to emerging radiofrequency technologies. To ensure that the United States remains the premier destination for space industry investment and leadership, it is essential to modernize the Commission's space and earth station licensing rules to support innovation, efficiency, and other national objectives.

2. This significant regulatory action is submitted to the Office of Information and Regulatory Affairs (OIRA) for interagency review. This regulatory impact analysis (RIA) presents an assessment of the costs and benefits associated with this action, including regulatory compliance costs, and is consistent with Executive Order 12866. Comparing the adopted rules with other alternative policy options, we find that the adopted rules will result in significant benefits that outweigh the associated costs. This regulatory action is considered a deregulatory action under Executive Order 14192.

B. Benefits

3. The modernization of the Commission's space and earth station licensing rules is expected to generate substantial benefits for the United States space sector and the public at large. By streamlining application processes, introducing modular and certification-based filings, and clarifying operational requirements, the new framework will significantly reduce regulatory uncertainty and administrative burden for applicants. This will enable both established operators and new entrants to bring innovative services to market more rapidly, supporting continued U.S. leadership in space technology and exploration.

4. A key benefit of the new rules is the increased speed and predictability of licensing decisions. The adoption of standardized application modules and clearer timelines will allow applicants to better plan investments and operations, while reducing the risk of costly delays. This predictability is especially critical in a capital-intensive sector where timely access to spectrum and orbital resources can determine the success or failure of major projects. The new framework will also provide greater flexibility for operators to modify and upgrade their systems, fostering an environment that encourages ongoing innovation and adaptation to technological advances. By focusing regulatory review on key areas such as harmful interference, space safety, and foreign ownership, the new framework will ensure that licensing decisions are both in the public interest and efficient.

5. We estimate that the rules adopted in this Order will generate benefits in terms of increased producer surplus of at least $42 million using a 3% discount rate and at least $37 million using a 7% discount rate. This benefit arises because by processing applications more quickly using our modularized framework, we enable competitors to deploy and bring innovative services to market more rapidly. We quantify the gain in producer surplus by supposing that the growth rate in the market value of U.S. satellite data services will increase by a single week over the period 2026-2030 as a result of our enhanced ability to more quickly process applications.[1] We find this assumption highly conservative and

[1] Specifically, we suppose that the compound annual growth rate (CAGR) increase by a single day in 2027, and by two days each in 2028, 2029, and 2030. In other words, if the CAGR equals x using our existing framework, the (continued….)

believe that our framework has the potential for much larger increases in market value growth and corresponding increases in producer surplus.

6. According to January 2025 analyst estimates for the years 2024-2034, U.S. satellite data services will grow in market value, measured in terms of total revenue generated from the sale of services to end consumers, from $3.40 billion to $19.43 billion at a CAGR of 19.1%.[2] An increase in the CAGR corresponding to growth of an extra week leads to a higher CAGR during the years 2027-2030.[3] Applying this new CAGR beginning in year 2027 leads to a gain in market value of approximately $79.6 million. Converting the market value gains to gains in producer surplus by multiplying by a profit margin of 58%, and then discounting leads to estimated producer surplus of $42.3 million using a 3% discount rate and $37.8 million using a 7% discount rate.[4]

7. Importantly, the rules we adopt today are also expected to generate increases in consumer surplus that are difficult to quantify. If satellite operators expand capacity more rapidly and, as a result, compete more aggressively, consumers may experience improved service quality, lower prices, and greater choice in consumer broadband and enterprise connectivity options. Expanded satellite access particularly benefits residents and businesses in areas where terrestrial networks are limited by geography or cost, thereby improving overall welfare and enabling broader participation in digital economic activity. Business customers—such as aviation, maritime, logistics, and cloud-based enterprises—may similarly benefit from the quality improvements and price reductions that result from increased competition and quicker innovation. In addition, our estimated gains to producer surplus do not account for additional reductions in costs associated with the new regulatory framework that we adopt. We discuss these cost reductions below.

C. Costs

8. The deregulatory aspects of this action—such as the elimination of duplicative filings, the reduction of unnecessary reporting requirements, and the streamlining of modification and renewal processes—are expected to yield significant cost savings for both industry and the Commission. These savings will free up resources for investment in new capabilities, support the growth of the domestic space industry, and reinforce the United States' position as the global leader in commercial space activities. We compare these cost savings against the costs of complying with these new rules, including familiarization and certification costs, as well as costs that are associated with changes in our surety bond requirements. In total, the cost savings associated with these new rules from 2026 to 2030 are approximately $778,000 using a 3% discount rate and $723,000 using a 7% discount rate. By comparison, the costs from 2026 to 2030 are $27.1 million using a 3% discount rate and $25.7 million using a 7% discount rate.

9. *Modifications and STA Requests*. In the NPRM, we estimated annual cost savings associated with a reduction in time that applicants would need to file modifications and STA requests of

(Continued from previous page)
CAGR will equal $(1+x)^{1+1/365}-1$ in 2027 and $(1+x)^{1+2/365}-1$ in years 2028-2030 following adoption of our rules.

[2] Market.US, *Global Satellite Data Service Market Size, Share Analysis Report By Service Type (Image Data, Data Analytics), By End User (Defense and Security, Agriculture, Maritime, Environment, Energy and Power, Other End Users), Region and Companies - Industry Segment Outlook, Market Assessment, Competition Scenario, Trends and Forecast 2025-2034* (Jan. 2025), https://market.us/report/satellite-data-service-market/.

[3] Specifically, based on our assumptions above, this leads to a CAGR of 1.1916 in 2027 and a CAGR of 1.1921 in 2028-2030.

[4] Robert Cyran, *SpaceX Will be a Better $1 Trln Bet Than Tesla* (Dec. 26, 2024), https://www.reuters.com/breakingviews/spacex-will-be-better-1-trln-bet-than-tesla-2024-12-26/ (noting that analysts estimate that Starlink's 2024 earnings before interest, taxes, depreciation, and amortization (EBITDA) margin is 58%).

$165,000.[5] Commenters did not specifically address this figure and we adopt it here. We estimate that the 5-year present value of cost savings associated with this reduction in applicant time equals to approximately $778,000 using a 3% discount rate and $723,000 using a 7% discount rate.[6]

10. *Compliance Costs*. We estimate that the five-year present value of costs to comply with the new requirements will be approximately $27.1 million using a 3% discount rate and $25.7 million using a 7% discount rate. We identify three categories of compliance costs associated with the adopted rules: (1) familiarization costs, (2) reporting costs, and (3) costs of capital. Familiarization costs result from work that regulatees will need to perform to familiarize themselves with the rule revisions. Going forward, NGSO operators will face additional costs of preparing semi-annual space system safety reports, which require information on the number of conjunction events identified for satellites in the NGSO system during the reporting period, the number of satellites removed from operation or screened from further deployment, and the number of satellites that re-entered the atmosphere. Finally, certain regulatees may incur costs of capital associated with increases in the size of surety bonds posted by NGSO applicants subject to processing rounds. We note, however, that such costs could actually decrease due to a drop in the number of regulatees subject to surety bonds under our new rules.

11. We estimate familiarization costs by using needed labor hours worked by engineers and attorneys to make sure that satellite operators understand and comply with the new rules. We estimate that telecommunications aerospace engineers are compensated at a rate of $100.26/hour and telecommunications attorneys are compensated at $140.73/hour.[7] We estimate that 3,335 entities, including 130 space station licensees and 3,205 earth station licensees may be impacted by our rules, and conservatively assume that all 3,335 will require familiarization with the rules.[8] For familiarization, we assume that for space station licensees, reading and understanding the Report and Order will take 20 engineer hours of work and 40 lawyer hours of work for each regulatee. For earth station licensees, we assume that it takes half of this time because many of the part 100 rules will not apply to the majority of earth station licensees. This implies that familiarization costs will equal approximately $13.2 million across regulatees.[9] Because these rules replace existing rules, future entrants would not be expected to incur additional familiarization costs because they would need to familiarize themselves with only one set of rules prior to entry.

12. In the NPRM, the Commission estimated the costs of filing newly required safety

[5] *NPRM,* 40 FCC Rcd at 8278-79, para. 244, n.475.

[6] The 5-year present value of cost savings using a 3% discount rate is $165,000 $\times \sum_{i=2026}^{2030} 1/(1+3\%)^{i-2026}$ = $778,321, rounded down to $778,000. Similarly, the 5-year present value of cost savings using a 7% discount rate are $165,000 $\times \sum_{i=2026}^{2030} 1/(1+7\%)^{i-2026}$ = $723,890, rounded down to $723,000.

[7] The Bureau of Labor Statistics reports May 2024 hourly mean wages for aerospace engineers and lawyers in the telecommunications industry as $68.76/hour and $95.39/hour, respectively. Bureau of Labor Statistics (BLS), *Occupational Employment and Wage Statistics Query System*, https://data.bls.gov/oes/#/industry/517000 (accessed April 22, 2026). According to the Bureau of Labor Statistics, as of December 2025, civilian wages and salaries averaged $33.45/hour and benefits averaged $15.33/hour. Using these figures, benefits constitute a markup of $15.33/$33.45 ~ 46%. Taking 46% for cost of benefits, we arrive at an hourly compensation of $100.26/hour ($68.67/hour × $146%), and $140.73/hour ($96.39/hour × $146%), for engineers and attorneys, respectively. *See* Press Release, Bureau of Labor Statistics, Employer Costs for Employee Compensation—December 2025 (March 20, 2025), https://www.bls.gov/news.release/pdf/ecec.pdf (*Benefit Markup*).

[8] Staff analysis of space station and earth station authorizations in ICFS. This estimate is conservative because some licensees in our data may fall under the same holding company or may concurrently hold licenses for both space stations and earth stations, thereby overstating the number of licensees subject to the rules changes.

[9] (20 hours of engineering work × $100.26/hour + 40 hours of legal work × $140.73) × 130 space station licensees + (10 hours of engineering work × $100.26/hour + 20 hours of legal work × $140.73) × 3,205 earth station licensees = $13,226,598) ~ $13.2 million.

reports at approximately $90,000.[10] Commenters did not specifically address this figure and we adopt it here. We estimate that the five year present value of costs on applicant time equals to approximately $425,000 using a 3% discount rate, and $395,000 using a 7% discount rate.[11] These costs include the cost of providing information on the number of conjunction events identified for satellites in the NGSO system during the reporting period, the number of satellites removed from operation or screened from further deployment, and the number of satellites that re-entered the atmosphere and therefore are no longer operational. Because regulatees should already be collecting this information as part of their routine operations, the estimated costs associated with this rule are assumed to be limited to preparing and submitting the report to the Commission.

13. We find that the costs associated with all other new reporting requirements in the item will likely be negligible. Specifically, the costs of sharing ephemeris and covariance data are expected to be minimal, as operators already generate and maintain this information for their own operational purposes. Sharing it with a designated space situational awareness service provider would primarily involve integrating with an existing data processing interface, which should require minimal additional effort. Finally, the Commission expects that changes including eliminating the annual point of contact requirement, replacing individual earth station licensing with nationwide, non-site licensing for immovable earth stations, among others, will result in cost savings rather than imposing new costs, although those savings are not quantified here.

14. To estimate the costs associated with revisions to surety bonds under the new part 100, we first project the annual costs that an NGSO operator subject to the part 100 bond would expect to pay before fully satisfying its bond obligation and subtract from this the costs that the operator would expect to pay were it subject to part 25 instead. We begin by assuming that a typical NGSO operator subject to a processing round will launch its full constellation of authorized satellites by the applicable nine-year deadline. For simplicity, we model satellite deployment as a linear launch cadence over this period. We assume that operators subject to the bond will pay their annual cost of capital, which we assume is 7% on average, to a financial entity that covers the bond in the event of default.[12] The updated NGSO surety bond formula establishes a deescalating bond obligation over time, such that the associated cost of capital declines as the outstanding bond amount falls.[13] By contrast, the part 25 bond obligation grows over time.[14] We assume that, in any given year beginning with 2027, an average of four new NGSO operators will be subject to a surety bond, and that operators previously subject to a part 25 bond would each be subject to a part 100 bond.[15] Therefore, these operators will pay the difference of what they would owe

[10] *NPRM,* 40 FCC Rcd at 8279, para. 246, n.476.

[11] The 5-year present value of space system safety reporting costs using a 3% discount rate are $90,000 $\times \sum_{i=2026}^{2030} 1/(1+3\%)^{i-2026}$ = $424,539, rounded to $425,000. Similarly, the 5-year present value of cost savings using a 7% discount rate are $90,000 $\times \sum_{i=2026}^{2030} 1/(1+7\%)^{i-2026}$ = $394,849, rounded to $395,000.

[12] The 7% rate is an OMB estimate of the average before-tax rate of return to private capital in the U.S. economy. Office of Management and Budget, Circular A-4 (Sept. 17, 2003), https://obamawhitehouse.archives.gov/omb/circulars_a004_a-4/.

[13] Specifically, the formula, $B = \$10{,}000{,}000 - \$10{,}000{,}000 \times (D/(0.9A))$, where B is the bond amount, A is the number of authorized satellites, and D is the number of deployed satellites, implies bond amounts of, respectively, approximately $8.8 million, $7.5 million, $6.3 million, and $5.1 million at the end of the first four years for an operator following a linear launch cadence.

[14] The part 25 formula is $A = \$1{,}000{,}000 + \$4{,}000{,}000 \times D/2192$, where A is the amount to be paid and D is the lesser of 2192 or the number of days that elapsed from the date of the license grant until the date when the license was surrendered. Using the same launch cadence, this implies bond amounts of, respectively, approximately $1.7 million, $2.3 million, $3.0 million, and $3.7 million at the end of the first four years.

[15] Staff analysis of space station authorizations in ICFS indicates that there were 14 NGSO operators that received launch and operating authority between 2022 and 2025, and potentially could have been subject to a surety bond under either part 100 or part 25. This implies 3.5 NGSO operators on average, which we round to 4.

under part 100 and what they would have owed had the part 25 surety bond formula remained in effect.[16] We then calculate the present value of the resulting change in costs using discount rates of 3% and 7%, consistent with the methodology applied elsewhere in our analysis. This leads to 2026-2030 net surety bond costs of $13.4 million using a 3% discount rate and $12.1 million using a 7% discount rate.

15. We believe that the above surety bond net cost estimate is a substantial overestimate that we nevertheless use as a conservative ceiling on surety bond costs resulting from part 100. The reasons for this are: (1) under part 100, GSO operators will not be subject to surety bonds, but we have not netted out any cost savings that GSO operators would face from our calculations; (2) we anticipate that most satellite operators do not pay their full cost of capital to secure a surety bond;[17] (3) we expect that certain NGSO operators that would have been subjected to the part 25 bond obligation will no longer be obligated to post a bond under part 100; (4) because the part 100 formula has a higher upfront bond requirement and decreases with the number of satellites launched, the formula may incentivize operators to launch at a faster cadence than they would have under part 25.

D. Alternative Policies

1. Alternative A – No Action

16. Under this alternative, the Commission would decline to adopt any new rules or reforms and would maintain the existing space and earth station licensing framework without modification. While this approach would avoid some costs, it would perpetuate the significant gaps and inefficiencies in our licensing framework that have developed as the space economy has evolved. The current framework contains substantial redundancies and lacks a clear path to licensing many new types of space operations, resulting in slow and unpredictable licensing timelines, excessive administrative burden, and uncertainty for applicants. Due to the rapid evolution of the space sector and the increasing complexity of licensing applications, maintaining the status quo would leave critical gaps unaddressed. As a result, applicants would continue to face delays and uncertainty, and the Commission's ability to service these new technologies and business models would remain limited. This alternative would fail to realize potential gains in transparency, efficiency, and innovation, and would be inferior to the adoption of a modernized regulatory framework.

2. Alternative B – Adopt Rules Requiring Comprehensive Modernization

17. This alternative, which is the approach adopted in the Order, would implement a comprehensive modernization of the Commission's space and earth station licensing rules. The new framework would introduce modular, certification-based applications, establish clear timelines for review, and focus regulatory oversight on key areas such as the potential for harmful interference from newly proposed systems to incumbent operations, spectrum efficiency, space safety, and foreign ownership. By streamlining application processes and providing greater flexibility for both established operators and new entrants, this approach would enable the United States to maintain its leadership in the global space economy. The comprehensive modernization of our space licensing system would promote transparency, predictability, and efficiency, while ensuring that the Commission's statutory responsibilities and public interest objectives are fully met. Of the alternatives considered, this approach offers the greatest net

[16] This means that in 2027, the undiscounted total bond cost is $4 \times (\$8.8 \text{ million} - \$1.7 \text{ million}) \times 0.07 = \$2.0 \text{ million}$. In 2028, the undiscounted total bond cost is $\$2.0 \text{ million} + 4 \times (\$7.5 \text{ million} - \$2.3 \text{ million}) \times 0.07 = \$3.5 \text{ million}$, where the $2.0 million refers to the difference in part 100 and part 25 bond obligations that operators authorized in 2028 would face, and the remaining term (equal to $1.5 million) pertains to the difference that operators authorized in 2027 would face. The calculations are similar for 2029 and 2030.

[17] *See e.g.*, Schmalz & Associates, *Surety Bond Education*, https://schmalzsurety.com/how-much-does-a-surety-bond-cost/ (last visited May 21, 2026) ("As a very general guideline, bond rates typically fall between one and three percent of the penal amount of the bond. There are several factors that can impact your rate such as risk of the obligation and your credit quality.")

benefit by reducing regulatory uncertainty and delay, supporting innovation, and aligning the regulatory framework with the realities of the 21st-century space sector.

3. Alternative C – Adopt Limited Rules Without New Part 100 Rules (Retain Part 25)

18. Under this alternative, the Commission would seek to address certain issues by adopting limited reforms or clarifications, but would not undertake a comprehensive overhaul of the licensing framework by adopting new part 100 rules. Instead, the existing part 25 rules would be retained as the core regulatory structure, with only minor updates or piecemeal adjustments to address specific technical or administrative concerns. While this approach might provide some incremental improvements to the current licensing system, it would fall far short of what is needed to support the rapidly evolving space sector. Retaining our part 25 licensing rules as the foundation would perpetuate the complexity and redundancy that have led to slow, unpredictable, and burdensome licensing processes. Applicants would continue to face narrative-heavy filings, unclear timelines, and uncertainty regarding substantive requirements. The absence of a modular, performance-based approach would limit the Commission's ability to respond to the new space technologies and business models, and the lack of comprehensive reform would leave critical regulatory gaps unaddressed. In comparison to the adoption of new part 100 rules, this halfway approach would not deliver the clarity, flexibility, or efficiency required for the modern space economy, and would risk leaving the United States at a disadvantage in the global competition for space innovation and investment.

E. Justification Determination

1. Benefits Exceed Costs

19. The analysis demonstrates that the benefits of this regulatory action significantly exceed the associated costs. The five year present value of enabling benefits resulting from increased speed and predictability of satellite licensing are estimated to be at least $42 million using a 3% discount rate and at least $37 million using a 7% discount rate. This is in addition to cost savings estimated at $778,000 using a 3% discount rate and $723,000 using a 7% discount rate. By comparison, the compliance costs associated of these new requirements are estimated at $27.1 million using a 3% discount rate and $25.7 million using a 7% discount rate. In addition to the quantifiable benefits, the action is expected to yield substantial qualitative benefits, including increased regulatory certainty, improved processing speed, and greater flexibility for both established operators and new entrants. Our quantification also does not include substantial additional benefits that consumers could anticipate from greater competition and an increased rate of quality improvements associated with faster innovation. The overall effect is to reduce barriers to innovation and investment, support U.S. leadership in the space sector, and promote the public interest.

Table of Benefits and Costs

	Year	Present Value (3% discount)	Present Value (7% discount)
Quantitative Benefits ($ Millions)	2026	$2.1	$2.1
	2027	$4.3	$4.1
	2028	$6.5	$6.1
	2029	$9.8	$8.8
	2030	$19.6	$16.8
	Total	$42.3	$37.8
Qualitative Benefits	Consumer surplus; increased regulatory certainty; improved processing speed; and greater licensing flexibility.		
Quantitative Costs ($ Millions)	2026	$13.2	$13.2
	2027	$1.9	$1.8
	2028	$3.2	$2.9

	2029	$3.9	$3.5
	2030	$4.2	$3.6
	Total	$26.3	$25.0
Net Gains	**Total**	$16.0	$12.8

2. Highest Net-Benefit Alternative

20. Of the alternatives considered, the comprehensive modernization approach (Alternative B) offers the highest net benefit. This approach provides a clear, modular, and performance-based regulatory framework that is responsive to the needs of a rapidly evolving space economy. By replacing the outdated and fragmented part 25 rules with a streamlined, certification-driven process, the Commission's space licensing system will become both more rigorous and efficient. The new framework delivers the greatest reduction in regulatory uncertainty and delay, supports the introduction of new technologies and business models, and aligns the Commission's processes with best practices for modern regulation. In contrast, alternatives that would maintain the status quo or implement only limited reforms would fail to address the root causes of inefficiency and unpredictability and would not deliver the full range of benefits necessary to support continued U.S. leadership in commercial space activities. The chosen approach maximizes net benefits by reducing costs, enhancing flexibility, and promoting innovation and investment in the space sector.

APPENDIX C

Final Regulatory Flexibility Act Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[1] the Federal Communications Commission (Commission) incorporated an Initial Regulatory Flexibility Analysis (IRFA) in the *Notice of Proposed Rulemaking (NPRM)*, released in October 2025.[2] The Commission sought written public comment on the proposals in the *NPRM*, including comment on the IRFA. No comments were filed addressing the IRFA. This Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA and it (or summaries thereof) will be published in the Federal Register.[3]

A. Need for, and Objectives of, the Rules

2. In the *NPRM*, the Commission initiated this rulemaking to update part 25 of the Commission's rules to improve the application process for space and earth station applicants and licensees and to remove certain rules and references that are no longer relevant or no longer provide the intended benefit to the Commission. The Commission continues its efforts to modernize and update the regulatory framework to promote investment, innovation, and competition in the space economy by replacing part 25 with the new part 100 in order to implement the revised application framework designed to review and process applications with increased speed and efficiency, while providing applicants with a higher degree of predictability during the licensing process. The Commission also streamlines the information required from space station and earth station applicants and updates the ways in which applications are processed and granted for authorization.

3. The primary objectives of the *Order* are: (1) to increase license processing speed, (2) to provide more predictability to applicants and licensees, (3) to provide more flexibility for innovation and for licensees' operations, and (4) to faithfully meet our statutory responsibilities and international obligations in order to create a space and earth station licensing process that can promote the wide availability and proliferation of communications and new technologies for the public, and that can efficiently scale with the space economy as it continues to grow. To that end, the cornerstone of the proposed licensing process is whether granting a license will serve the "public convenience, interest, or necessity"[4] based on the assessment of harmful interference, spectrum efficiency, space safety, and foreign ownership, which could undermine the continued growth of the space economy and hinder the public's access to advanced communications services and emerging technologies if not evaluated. The Commission anticipates that the modernization of its space and earth station licensing rules and processes to meet the current needs of the space industry and allow for future expansion and growth of the space economy, as well as facilitate better access and create and expand opportunities for companies to enter and compete in the space industry.

B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA

4. No comments were filed addressing the impact of the proposed rules on small entities.

[1] 5 U.S.C. §§ 601 *et seq*., as amended by the Small Business Regulatory Enforcement and Fairness Act (SBREFA), Pub. L. No. 104-121, 110 Stat. 847 (1996).

[2] *Spectrum Modernization for the 21st Century Notice of Proposed Rulemaking*, SB Docket No. 25-306, Notice of Proposed Rulemaking, 40 FCC Rcd 8191, 8390 at Appendix B (2025).

[3] 5 U.S.C. § 604.

[4] 47 U.S.C. § 307(a).

C. Response to Comments by the Chief Counsel for the Small Business Administration Office of Advocacy

5. Pursuant to the Small Business Jobs Act of 2010, which amended the RFA,[5] the Commission is required to respond to any comments filed by the Chief Counsel for the Small Business Administration (SBA) Office of Advocacy, and also provide a detailed statement of any change made to the proposed rules as a result of those comments.[6] The Chief Counsel did not file any comments in response to the proposed rules in this proceeding.

D. Description and Estimate of the Number of Small Entities to Which the Rules Will Apply

6. The RFA directs agencies to provide a description of, and where feasible, an estimate of the number of small entities that may be affected by the adopted rules.[7] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[8] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[9] A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.[10] The SBA establishes small business size standards that agencies are required to use when promulgating regulations relating to small businesses; agencies may establish alternative size standards for use in such programs, but must consult and obtain approval from SBA before doing so.[11]

7. Our actions, over time, may affect small entities that are not easily categorized at present. We therefore describe three broad groups of small entities that could be directly affected by our actions.[12] In general, a small business is an independent business having fewer than 500 employees.[13] These types of small businesses represent 99.9% of all businesses in the United States, which translates to 34.75 million businesses.[14] Next, "small organizations" are not-for-profit enterprises that are independently owned and operated and are not dominant in their field.[15] While we do not have data regarding the number of non-profits that meet that criteria, over 99 percent of nonprofits have fewer than 500

[5] Small Business Jobs Act of 2010, Pub. L. No. 111-240, 124 Stat. 2504 (2010).

[6] 5 U.S.C. § 604(a)(3).

[7] 5 U.S.C. § 604.

[8] *Id.* at § 601(6).

[9] *Id.* at § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[10] 15 U.S.C. § 632.

[11] 13 CFR § 121.903.

[12] 5 U.S.C. § 601(3)-(6).

[13] *See* SBA, Office of Advocacy, *Frequently Asked Questions About Small Business* (July 23, 2024), https://advocacy.sba.gov/wp-content/uploads/2024/12/Frequently-Asked-Questions-About-Small-Business_2024-508.pdf.

[14] *Id.*

[15] 5 U.S.C. § 601(4).

employees.[16] Finally, "small governmental jurisdictions" are defined as cities, counties, towns, townships, villages, school districts, or special districts with populations of less than fifty thousand.[17] Based on the 2022 U.S. Census of Governments data, we estimate that at least 48,724 out of 90,835 local government jurisdictions have a population of less than 50,000.[18]

8. The rules adopted in the *Order* will apply to small entities in the industries identified in the chart below by their six-digit North American Industry Classification System (NAICS)[19] codes and corresponding SBA size standard.[20] Where available, we also provide additional information regarding the number of potentially affected entities in the identified industries below.

Table 1: 2022 U.S. Census Bureau Data by NAICS Code

Regulated Industry (Footnotes specify potentially affected entities within a regulated industry where applicable)	**NAICS Code**	**SBA Size Standard**	**Total Firms**[21]	**Total Small Firms**[22]	**% Small Firms**
Wired Telecommunications Carriers[23]	517111	1,500 employees	3,403	3,027	88.95%
Wireless	517112	1,500 employees	1,184	1,081	91.30%

[16] *See* SBA, Office of Advocacy, *Small Business Facts, Spotlight on Nonprofits* (July 2019), https://advocacy.sba.gov/2019/07/25/small-business-facts-spotlight-on-nonprofits/.

[17] 5 U.S.C. § 601(5).

[18] *See* U.S. Census Bureau, 2022 Census of Governments –Organization, https://www.census.gov/data/tables/2022/econ/gus/2022-governments.html, tables 1-11.

[19] The North American Industry Classification System (NAICS) is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. *See* www.census.gov/NAICS for further details regarding the NAICS codes identified in this chart.

[20] The size standards in this chart are set forth in 13 CFR 121.201, by six digit NAICS code.

[21] *U.S. Census Bureau*, "*Selected Sectors: Employment Size of Firms for the U.S.: 2022*." Economic Census, ECN Core Statistics Economic Census: Establishment and Firm Size Statistics for the U.S., Table EC2200SIZEEMPFIRM, 2025, "*Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2022*." Economic Census, ECN Core Statistics Economic Census: Establishment and Firm Size Statistics for the U.S., Table EC2200SIZEREVFIRM, 2025.

[22] *Id.*

[23] Affected Entities in this industry include Cable Television Distribution Services, Carrier RespOrgs, Competitive Access Providers, Cable Companies and Systems (Rate Regulation), Cable System Operators (Telecom Act Standard), Competitive Local Exchange Carriers (CLECs), Competitive Local Service Providers, Direct Broadcast Satellite (DBS), Facilities-Based Carriers (International Telecom Carriers), Home Satellite Dish (HSD) Service, Incumbent Local Exchange Carriers (Incumbent LECs), Interexchange Carriers (IXCs), Local Exchange Carriers (LECs), Open Video Systems, Operator Service Providers (OSPs), Operators of Common Carrier Non-Common Carrier Undersea Cable Systems, Other Toll Carriers, Providers of International Telecommunications Transmission Facilities, Satellite Master Antenna Television (SMATV) Systems aka Private Cable Operators (PCOs), and Wired Broadband Internet Access Service Providers.

Regulated Industry (Footnotes specify potentially affected entities within a regulated industry where applicable)	NAICS Code	SBA Size Standard	Total Firms[21]	Total Small Firms[22]	% Small Firms
Telecommunications Carriers (except Satellite)[24]					
Satellite Telecommunications[25]	517410	$44 million	332	195	58.73%
All Other Telecommunications[26]	517810	$40 million	1,673	1,007	60.19%

E. Description of Economic Impact and Projected Reporting, Recordkeeping and Other Compliance Requirements for Small Entities

9. The RFA directs agencies to describe the economic impact of adopted rules on small entities, as well as projected reporting, recordkeeping and other compliance requirements, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for preparation of the report or record.[27]

10. The *Order* adopts several rule changes that will affect the application and licensing process and requirements for space and earth station operators, some of which are small entities. These changes are discussed in greater detail below. In addition, the adopted rules in the *Order* add an additional milestone deployment requirement, thereby increasing the number of milestone requirements for non-geostationary orbit (NGSO) systems from two to three, with each requiring notice to the Commission upon meeting the respective milestone.

[24] Affected Entities in this industry include 1.4 GHz Band Licensees, 1670–1675 MHz Services, 2.3 GHz Wireless Communications Services, 218-219 MHz Service, 220 MHz Radio Service – Phase I and Phase II, 3650-3700 MHz Band, 39 GHz Service, 600 MHz Band, 700 MHz Guard Band Licensees, Advanced Wireless Services - AWS Services, Aeronautical en route Services, Aeronautical Fixed Radio Services, Air-Ground Radiotelephone Services, Aviation and Marine Radio Services, Broadband Personal Communications Service, Broadband Radio Service and Educational Broadband Service, Carrier RespOrgs, Cellular Radiotelephone Service, Experimental Radio Service (Other Than Broadcast), Fixed Microwave Services, Future 24 GHz Licensees, Government Transfer Bands, Incumbent 24 GHz Licensees, Local Multipoint Distribution Service (LMDS), Location and Monitoring Service (LMS), Low Power Auxiliary Station (LPAS) Licensees, Lower 700 MHz Band Licenses, Marine Radio Services, Multichannel Video Distribution and Data Service (MVDDS), Multiple Address Systems, Narrowband Personal Communications Services, Offshore Radiotelephone Service, Paging Services, Personal Radio Services, Private Land Mobile Radio - 900 MHz Band, Private Land Mobile Radio Licensees (PLMR), Public Safety Radio Licensees, Rural Radiotelephone Service, Specialized Mobile Radio Licenses, Upper 700 MHz Band Licenses, Wireless Broadband Internet Access Service Providers, Wireless Carriers and Service Providers, Wireless Communications Services, Wireless Telephony.

[25] Affected Entities in this industry include Fixed Satellite Small Transmit/Receive Earth Stations, Fixed Satellite Very Small Aperture Terminal (VSAT) Systems, Mobile Satellite Earth Stations.

[26] Affected Entities in this industry include Earth Stations (except Satellite Telecommunications Carriers), Internet Service Providers (Non-Broadband), Non-Carrier RespOrgs, Non Licensee Owners of Towers and Other Infrastructure, Online Access Service Providers, Radar Station Operations, Satellite Telemetry Operations, Satellite Tracking Stations, Telecommunications Relay Service (TRS) Providers, Telemetry and Tracking System Operations and VoIP Service Providers (via Client-Supplied Telecommunications Connections).

[27] 5 U.S.C. § 604(a)(5).

11. *Licensing Assembly Line*. The Commission adopts an assembly line approach to modernizing the licensing process, which would adopt a modular application to replace the submission of one large, narrative-heavy application with a process that allows applicants to complete specific sections (or modules) that are tailored to their system type and licensing needs. Applicants can file the main application form FCC Form 312 – Main Form once and its schedules (Schedules O and F) based on the type of system license for which they are applying. The key information sections for space station applications include the General and Ownership Information on FCC Form 312 – Main Form, Orbital Elements on Schedule O, and Frequency Elements on Schedule F. Earth station applicants will file both a Form 312 and a Schedule B. In addition, for Supplemental Coverage from Space (SCS) and market access requests additional information will be required. The Commission will apply this modular application approach to any type of application, including initial space and earth station applications, requests for market access, amendments, modifications, requests for special temporary authority (STA), and any other applications. In future filings, an applicant may reference their FCC Form 312 – Main Form and certify that the information in that form remains accurate.

12. The *Order* replaces certain written explanation filings with certification requirements, which will reduce the burdens of administrative preparation and filings. For example, the *Order* aligns the certification requirements in this proceeding with a May 2025 rulemaking proposing foreign adversary ownership certification and information collection requirements for all entities holding Commission licenses or authorizations.[28] Applicants will still need to include ownership charts and plans for managing orbital debris. The *Order* also requires that all applications must be filed electronically. This new approach is expected to reduce administrative work requirements and delays, making the licensing process more predictable and easier for companies to plan around. It is also designed to be scalable to grow with the industry, which will benefit small entities. Cost savings for small entities will result from removing repetitive paperwork, simplifying forms, reducing the need for STA and waiver requests, and allow for future automation. Further, because the proposed process is less cumbersome and more straightforward, it is likely that small applicants will not need to hire lawyers or engineers for routine filings, although more complex cases may still require professional assistance.

13. *Additional Reforms for Licensing Efficiency*. The reporting and recordkeeping requirements clarify when applications may be dismissed as incomplete or non-compliant, which will allow small and other applicants to sufficiently prepare their application to avoid unnecessary delays. The process for amending or modifying applications has been streamlined to allow a licensee to make changes to their systems and operations without notifying or seeking approval from the Commission depending on the type of modification. The reporting/notification requirements for modifications fall into three groups: (1) those that an applicant can make without informing the Commission; (2) minor modifications, or those that an applicant can make but will need to notify the Commission either before or after the modification; and (3) major modifications, or any modification that meets certain parameters but is also not covered by the first two categories, and that requires Commission authorization. By expanding the scope of permissible modifications, the need for STA requests will be reduced. These changes are expected to lower regulatory uncertainty for small and other entities, and speed up decision-making which in turn should spur investment. Small entities should incur cost savings from the elimination of unnecessary filings and should face lower compliance costs and fewer administrative burdens. Consistent with the impacts of the processes discussed in the preceding paragraph, the removal of requirements, and clarification and simplification of processes for additional efficiency should reduce the need for small entities to hire legal or technical consultants for the filing of standard applications.

14. *Operational and Technical Requirements*. The operational and technical requirements in the *Order* introduce several new reporting and recordkeeping obligations aimed at improving space safety

[28] *In the Matter of Protecting our Communications Networks by Promoting Transparency Regarding Foreign Adversary Control*, NPRM of Proposed Rulemaking, GN Docket No. 25-28, FCC 25-28 (rel. May 27, 2025) (*Foreign Adversary NPRM*).

and regulatory efficiency. The *Order* eliminates the annual reporting requirement for space station licensees and market access recipients. The *Order* also modernizes data sharing by requiring the submission of orbital ephemerides data into Space Situational Awareness (SSA) systems. More specifically, it requires space station licensees and market access recipients to submit ephemeris data for all space stations in an authorized satellite system to either the 18th Space Control Squadron, or to one or more U.S. SSA systems as selected by the Commission.

15. To address space system safety and ensure that licensees are monitoring the safety and efficacy of licensed and operating systems, the *Order* creates a reporting requirement that requires licensed operators of NGSO systems to report on the safety of their operating systems on a semi-annual basis. The semi-annual reports will cover a preceding six-month period on space system safety, the number of conjunction events, the number of satellites removed from operation or screened from further deployment, and the number of satellites that re-entered the atmosphere. The rules in the *Order* also update requirements for orbital debris mitigation and end-of-life reporting. These measures will promote safer and more efficient operations while reducing long-term costs by helping to prevent collisions and avoid regulatory delays. Small entities are likely to experience additional cost savings from streamlined antenna and radiation hazard rules, as well as the elimination of outdated technical standards and redundant reporting.

16. Next, we turn to our discussion of the compliance costs for the reporting, recordkeeping and other provisions of the *Order*. The Commission estimates the total cost for an operator to implement the earth and space station licensing process modernization rules will be $90,000.[29] This estimate is primarily driven by the cost of preparing semi-annual space system safety reports, which require information on the number of conjunction events identified for satellites in the NGSO system during the reporting period, the number of satellites removed from operation or screened from further deployment, and the number of satellites that re-entered the atmosphere. However, overall, we expect that the *Order* will significantly reduce regulatory compliance costs, resulting in annual cost savings of at least $165,000[30] each for small and other operators. We attribute these potential savings to limits on the cases in which operators are required to submit modification filings and STA requests, elimination of the need for applicants to request certain waivers and provide associated showings, elimination of the need for operators to meet certain milestone requirements, elimination of the need for applicants to resubmit an FCC Form 312 – Main Form in certain circumstances, ability for applicants to submit an ITU filing without the need for prior filings with the Commission, and the elimination of the bond requirement for certain space station operators. Small entities may need to hire professionals to comply with the *Order*. For earth station licensees, which are more likely to be small entities, the per licensee cost is a one-time cost of $3,817 (the familiarization cost of 10 hours of engineering work at $100.26 per hour plus 20 hours of legal work at $140.73 per hour). However, the degree to which the services of such professionals are required should be reduced in light of the aforementioned elimination of filings, showings and other regulatory requirements. These cost savings are in addition to other benefits that are more difficult to quantify, but nevertheless important, such as reduced harmful interference, increased spectrum efficiency, and space safety.

[29] $90,000 = 10 hours × 48 NGSO licensees × 2 reports × $93.44/hour = $89,702, rounded to $90,000.

[30] According to the Bureau of Labor Statistics, as of April 2025, the median wage for lawyers was $72.67/hour. Bureau of Labor Statistics, Occupational Outlook Handbook, April 2025 (Jul. 9, 2025), https://www.bls.gov/ooh/legal/lawyers.htm. According to the Bureau of Labor Statistics, as of April 2025, the median wage for aerospace engineers was $ 64.82/hour. Bureau of Labor Statistics, Occupational Outlook Handbook, April 2025 (Jul. 9, 2025), https://www.bls.gov/ooh/architecture-and-engineering/aerospace-engineers.htm. On average, U.S. benefits constitute a markup of $15.00/$32.92 = 46% (*Benefits Markup*). We therefore mark up wages by 46% to account for benefits (Lawyers: $72.67 × 1.46 = $106.10; aerospace engineers: $64.82 × 1.46 = $94.64). Press Release, Bureau of Labor Statistics, Employer Costs for Employee Compensation – March 2025 at 1 (Jul. 9, 2025), https://www.bls.gov/news.release/pdf/ecec.pdf.

F. Discussion of Steps Taken to Minimize the Significant Economic Impact on Small Entities, and Significant Alternatives Considered

17. The RFA requires an agency to provide "a description of the steps the agency has taken to minimize the significant economic impact on small entities…including a statement of the factual, policy, and legal reasons for selecting the alternative adopted in the final rule and why each one of the other significant alternatives to the rule considered by the agency which affect the impact on small entities was rejected."[31]

18. The *Order* reorganizes the current part 25 rules and both modifies and simplifies the existing requirements to provide an updated framework for space and earth station applicants under a new proposed part 100 of the Commission's rules. All of these changes will lessen the burdens of the licensing process and operational requirements for space and earth station operators. Specifically, the *Order* replaces several of the current information requirements that are included on space and earth station applications with certifications and are intended to significantly cut down on the time required to prepare and complete applications and the related costs to applicants. Additionally, the *Order* permits certain qualified applications to receive a conditional grant of authority prior to submission of the required orbital debris plan materials. The *Order* also increases the number of permissible space station operations that do not require an application for modification or notification of the operation. These changes are designed to simplify the overall application process and help to clarify the specific required information as part of the licensing stage for space and earth station operator entities. The revisions will ultimately lead to benefits for space and earth station operators in the long term. The O*rder* also eliminates unnecessary technical and information filing requirements along with outdated or unused rule provisions.

19. Certain commenters, including small businesses, objected to the proposal to eliminate the category of small satellite/small spacecraft licensing currently contained in our rules. However, the changes made in the *Order* benefit all businesses, including small businesses which would not have previously qualified for the small satellite/small spacecraft licensing regime. Thus, elimination of this regime provides benefits to a larger class of small business. In addition, some small businesses objected to our proposal to shorten public notice periods. In the *NPRM*, we proposed to shorten our public notice periods from 30 days to two different public notice periods of seven and 15 days. In response to comments, we establish a single public notice period of 15 days, the longer of our proposed periods. While some commenters contend that the shortened public notice period would disadvantage small businesses who may not have resources to review applications during this time period, we allow for a longer period at the FCC's discretion or in response to a request from an applicant, petitioner, or commenter, extend the public notice time period. In addition, many of the reforms in the *Order*, including standardized application formats, the reuse of Form 312, and the modularity of Schedule F and Schedule O, should allow companies of all sizes to review applications more quickly. Finally, we will continue to update ICFS to allow for more automation to make it easier for interested parties to monitor applications.

20. In reaching its conclusions regarding minimizing significant economic impact on small entities, the Commission specifically considered alternative proposals. For example, we declined to adopt a proposal to impose two sets of milestones on systems authorized in a processing round because doing so would impose duplicative requirements on operators bound by earlier-in-time deployment benchmarks. We also declined to remove the milestone requirement for geostationary orbit (GSO) system operators at this time, as our review of the record indicated strong opposition to the elimination of the GSO milestone, with some commenters arguing that eliminating the milestone would hinder competition and services by allowing operators to tie up orbital slots, as well as undermine the Commission's goal of facilitating rapid

[31] 5 U.S.C. § 604(a)(6).

deployment.[32]

G. Report to Congress

21. The Commission will send a copy of the Order, including this Final Regulatory Flexibility Analysis, in a report to Congress pursuant to the Congressional Review Act. In addition, the Commission will send a copy of the Order, including this Final Regulatory Flexibility Analysis, to the Chief Counsel for the SBA Office of Advocacy and will publish a copy of the Order and this Final Regulatory Flexibility Analysis (or summaries thereof) in the Federal Register.

[32] Astranis Comments at 10; Viasat Comments at 15 (arguing that eliminating the milestone would lead to an increase in speculative applications and anticompetitive gamesmanship by some operators seeking to prevent competitors from using orbital resources).

APPENDIX D

Initial Regulatory Flexibility Act Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),[1] the Federal Communications Commission (Commission) has prepared this Initial Regulatory Flexibility Analysis (IRFA) of the policies and rules proposed in the *Further Notice of Proposed Rulemaking* (*FNPRM*) assessing the possible significant economic impact on a substantial number of small entities. The Commission requests written public comments on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments specified on the first page of the *FNPRM*. The Commission will send a copy of the *FNPRM*, including this IRFA, to the Chief Counsel for the Small Business Administration (SBA) Office of Advocacy.[2] In addition, the *FNPRM* and IRFA (or summaries thereof) will be published in the Federal Register.[3]

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

2. In the *Order* adopted today, the Commission took steps to modernize our part 100 rules to establish a regulatory framework that provides a more efficient, predictable and flexible environment for the commercial space industry by creating a space "licensing assembly line."[4] In the *FNPRM*, the Commission seeks to identify additional areas in which we can further modernize our rules for small and other entities operating in this sector. Specifically, we initiate a further rulemaking proceeding seeking comment on its proposals to refine the operational rules in part 100, Subpart C to build "operational envelopes" within which licensees will have greater flexibility.[5] Rather than requiring applicants to specify exact technical or operational parameters in their applications, which may require multiple modifications or amendments as operations change, operational envelopes would allow applicants to request broader authority and change operations within that envelope without further permission from the Commission. This approach could have considerable benefits by allowing applicants more flexibility in designing and operating their systems without the need for additional authorization from the Commission. Therefore, in addition to other topics discussed below, we seek comment in the *FNPRM* on how we might create such operational envelopes. While we primarily seek specific comment on certain specific questions and proposals, we also seek general comment on revising our operational rules to promote flexibility and "operational envelopes."

B. Legal Basis

3. The proposed action is authorized pursuant to sections 4(i), 7(a), 301, 303, 307, 308, 309, 310, and 332 of the Communications Act of 1934, as amended, U.S.C. §§ 154(i), 157(a), 301, 303, 307, 308, 309, 310, 332.

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

4. The RFA directs agencies to provide a description of and, where feasible, an estimate of the number of small entities that may be affected by the proposed rules, if adopted.[6] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small

[1] 5 U.S.C. §§ 601 *et seq*., as amended by the Small Business Regulatory Enforcement and Fairness Act (SBREFA), Pub. L. No. 104-121, 110 Stat. 847 (1996).

[2] *Id.* § 603(a).

[3] *Id.*

[4] *See* section III.B.

[5] *See* section IV.

[6] 5 U.S.C. § 603(b)(3).

organization," and "small governmental jurisdiction."[7] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.[8] A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.[9] The SBA establishes small business size standards that agencies are required to use when promulgating regulations relating to small businesses; agencies may establish alternative size standards for use in such programs, but must consult and obtain approval from SBA before doing so.[10]

5. Our actions, over time, may affect small entities that are not easily categorized at present. We therefore describe three broad groups of small entities that could be directly affected by our actions.[11] In general, a small business is an independent business having fewer than 500 employees.[12] These types of small businesses represent 99.9% of all businesses in the United States, which translates to 34.75 million businesses.[13] Next, "small organizations" are not-for-profit enterprises that are independently owned and operated and not dominant in their field.[14] While we do not have data regarding the number of non-profits that meet that criteria, over 99 percent of nonprofits have fewer than 500 employees.[15] Finally, "small governmental jurisdictions" are defined as cities, counties, towns, townships, villages, school districts, or special districts with populations of less than fifty thousand.[16] Based on the 2022 U.S. Census of Governments data, we estimate that at least 48,724 out of 90,835 local government jurisdictions have a population of less than 50,000.[17]

6. The rules proposed in the *FNPRM* will apply to small entities in the industries identified in the charts below by their six-digit North American Industry Classification System (NAICS)[18] codes and corresponding SBA size standard.[19] Where available, we also provide additional information

[7] *Id.* § 601(6).

[8] *Id.* § 601(3) (incorporating by reference the definition of "small-business concern" in the Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

[9] 15 U.S.C. § 632.

[10] 13 CFR 121.903.

[11] 5 U.S.C. § 601(3)-(6).

[12] *See* SBA, Office of Advocacy, *Frequently Asked Questions About Small Business* (July 23, 2024), https://advocacy.sba.gov/wp-content/uploads/2024/12/Frequently-Asked-Questions-About-Small-Business_2024-508.pdf.

[13] *Id.*

[14] 5 U.S.C. § 601(4).

[15] *See* SBA, Office of Advocacy, *Small Business Facts, Spotlight on Nonprofits* (July 2019), https://advocacy.sba.gov/2019/07/25/small-business-facts-spotlight-on-nonprofits/.

[16] 5 U.S.C. § 601(5).

[17] *See* U.S. Census Bureau, 2022 Census of Governments –Organization, https://www.census.gov/data/tables/2022/econ/gus/2022-governments.html, tables 1-11.

[18] The North American Industry Classification System (NAICS) is the standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the U.S. business economy. *See* www.census.gov/NAICS for further details regarding the NAICS codes identified in this chart.

[19] The size standards in this chart are set forth in 13 CFR 121.201, by six digit North American Industrial Classification System (NAICS) code.

regarding the number of potentially affected entities in the industries identified below.

Table 1. 2022 U.S. Census Bureau Data by NAICS Code

Regulated Industry (Footnotes specify potentially affected entities within a regulated industry where applicable)	NAICS Code	SBA Size Standard	Total Firms[20]	Total Small Firms[21]	% Small Firms
Wired Telecommunications Carriers[22]	517111	1,500 employees	3,403	3,027	88.95%
Wireless Telecommunications Carriers (except Satellite)[23]	517112	1,500 employees	1,184	1,081	91.30%
Satellite Telecommunications[24]	517410	$44 million	332	195	58.73%
All Other Telecommunications[25]	517810	$40 million	1,673	1,007	60.19%

[20] *U.S. Census Bureau*, "*Selected Sectors: Employment Size of Firms for the U.S.: 2022*." Economic Census, ECN Core Statistics Economic Census: Establishment and Firm Size Statistics for the U.S., Table EC2200SIZEEMPFIRM, 2025, "*Selected Sectors: Sales, Value of Shipments, or Revenue Size of Firms for the U.S.: 2022*." Economic Census, ECN Core Statistics Economic Census: Establishment and Firm Size Statistics for the U.S., Table EC2200SIZEREVFIRM, 2025.

[21] *Id.*

[22] Affected Entities in this industry include Cable Television Distribution Services, Carrier RespOrgs, Competitive Access Providers, Cable Companies and Systems (Rate Regulation), Cable System Operators (Telecom Act Standard), Competitive Local Exchange Carriers (CLECs), Competitive Local Service Providers, Direct Broadcast Satellite (DBS), Facilities-Based Carriers (International Telecom Carriers), Home Satellite Dish (HSD) Service, Incumbent Local Exchange Carriers (Incumbent LECs), Interexchange Carriers (IXCs), Local Exchange Carriers (LECs), Open Video Systems, Operator Service Providers (OSPs), Operators of Common Carrier Non-Common Carrier Undersea Cable Systems, Other Toll Carriers, Providers of International Telecommunications Transmission Facilities, Satellite Master Antenna Television (SMATV) Systems aka Private Cable Operators (PCOs), and Wired Broadband Internet Access Service Providers.

[23] Affected Entities in this industry include 1.4 GHz Band Licensees, 1670–1675 MHz Services, 2.3 GHz Wireless Communications Services, 218-219 MHz Service, 220 MHz Radio Service – Phase I and Phase II, 3650-3700 MHz Band, 39 GHz Service, 600 MHz Band, 700 MHz Guard Band Licensees, Advanced Wireless Services - AWS Services, Aeronautical en route Services, Aeronautical Fixed Radio Services, Air-Ground Radiotelephone Services, Aviation and Marine Radio Services, Broadband Personal Communications Service, Broadband Radio Service and Educational Broadband Service, Carrier RespOrgs, Cellular Radiotelephone Service, Experimental Radio Service (Other Than Broadcast), Fixed Microwave Services, Future 24 GHz Licensees, Government Transfer Bands, Incumbent 24 GHz Licensees, Local Multipoint Distribution Service (LMDS), Location and Monitoring Service (LMS), Low Power Auxiliary Station (LPAS) Licensees, Lower 700 MHz Band Licenses, Marine Radio Services, Multichannel Video Distribution and Data Service (MVDDS), Multiple Address Systems, Narrowband Personal Communications Services, Offshore Radiotelephone Service, Paging Services, Personal Radio Services, Private Land Mobile Radio - 900 MHz Band, Private Land Mobile Radio Licensees (PLMR), Public Safety Radio Licensees, Rural Radiotelephone Service, Specialized Mobile Radio Licenses, Upper 700 MHz Band Licenses, Wireless Broadband Internet Access Service Providers, Wireless Carriers and Service Providers, Wireless Communications Services, Wireless Telephony.

[24] Affected Entities in this industry include Fixed Satellite Small Transmit/Receive Earth Stations, Fixed Satellite Very Small Aperture Terminal (VSAT) Systems, Mobile Satellite Earth Stations.

[25] Affected Entities in this industry include Earth Stations (except Satellite Telecommunications Carriers), Internet Service Providers (Non-Broadband), Non-Carrier RespOrgs, Non Licensee Owners of Towers and Other Infrastructure, Online Access Service Providers, Radar Station Operations, Satellite Telemetry Operations, Satellite

(continued….)

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

7. The RFA directs agencies to describe the economic impact of proposed rules on small entities, as well as projected reporting, recordkeeping and other compliance requirements, including an estimate of the classes of small entities which will be subject to the requirements and the type of professional skills necessary for preparation of the report or record.[26]

8. The *FNPRM* proposes a strategy to create operational envelopes that would allow applicants to request broader authority and change operations within that envelope without further permission from the Commission. This new approach is expected to reduce administrative work requirements and delays, making the licensing process more flexible and easier for companies to plan around, which will benefit small entities. Cost savings for small entities will result from removing repetitive paperwork, simplifying forms, reducing the need for special temporary authority (STA) and waiver requests, and also allow for future automation. Further, because the proposed process is less cumbersome and more straightforward, it is likely that small entity applicants will not need to hire lawyers or engineers for routine filings, although more complex cases may still require professional assistance.

9. *Part 100 Commercial Experimental*. In the *FNPRM*, the Commission also proposes to create a new type of space and earth station license under part 100 for developing or experimental technologies. This part 100 experimental or developmental license would provide companies with a clear and predictable pathway to a short-term license for the purpose of testing new technology or providing proof of concept before moving to commercial operations. We believe that this would increase the Commission's administrative efficiency by bringing all space and earth station licensing under the purview of the Space Bureau instead of sometimes requiring applicants to interface with both the Office of Engineering and Technology (OET) for part 5 applications and the Space Bureau for part 25 applications. This organizational simplification should lead to efficiency benefits for small entities.

10. The Commission also proposes to limit the license term for a part 100 experimental license to two years. We believe this provides licensees with sufficient time to test and validate their technology while remaining short enough to require less intensive review. We also propose to allow up to one renewal for a length of up to two years. Additionally, we propose to require operations under a part 100 experimental license to be conducted on an unprotected and non-interference basis, and not to place applications for a part 100 experimental license on public notice. Further, we propose to require applicants for a part 100 experimental license to certify that operations under the license will not be for commercial purposes but only be for the purpose of testing, experimentation, demonstration, or validation. Lastly, we propose to create a process by which a part 100 experimental license may be converted to a regular part 100 license upon request by the licensee and action by the Commission.

11. *NGSO Call Sign Merging*. In the *FNPRM*, the Commission proposes to allow Non-Geostationary Satellite Orbit (NGSO) satellite system operators to combine authorized satellites currently operating under multiple call signs into one NGSO satellite system under one call sign. We believe that this could help applicants simplify the number of licenses that must be maintained and also provide greater flexibility and modularization, all of which would create efficiencies that would benefit small entities.

12. *Earth Stations*. We seek comment on ways in which we can update and revise the licensing process for earth stations, specifically on establishing a specific definition for "site" as it relates

(Continued from previous page)
Tracking Stations, Telecommunications Relay Service (TRS) Providers, Telemetry and Tracking System Operations and VoIP Service Providers (via Client-Supplied Telecommunications Connections).

[26] 5 U.S.C. § 603(b)(4).

to earth stations and establishing a definition in our rules for User Terminals that matches what we stated in the Order. We also seek comment on how we should revise the Earth Station in Motion (ESIM) definitions, technical rules, and limitations to better account for today's reality and whether there are ways in which we can condense and streamline the number of different types of earth stations that exist in our rules. We seek comment on whether we should align our rules for earth stations with the part 2 rules, whether we should retain our rules relating to receive-only earth stations, and whether we should allow applicants who require a waiver to apply for a Nationwide, Non-Site license.

13. *Modifications*. The Commission seeks comment on whether we should allow space station licensees to change or add radiofrequency (RF) sensing capabilities through a minor modification notification process instead of requiring a major modification application.

14. *Hosted Space Stations*. We seek comment on whether to extend the framework adopted in the Order for U.S.-licensed hosted space stations onboard U.S.-licensed host spacecraft to non-U.S.-licensed hosted and host space stations.

15. *Ephemeris Data Sharing and Reporting*. In the Order, we take a meaningful step towards enhancing space safety by requiring licensees and market access grantees to share their ephemeris data. We seek comment now on potential future requirements for ephemeris sharing to enhance space safety. We also seek comment on creating a process whereby the Space Bureau could certify qualified, private ephemeris tracking systems as sufficient for the purpose of complying with our rules on ephemeris sharing.

16. *Inter-satellite Service Links (ISLs) between U.S.-Licensed and non-U.S.-Licensed satellites*. Currently, the Commission does not have rules for the licensing of communications via inter-satellite service links between U.S.-licensed and non-U.S.-licensed space stations or spacecraft. We recognize that these types of operations could pose security risks. We therefore seek comment on the types of issues that the Commission should be concerned with and how to address them. We also seek comment on the most appropriate mechanism for licensing these inter-satellite links.

17. *Frequency Reuse*. Section 100.211(d) of the Commission rules requires all space stations in the Fixed-Satellite Service (FSS) operating in any portion of the 3600-4200 MHz, 5091-5250 MHz, 5850-7025 MHz, 10.7-12.7 GHz, 12.75-13.25 GHz, 13.75-14.5 GHz, 15.43-15.63 GHz, 17.3-17.8 GHz, 18.3-20.2 GHz, 24.75-25.25 GHz, or 27.5-30.0 GHz bands, including feeder links for other space services, and in the Broadcasting-Satellite Service (BSS) in the 17.3-17.8 GHz band (space-to-Earth), shall employ state-of-the-art full frequency reuse, either through the use of orthogonal polarizations within the same beam and/or the use of spatially independent beams. Given the growth in the use of spectrum by the FSS and BSS, we seek comment on requiring full frequency reuse for all FSS and BSS operations in bands allocated to FSS and BSS as a general rule instead of just the bands listed above.

18. *Orbital Debris Mitigation*. We seek comments on requiring spacecraft monitoring and collision avoidance capabilities for each spacecraft in Low Earth Orbit (LEO) throughout its orbital lifetime, including end-of-mission, until re-entry. Beyond LEO, Section 100.111(c)(2) requires NGSO satellites to be 10 cm or larger in the smallest dimension in order to be trackable. In light of the number of spacecraft going beyond LEO orbit and to maintain a safe operating environment, we seek comment on requiring spacecraft going, or intending to go, beyond LEO orbit to be 1 meter or larger in the smallest dimension.

19. *Two-Degree GSO Spacing Requirements*. We seek comment on whether any updates to the current FSS Earth Station Performance Standards are necessary, including whether the current rule covers all current and possible future antenna types, frequency bands, and any other pertinent addition or clarification to bring the rule up to date. We also seek comments on whether updates are needed to the current FSS Transmitting Earth Station Off-Axis Effective Isotropic Radiated Power (EIRP) rule to accommodate current and future sharing of the Geosynchronous Orbit (GSO) arc, whether additional bands need to be included, and any other pertinent addition or clarification necessary to the rule.

20. *Secondary Markets*. In the Order, we adopt a framework for processing rounds. This

framework will result in clearly defined status across systems, and it appears that processing round status can have a quantifiable impact on operations. Therefore, we seek comment on the possibility of licensees or market access holders exchanging processing round status, via secondary markets.

21. *Renewal and Replacement Expectancies and Reassignment.* In the Order, we establish a definition for replacement satellites. In the *FNPRM*, we seek comment on establishing renewal and replacement expectancies and explore the differences between NGSO and GSO satellites that affect renewal and replacement expectancies. We seek additional comment on whether it is possible to establish a unified rule for renewals of space and earth station licenses. There is currently regulatory uncertainty that arises when a GSO space station licensee disposes or relocates an in-orbit satellite and does not immediately surrender the license or place another satellite into the vacated orbital location that uses all the spectrum resources that were licensed for use by the satellite that was disposed or relocated. We propose a rule that would automatically make the orbital and spectrum resources available for reassignment unless the licensee has already put into place a new replacement satellite at the location, or within a year of the date of the disposal or relocation has relocated another in-orbit satellite to utilize all frequencies that we authorized for use by the disposed or relocated satellite at the orbital location. If neither condition is met, we propose that the Space Bureau will release a public NPRM making the orbital location and any unused frequencies available for reassignment and establishing a date and time that new applications will be accepted.

22. *Miscellaneous*. In addition to the specific proposals in the *FNPRM*, we also seek comment on a number of open questions concerning a variety of topics for which the *FNPRM* contains no specific proposals, including revising the licensing process for earth stations and whether, and how, the Commission should adopt more structured renewal and replacement expectancy frameworks for satellite and earth station authorizations. Small entities are encouraged to bring to the Commission's attention any proposals they may have on the topics on which comments are solicited in the *FNPRM*.

23. *U.S.-Based Control Point*. We seek comment on whether we should require that all satellites, spacecraft, or space stations licensed by the Commission have a U.S.-based control point. We tentatively conclude that we should and seek comment on this tentative conclusion.

24. *Transfers of Control and Assignments*. As we continue to create efficiencies in our approval processes we recognize that any market-based approach must establish clear rules regarding transfers of control and assignments of licenses. Therefore, we seek comment on ways to make this process more efficient while still ensuring proper oversight of licensees.

E. Discussion of Significant Alternatives Considered That Minimize the Significant Economic Impact on Small Entities

25. The RFA directs agencies to provide a description of any significant alternatives to the proposed rules that would accomplish the stated objectives of applicable statutes, and minimize any significant economic impact on small entities.[27] The discussion is required to include alternatives such as: "(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities; (3) the use of performance rather than design standards; and (4) an exemption from coverage of the rule, or any part thereof, for such small entities."[28]

26. If adopted, the new framework proposed in the *FNPRM* could lessen the economic and administrative burdens of the licensing process and the operational requirements for space and earth station operators. Specifically, the *FNPRM* proposes to create "operational envelopes" that would allow

[27] 5 U.S.C. § 603(c).

[28] *Id.* § 603(c)(1)-(4).

applicants to request broader authority and change operations within that envelope without further permission from the Commission. This proposal is intended to significantly reduce repetitive paperwork, decrease the need for STA and waiver requests, and allow for future automation. In addition, this proposal is designed to continue the Commission's efforts to simplify the overall application process for small and other space and earth station operator entities. The *FNPRM* seeks comment on each proposed rule, as well as on the operational envelope framework in general, as to whether the Commission's proposed revisions would provide the intended increased speed, predictability, and clarity for applicants. The proposed revisions, if adopted, would ultimately provide benefits for space and earth station operators, of all sizes, in the long term.

27. Small entities also stand to realize economic benefits from efficiencies arising from other licensing simplification and liberalization proposals in the *FNPRM*. These include allowing NGSO call sign merging, allowing space station licensees to change or add RF sensing capabilities through a minor modification notification process, extending the framework for U.S.-licensed hosted space stations to non-U.S.-licensed space stations, creating a process for certification of ephemeris tracking systems, creating a framework for licensing communications via inter-satellite service links between U.S.-licensed and non-U.S.-licensed space stations, permitting licensees or market access holders to exchange processing round status via secondary markets, reforming the process for transfers of control and assignments of licenses, allowing for use of the Nationwide, Non-Site license process if certain waivers are present, and proposing revisions to streamline many earth station definitions. In addition, our proposed rule on GSO orbital slot reassignment may benefit small, newer businesses that will be able to apply for and use orbital resources that another operator has abandoned.

28. The *FNPRM* also contains several proposals to modernize the regulatory environment in ways that stand to benefit the entire space industry, including small entities, by ensuring safety and stability of all operations licensed by the Commission. These include proposals to require full frequency reuse for all FSS and BSS operations in bands allocated to FSS and BSS, to mitigate orbital debris, to update two-degree GSO spacing requirements, and to require that all satellites, spacecraft, or space stations licensed by the Commission have a U.S.-based control point.

29. In determining its proposals in the *FNPRM*, the Commission considered alternative proposals that could minimize significant economic impact on small entities. For example, our proposed rules tentatively conclude that satellites, spacecraft, or space stations licensed by the Commission have a US based control point. Alternatively, we considered potential burdens of this proposal's requirements on operators and whether those burdens could be relieved by third-party control points that have agreements with operators. In addition, as discussed above, we propose the creation of a framework for licensing communications via inter-satellite service links between U.S.-licensed and non-U.S.-licensed space stations. We considered alternative proposals such as requiring a modification application that outlines the ownership and operations of the non-U.S.-licensed system or whether the U.S.-licensed system should simply file a notification prior to beginning operations that identifies the foreign satellite system. Small entities are encouraged to bring to the Commission's attention any specific concerns that they may have with the proposals outlined in the *FNPRM*.

30. In addition, small entities are encouraged to bring to the Commission's attention any alternative proposals they may have on the topics for which the *FNPRM* contains no specific proposals so that the Commission may benefit from their insight into the impact on to small entities as this proceeding progresses. These include such areas as revising the licensing process for earth stations and whether, and how, the Commission should adopt more structured renewal and replacement expectancy frameworks for satellite and earth station authorizations. The Commission expects to consider more fully the economic impact on small entities following its review of comments filed in response to the *FNPRM*, including costs and benefits information. Alternative proposals and approaches from commenters could also help the Commission further minimize the economic impact on small entities.

31. The Commission's evaluation of the comments filed in this proceeding will shape the final conclusions it reaches, the final alternatives it considers, and the actions it ultimately takes in this

proceeding to minimize any significant economic impact that may occur on small entities from the final rules that are ultimately adopted..

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

32. None.

APPENDIX E

List of Ex Parte Filings