

EPA-APPROVED NEW JERSEY NONREGULATORY AND QUASI-REGULATORY PROVISIONS

SIP element	Applicable geographic or nonattainment area	New Jersey submittal date	EPA approval date	Explanation
NJ Infrastructure SIP for the 2015 ozone NAAQS.	Statewide	05/13/2019	8/9/2024, [insert Federal Register citation].	<ul style="list-style-type: none"> • Full approval. • This action addresses the following CAA elements: 110(a)(2)(A), (B), (C) (enforcement program only), (D)(i)(II) prong 4 (visibility), (E), (F), (G), (H), (J) (consultation and public notification only), (K), (L), and (M).

■ 3. Section 52.1586 is amended by revising paragraphs (c)(1) and (2) to read as follows:

§ 52.1586 Section 110(a)(2) Infrastructure requirements.

* * * * *

(c) * * *

(1) *Approval.* New Jersey SIP revision submitted on May 13, 2019 to address CAA infrastructure requirements of 110(a)(2) for the 2015 8-hour ozone NAAQS is approved for (A), (B), (C)(enforcement program only), (D)(i)(II) prong 4 (visibility), (E), (F), (G), (H), (J)(consultation and public notification only), (K), (L), and (M).

(2) *Disapproval.* New Jersey SIP revision submitted on May 13, 2019, to address the CAA infrastructure requirements of 110(a)(2) for the 2015 8-hour ozone NAAQS, is disapproved for (C)(Preconstruction PSD program only), (D)(i)(I) (prongs 1 and 2), (D)(i)(II) prong 3, (D)(ii), and (J)(PSD program only). PSD program requirements are being addressed by § 52.1603 which has been delegated to New Jersey to implement.

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[FR Doc. 2024–17335 Filed 8–8–24; 8:45 am]

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FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 5, 25, and 97

[IB Docket Nos. 18–313, 22–271; FCC 20–54, FCC 22–74, FCC 24–6; FR ID 235363]

Space Innovation; Mitigation of Orbital Debris in the New Space Age

AGENCY: Federal Communications Commission.

ACTION: Final rule; announcement of effective date.

SUMMARY: In this document, the Federal Communications Commission (FCC or Commission) announces that the Office of Management and Budget (OMB) has approved, for a period of three years, the new information collection as a result of

changes adopted in a Report and Order titled “Mitigation of Orbital Debris in the New Space Age” (*Orbital Debris Report and Order*) and a Second Report and Order titled “Space Innovation; Mitigation of Orbital Debris in the New Space Age” (*Orbital Debris Second Report and Order*), and affirmed and further clarified in an Order on Reconsideration titled “Mitigation of Orbital Debris in the New Space Age” (*Orbital Debris Reconsideration Order*). This document announces the effective date of rules adopted in those orders that contained new or modified information collection requirements that required review and approval by OMB and that had not already been announced as effective. This document also summarizes and makes effective the rules adopted in the *Orbital Debris Second Report and Order*, which required space stations ending their mission in, or passing through, the low-Earth orbit region below 2000 km altitude and planning disposal through uncontrolled atmospheric re-entry to complete disposal as soon as practicable following end of mission, and no later than five years after the end of the mission.

DATES:

Effective date: The amendments to 47 CFR 25.114(d)(14), 25.121(f), 25.122(c) and (d), and 25.123(b) published at 85 FR 52422 on August 25, 2020, and the amendments to 47 CFR 5.64(b)(7)(iv)(A), 25.114(d)(14)(vii)(D)(1), 25.283(b), (d), and (e), and 97.207(g)(1)(vii)(D)(1) in this final rule are effective September 9, 2024.

Compliance date: Compliance with the amendments to 47 CFR 5.64(b)(7)(iv)(A), 25.114(d)(14)(vii)(D)(1), and 97.207(g)(1)(vii)(D)(1) is not required until September 29, 2024.

FOR FURTHER INFORMATION CONTACT:

Scott Mackoul, Space Bureau, at (202) 418–7498 or Scott.Mackoul@fcc.gov. For information regarding the Paperwork Reduction Act (PRA) information collection requirements contained in the

PRA, contact Cathy Williams, Office of Managing Director, at (202) 418–2918 or Cathy.Williams@fcc.gov.

SUPPLEMENTARY INFORMATION: This document announces that, on July 2, 2024, OMB approved the information collection requirements in 47 CFR 25.114(d)(14), 25.121(f), 25.122(c) and (d), and 25.123(b). These rules were modified in the *Orbital Debris Report and Order* (FCC 20–54, IB Docket No. 18–313) (85 FR 52422, August 25, 2020) and the *Orbital Debris Second Report and Order* (FCC 22–74, IB Docket Nos. 18–313 and 22–271), and affirmed and clarified in the *Orbital Debris Reconsideration Order* (FCC 24–6, IB Docket No. 18–313) (89 FR 13276, February 22, 2024). This document also provides a summary of the *Orbital Debris Second Report and Order*, the full text of which is available at <https://www.fcc.gov/document/fcc-adopts-new-5-year-rule-deorbiting-satellites-0>.

If you have any comments on the burden estimates listed below, or how the Commission can improve the collections and reduce any burdens caused thereby, please contact Cathy Williams, Federal Communications Commission, Cathy.Williams@fcc.gov, regarding OMB Control Number 3060–1327. Please include the applicable OMB Control Number(s) in your correspondence. The Commission will also accept your comments via email at PRA@fcc.gov.

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 and Governmental Affairs Bureau at (202) 418–0530 (voice), (202) 418–0432 (TTY).

Final Regulatory Flexibility Analysis. As required by the Regulatory Flexibility Act of 1980, as amended (RFA), the Commission prepared a Final Regulatory Flexibility Analysis (FRFA) of the possible significant economic impact on small entities of the policies and rules adopted in the *Orbital Debris*

Second Report and Order. The FRFA is summarized below and provided in appendix B to the *Orbital Debris Second Report and Order*, the full text of which is available at <https://www.fcc.gov/document/fcc-adopts-new-5-year-rule-deorbiting-satellites-0>.

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

Synopsis

I. OMB Control Number 3060–1327

As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3507), the Commission is notifying the public that it received final OMB approval on July 2, 2024, for the information collection requirements contained in the *Orbital Debris Report and Order*, the *Orbital Debris Second Report and Order*, and the *Orbital Debris Reconsideration Order*. This document announces the effective date of those rules. The other part 25 rule amendments adopted in the *Orbital Debris Report and Order* that did not require OMB approval became effective as identified in its **Federal Register** publication.

Under 5 CFR part 1320, an agency may not conduct or sponsor a collection of information unless it displays a current, valid OMB Control Number. No person shall be subject to any penalty for failing to comply with a collection of information subject to the Paperwork Reduction Act that does not display a current, valid OMB Control Number. The OMB Control Number for the information collection requirements in these rules is 3060–1327.

The foregoing notification is required by the Paperwork Reduction Act of 1995, Public Law 104–13, October 1, 1995, and 44 U.S.C. 3507.

The total annual reporting burdens and costs for the respondents are as follows:

OMB Control Number: 3060–1327.

OMB Approval Date: July 2, 2024.

OMB Expiration Date: July 31, 2027.

Title: Part 25 Rules Addressing the Mitigation of Orbital Debris.

Type of Review: New collection.

Respondents: Business or other for-profit, not-for-profit institutions.

Number of Respondents and Responses: 28 respondents and 28 responses.

Estimated Time per Response: 4–15 hours.

Frequency of Response: On occasion reporting requirement.

Obligation to Respond: Required to obtain or retain benefits. The statutory authority for this information collection is contained in 47 U.S.C. 151, 154(i), 301, 303, 307, 308, 309, and 310.

Total Annual Burden: 341 hours.

Annual Cost Burden: \$53,900.

Needs and Uses: Notification of orbital debris mitigation plans as part of requests for Commission authorization will help preserve the United States' continued affordable access to space and the continued provision of experimental and amateur services. Notification of debris mitigation plans will allow the Commission and potentially affected third parties to evaluate operators' debris mitigation plans prior to the issuance of an FCC approval for communications activities. Notification may also aid in the wider dissemination of information concerning debris mitigation techniques and may provide a baseline of information that will aid in analyzing and refining those techniques. Without notification of orbital debris mitigation plans as part of applications for FCC authority, the Commission would be denied any opportunity to ascertain whether satellite operators are in fact considering and adopting reasonable debris mitigation practices, which could result in an increase in orbital debris and a decrease in the utility of space for communications and other uses.

II. Summary of the Orbital Debris Second Report and Order

A. Introduction

In the *Orbital Debris Second Report and Order*, the Commission adopts a first-ever rule requiring non-geostationary satellite operators to deorbit their satellites after the end of their operations to minimize the risk of collisions that would create debris. The Commission's action formalizes a longstanding orbital debris guideline, updates it to better reflect the realities of today's space activities, and uniformly applies it to space stations in low-Earth orbit (LEO).

Strong compliance with post-mission disposal guidelines is an effective tool that can help stabilize the orbital debris environment. Before the Commission adopted the *Orbital Debris Second Report and Order*, it was recommended that operators with objects in LEO ensure that their spacecraft are either removed from orbit immediately post-mission or left in an orbit that will decay and re-enter Earth's atmosphere within no more than 25 years to mitigate the creation of more orbital debris. However, the Commission believes it is no longer sustainable to leave satellites

in LEO to deorbit over decades.

Accordingly, as part of its continued efforts to mitigate the generation of orbital debris, the Commission shortens the 25-year benchmark for post-mission disposal of space stations in LEO to five years. The regulations the Commission adopts are designed to ensure that its actions concerning radio communications, including licensing U.S. spacecraft and granting access to the U.S. market for non-U.S. spacecraft, promote the sustainable use of outer space without creating undue regulatory obstacles to new satellite ventures. The action by the Commission furthers the public interest in preserving viable options for future satellites and systems and the many services that those systems provide to the public.

B. Background

There are multiple existing guidelines concerning orbital debris, none of which are legally binding. One of these is the longstanding guideline for deorbiting satellites within 25 years. It has been adopted by the space agencies of other nations, the Inter-Agency Space Debris Coordination Committee (IADC), and incorporated into a National Aeronautics and Space Administration (NASA) Standard and the U.S. Government Orbital Debris Mitigation Standard Practices (ODMSP). Both the NASA Standard and ODMSP specify a maximum 25-year post-mission orbital lifetime, with the 2019 revised ODMSP stating that for spacecraft disposed of by atmospheric reentry, the spacecraft shall be "left in an orbit in which, using conservative projections for solar activity, atmospheric drag will limit the lifetime to as short as practicable but no more than 25 years."

The Commission adopted comprehensive rules on orbital debris in 2004, pursuant to its authority to determine whether the public interest would be served by the authorization of satellite communications systems. The 2004 rules generally consisted of disclosure requirements that yielded information critical to the Commission's overall determination of whether the public interest would be served by approving the proposed operations. Applicants were required to include a statement that they have assessed and limited the amount of debris released in a planned manner during normal operations, and have assessed and limited the probability of the satellite becoming a source of debris by collisions with small debris. Applicants also were required to state that they have assessed and limited the probability of accidental explosions during and after completion of mission

operations. The rules also required a statement that the satellite applicant has assessed and limited the probability of the satellite becoming a source of debris by collisions with large debris or other operational satellites. Finally, applicants were required to include a statement detailing the post-mission disposal plans for the satellite as it enters its end-of-life stage, including the quantity of fuel—if any—that will be reserved for post-mission disposal maneuvers.

Although not specifically codified in the Commission's 2004 rules, the Commission has consistently applied the 25-year benchmark in licensing decisions for non-geostationary orbit (NGSO) systems. On November 15, 2018, recognizing that there had been a variety of technical and policy updates to orbital debris mitigation standards, policy, and guidance documents since 2004, the Commission adopted a notice of proposed rulemaking (84 FR 4742, February 19, 2019) seeking comment on a comprehensive update to its orbital debris rules to better reflect the significant increase in satellites and types of operations in orbit. As part of that effort, the Commission sought comment on the 25-year benchmark and whether it was still a relevant guideline or whether a shorter deorbit deadline was appropriate for new systems.

In 2020, the Commission comprehensively updating the 2004 rules when it adopted the *Orbital Debris Report and Order*. At the same time, the Commission adopted a further notice of proposed rulemaking (*Orbital Debris FNPRM*) (85 FR 52455, August 25, 2020) seeking comment on the probability of accidental explosions, collision risk for multi-satellite systems, maneuverability requirements, casualty risk, indemnification, and performance bonds tied to post-mission disposal. In the *Orbital Debris Report and Order*, the Commission maintained its existing rule requiring a statement detailing post-mission disposal plans for the space station at end of life and adopted a new requirement that applicants planning disposal by atmospheric re-entry specify the planned time period for post-mission disposal as part of the description of disposal plans for the space station. In the *Orbital Debris FNPRM*, the Commission sought further comment on whether the 25-year benchmark for completion of NGSO post-mission disposal by atmospheric re-entry remains a relevant benchmark as applied to commercial or other non-Federal systems.

Specifically, in the *Orbital Debris FNPRM*, the Commission noted broad support in the record for shortening the

25-year benchmark and sought comment on alternative post-mission disposal lifetimes. The Commission sought comment on how to apply the ODMSP guidance that the post-mission lifetime be “as short as practicable but no more than 25 years,” noting that incorporating only the 25-year metric into its rules may not incentivize commercial and other non-Federal operators to limit the post-mission orbital lifetime to “as short as practicable.” The Commission further asked whether a maximum 25-year limit on post-mission orbital lifetime would provide any incentive to operators to shorten the post-mission time in orbit or whether there is another preferable approach, such as a requirement for spacecraft to utilize propulsion, and if there were any potential scenarios in which spacecraft with maneuverability would remain in orbit for significant amounts of time following the conclusion of the mission. The Commission also asked for input on whether these scenarios would be sufficiently unlikely to warrant a case-by-case approach or if a bright-line rule would be more appropriate in these circumstances. The Commission presented a number of potential frameworks, including a safe-harbor provision, wherein operators would be encouraged to dispose of their spacecraft “as soon as practicable” but no more than five years following the end of the mission, and allow applicants to provide additional demonstrations in support of longer post-mission lifetimes for the Commission to consider. The Commission sought comment on this proposal and asked whether five years would be sufficient for such a safe harbor provision or if there were any alternative timeframes that should be considered.

C. Discussion

1. Promoting Space Safety Through Post-Mission Disposal Requirements

In response to the *Orbital Debris FNPRM*, the Commission received additional support in the record for reducing the 25-year benchmark, with many commenters echoing prior concerns that the 25-year benchmark is outdated and may no longer serve the public interest. Commenters noted that, while the 25-year benchmark may be an effective standard to limit the rate of debris growth in LEO, it fails to account for the growth of the commercial space industry and does not consider the disruption to satellite operations due to the increased need for collision avoidance maneuvers. Many commenters assert that shortening the

25-year benchmark would not only address the threat of long-term debris generation, but would also address issues like the mounting number of conjunctions, collision avoidance maneuvers, fuel costs and other operational expenditures, time concerns, and other considerations faced by operators as LEO becomes more populated. The Consortium for Execution of Rendezvous and Servicing Operations (CONFERS) also contends that the increased need for collision avoidance maneuvers due to the congestion in LEO impacts the general public as well because it increases the likelihood of service disruptions.

Some commenters argue that the 25-year benchmark remains relevant to sufficiently mitigate orbital debris generation, asserting that many organizations have studied and confirmed the effectiveness of this standard in reducing the rate of orbital debris generation in LEO. Most commenters who supported retaining that benchmark cite a report published by NASA's Orbital Debris Program Office, which stated that reducing the 25-year rule to a five-year rule would lead to a 10% debris reduction over 200 years, which NASA described as “not a statistically significant benefit.” However, other commenters note that the NASA analysis does not fully account for the risks of leaving defunct satellites in lower orbits for periods up to 25 years. According to one commenter, “the 200-year simulation used in this assertion aggregates cataloged debris from all of LEO” and “ignores debris generated below [800 km because debris at these altitudes washes out in decades.” That commenter further asserts that events below 850 km are not considered in NASA's analysis because they do not accumulate over the 200-year period, but these events may still significantly increase lethal, non-trackable collision risk and collision avoidance burdens for commercially-relevant altitudes. “Lethal non-trackable” objects, or LNTs, are space objects that are 10 cm or smaller that are too small to be cataloged but still possess enough kinetic energy to disable a satellite upon impact. LNTs in LEO are primarily caused by the several hundred explosions of satellites and spent launch vehicle upper stages, but a few collision events have contributed to the LNT population as well. LNTs account for 97–98% of mission-terminating risk in LEO and cannot be mitigated by space traffic management (STM) or space situational awareness (SSA) alone, even as SSA and STM capabilities continue to improve and

these space objects become increasingly visible to operators.

This commenter also argues that the 25-year benchmark encourages new satellites to be deployed below 650 km as such an altitude is “naturally compliant” with the 25-year benchmark and encourages massive, nonfunctioning hardware to be moved below 650 km from missions above 650 km, resting on the assumption that 25 years is not a long time. However, for typical LEO satellites, 25 years represents five generations of spacecraft, performing 135,000 uncontrolled orbits, and transiting 800 active spacecraft and more as the population of LEO satellites grows. As Astroscale has observed, operators formulating designs and plans to adhere to the maximum 25-year requirement has ultimately contributed to the increased congestion around and below the 600–650 km altitude range and the associated increase in conjunctions and risk in LEO operations.

The Commission finds these arguments persuasive and agrees with commenters that the threat of long-term debris generation is not the only relevant risk factor to consider in weighing shortening the benchmark, and any analysis concerning post-mission disposal lifetimes should account for the effects on the orbital environment raised by the commenters, such as the collision risks posed by LNT generation and increased collision avoidance burdens on operators. Accordingly, the Commission concludes that shortening the 25-year benchmark for all missions is warranted and in the public interest.

In the *Orbital Debris FNPRM*, the Commission considered whether specifying a post-mission orbital lifetime requirement would be necessary in light of potentially adopting a maneuverability requirement for spacecraft operating above 400 km. Although the *Orbital Debris Second Report and Order* does not adopt rules relating to maneuverability, given the risks associated with the increasing congestion in the orbital environment and the strong support in the record for shortening permissible post-mission orbital lifetime, the Commission believes it is appropriate to adopt a rule reducing the post-mission disposal orbital lifetime while it continues to assess potential maneuverability requirements, additional measures with respect to large constellations, and other possible approaches to mitigation of debris risks.

Accordingly, the Commission adopts a rule requiring space stations ending their mission in, or passing through, the

LEO region below 2,000 km altitude and planning disposal through uncontrolled atmospheric re-entry to complete disposal as soon as practicable following end of mission, and no later than five years after the end of the mission. For purposes of administering this rule, “end of mission” will be defined to be 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” will be defined as the point in which the individual spacecraft has completed its primary mission, *e.g.*, communications services, handling customer message traffic, remote-sensing, etc. Consistent with other requirements in part 25 of Commission’s rules, this requirement will also apply to entities seeking to access the U.S. market using a non-U.S.-licensed satellite or satellite system. This requirement will also apply to small satellites licensed under the streamlined processes outlined in 47 CFR 25.122. Additionally, the requirements adopted in this final rule will also apply to any entities applying for satellites licensed under part 5 of the Commission’s rules, as well as amateur satellites authorized under part 97.

While the record indicates support for shortening the 25-year benchmark to five years in general, many commenters express that five years may still be too long for large constellations, given the greater risks for generating orbital debris that these systems may pose over extended periods of time. Large constellations could impose specific risks to the orbital environment that may be mitigated by a shorter post-mission orbital lifetime, among other factors; therefore the Commission will continue to assess whether a shorter post-mission disposal requirement, such as one year, would be appropriate for large constellations in light of the potential risks to the orbital environment posed by those systems. In the interim, the Commission will continue evaluating large constellations consistent with the revised rules, including conditioning authorizations as appropriate to address collision risk and post-mission disposal matters on a case-by-case basis.

Commenters also indicated that any updated rule should be performance-based as to how the requirements are met in order to maintain flexibility and better accommodate different technologies and mission profiles. In this spirit, the Commission declines to prescribe a specific method of post-mission disposal at this time. In adopting this five-year benchmark for

LEO missions, the Commission also acknowledges the possibility that satellite failures may give rise to non-compliance. The Commission in the *Orbital Debris Second Report and Order* declines to provide a blanket exception for satellite failures that was suggested by some commenters, as appropriate with the spirit of a performance-based objective. However, in the event of a failure or anomaly giving rise to non-compliance, parties are permitted to seek waivers of such requirements for good cause shown under the Commission’s existing rules. In evaluating such a request for the waiver, the Commission will take into account all the facts and circumstances surrounding any potential satellite failure or anomaly that has occurred, including the assessed cause of the failure or anomaly, matters beyond the operator’s control, and any steps taken by the operator to avoid non-compliance. Such waivers will not be liberally granted.

2. Grandfathering Existing Operations

The Commission is aware that adopting a rule shortening the 25-year benchmark may impose a burden and increase costs for existing operators. In light of the potential financial and mission-planning impact of this new requirement, a transition period sufficient to permit operators to adjust their mission timelines and operations is in the public interest and supported by the record.

Accordingly, satellites already in orbit are exempt from the new requirement. For satellites already authorized by the Commission that have not yet been launched, the Commission will provide a grandfathering period of two years, beginning on September 29, 2022, in order to allow operators to incorporate the five-year post-mission disposal requirement into their mission objectives. The Commission believes a two-year period strikes a reasonable balance that will advance the goals of the reduced post-mission orbital lifetime while providing time for any necessary adjustments by operators in order to continue existing services and adjust planned operations. New licensees and existing applicants with authorized satellites to be launched after September 29, 2024, must comply with the five-year post-mission disposal requirement, though in individual cases the Commission will consider waivers requesting additional time for systems with existing authorizations that extend beyond the two-year period. For pending applications, the Commission will continue to process them consistent with the current rules. For any

applications granted involving space stations that would exceed the five-year limit, those space stations would need to be launched prior to September 30, 2024.

In some cases, already-authorized systems may require approval of a modification to update their license or grant to reflect alterations in system characteristics in order to achieve compliance. Accordingly, any licensee or grantee with a license or market access grant requiring modification should file an application for a modification with respect to any satellites to be launched after September 29, 2024, including any replacement satellites, no later than March 29, 2024, to provide the Commission with sufficient time to process the modification requests before the conclusion of the two-year grandfathering period.

3. Additional Flexibility for Academic and Research Missions

The Commission observes that there may be circumstances that warrant a waiver of the five-year post-mission disposal requirement. The Commission acknowledges the public interest benefits of scientific research missions and recognize the possibility that there may be specific scientific objectives that are not achievable at lower altitudes that would comply with the five-year post-mission disposal requirement. While it does not adopt a blanket waiver for these types of missions, the Commission will consider such missions as a special category for purposes of analyzing waiver requests.

In determining whether research and scientific missions warrant a waiver of the five-year post-mission disposal requirement, some factors that the Commission may consider include the level of government funding, coordination, and oversight of the mission, the need to conduct research at altitudes in which a five-year post-mission disposal requirement may be unduly burdensome, the predictability of mission trajectory and associated burdens on other operators, unique spacecraft characteristics, and whether the mission involves any unusual risks to the space environment.

Applicants requesting waiver of the five-year post-mission disposal requirement should consider submitting certain information to facilitate the Commission's analysis as to whether a waiver is warranted, including a statement describing the unique mission and research objectives that could not be achieved at a lower altitude, as well as a document of anticipated findings and a description of any plans for

publishing or producing a report of such findings. Operators may provide a survey of outstanding research and missions indicating that the proposed operations would satisfy a unique area of research, including any findings and actions of other government agencies and educational institutions that support the importance of the mission. The Commission notes that a general statement that the mission is for the general education and practical experience of future space-oriented professionals, while laudable, is in itself unlikely to make a mission sufficiently unique to warrant a waiver. If the only purpose of the mission is to provide students with hands-on participation in space activities, this may not justify consideration for a waiver of the post-mission disposal rule adopted in the *Orbital Debris Second Report and Order*. However, operators seeking a waiver of the five-year post-mission disposal rule may submit, for the Commission's consideration, a statement demonstrating that the educational purposes of the mission would not be served should students participate in a mission with a post-mission disposal lifetime of fewer than five years. In addition, there should be a direct nexus between the orbital altitude at which the research is to be conducted and the need for a waiver, unrelated to whether there is a particular "rideshare" launch available to the altitude range sought.

The Commission is also sensitive to the needs of government-supported missions. Operators seeking a waiver consistent with this guidance should also consider providing a statement identifying specific facts demonstrating that their proposed mission supports and serves a government purpose. Demonstrations should include, if applicable, participation in government research programs, the level of government oversight, how any government funds were used for the development and operation of the proposed mission, as well as government support for launch operations, including ridesharing agreements through NASA. The Commission will consider statements demonstrating that the proposed mission is at least 50% funded by the U.S. Government, excluding funding for launch operations, as government-supported, in order to facilitate equitable analysis of this demonstration.

4. Costs-Benefits

The rules adopted in the *Orbital Debris Second Report and Order* may impose additional costs on the industry, including in some instances fuel and

other costs for more rapid decommissioning needed to accommodate the shortened post-mission disposal timeframe, and opportunity costs associated with certain entities altering their mission plans to comply with the rule. However, these rules are intended to incrementally slow the growth of orbital debris, particularly in LEO, with its increasing numbers of satellites. While it is difficult to quantify the economic value of the orbital debris mitigation measures adopted in the *Orbital Debris Second Report and Order*, the Commission finds that the benefits of the rules in terms of reducing the probability of costly collisions and commensurate reduction in service outages, as well as reducing the frequency of collision avoidance maneuvers, outweigh any costs resulting from the rules.

D. Final Regulatory Flexibility Analysis

As required by the Regulatory Flexibility Act of 1980 (RFA), as amended, an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the *Orbital Debris FNPRM*. The Commission sought written public comment on the proposals in the *Orbital Debris FNPRM*, including comment on the IRFA. No comments were filed addressing the IRFA. The IRFA in the *Orbital Debris Second Report and Order* conforms to the RFA.

Need for, and Objectives of, the Final Rule

The *Orbital Debris Second Report and Order* requires space stations ending their mission in or passing through the low-Earth orbit region below 2000 km altitude and planning disposal through uncontrolled atmospheric re-entry following the completion of the mission, to complete as soon as practicable following end of mission, and no later than five years after the end of the mission. Adoption of this requirement is a significant step in updating the Commission's rules on orbital debris mitigation. Updates to the Commission's rules on orbital debris mitigation are informed by the Commission's experience gained in the licensing process and address updates in mitigation guidelines and practices as well as market developments. Adoption of this requirement will ensure that applicants for a Commission space station license or authorization, or grant of market access, will not contribute to orbital congestion longer than necessary. This action will help ensure that Commission decisions are consistent with the public interest in

space remaining viable for future satellites and systems and the many services those systems provide to the public.

Summary of Significant Issues Raised by Public Comments in Response to the IRFA

No comments were filed that specifically addressed the IRFA.

Response to Comments by the Chief Counsel for Advocacy of the Small Business

Pursuant to the Small Business Jobs Act of 2010, which amended the RFA, the Commission is required to respond to any comments filed by the Chief Counsel for Advocacy of the Small Business Administration (SBA), and to provide a detailed statement of any change made to the proposed rules as a result of those comments. The Chief Counsel did not file any comments in response to the proposed rules in this proceeding.

Description and Estimate of the Number of Small Entities to Which the Rules Will Apply

The RFA directs agencies to provide a description of, and, where feasible, an estimate of, the number of small entities that may be affected by the rules adopted herein. The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.” In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act. 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. The Commission describes and estimates the number of small entities that may be affected by the adoption of the final rules.

Satellite Telecommunications. This industry comprises firms “primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications.” Satellite telecommunications service providers include satellite and earth station operators. The SBA small business size standard for this industry classifies a business with \$38 million or less in annual receipts as small. U.S. Census Bureau data for 2017 show that 275

firms in this industry operated for the entire year. Of this number, 242 firms had revenue of less than \$25 million. Additionally, based on Commission data in the 2021 Universal Service Monitoring Report, as of December 31, 2020, there were 71 providers that reported they were engaged in the provision of satellite telecommunications services. Of these providers, the Commission estimates that approximately 48 providers have 1,500 or fewer employees. Consequently, using the SBA’s small business size standard, a little more than half of these providers can be considered small entities.

All Other Telecommunications. The “All Other Telecommunications” category is comprised of establishments primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation. This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems. Establishments providing internet services or voice over internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry. The SBA has developed a small business size standard for “All Other Telecommunications,” which consists of all such firms with annual receipts of \$35 million or less. For this category, U.S. Census Bureau data for 2012 show that there were 1,442 firms that operated for the entire year. Of those firms, a total of 1,400 had annual receipts of less than \$25 million and 15 firms had annual receipts of \$25 million to \$49,999,999. Thus, the Commission estimates that the majority of “All Other Telecommunications” firms potentially affected by our action can be considered small.

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

The *Orbital Debris Second Report and Order* amends rules that are applicable to space station operators requesting a license or authorization from the Commission, or entities requesting that the Commission grant a request for U.S. market access. Specifically, the revised rules now require space stations ending their mission in or passing through the low-Earth orbit region below 2000 km altitude and planning disposal through uncontrolled atmospheric re-entry

following the completion of the mission, to complete disposal as soon as practicable following end of mission, and no later than five years after the end of the mission.

Applicants requesting authorization from the Commission must already comply with existing operational requirements, including those related to orbital debris mitigation and post-mission disposal. Operators must prepare and provide a disclosure as part of their application detailing their orbital debris mitigation plan. There may be fuel and other costs for more rapid decommissioning needed to accommodate the shortened post-mission disposal timeframe and opportunity costs associated with certain entities altering their mission plans to comply with the rule. However, this requirement will slow the growth of collision avoidance maneuvers, saving fuel costs. Faster deorbiting may also foster technological progress as firms are able to implement newer socially-valuable technologies over a shortened time horizon that might not have been implemented under the 25-year guidelines. Further, launch services will likely evolve to provide initial deployments compatible with the five-year post-mission disposal benchmark, thereby avoiding or reducing impacts on “rideshare” customers.

Steps Taken To Minimize the Significant Economic Impact on Small Entities, and Significant Alternatives Considered

The RFA requires an agency to describe any significant alternatives that it has considered in developing its approach, which may include the following four alternatives (among others): (1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for 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.

The *Orbital Debris Second Report and Order* requires all space stations ending their mission in or passing through the low-Earth orbit region below 2000 km altitude and planning disposal through uncontrolled atmospheric re-entry following the completion of the mission, to complete disposal as soon as practicable following end of mission, and no later than five years after the end of the mission. The Commission has elected to provide a two-year

grandfathering period to provide additional time for small entities to comply with this requirement. The *Orbital Debris Second Report and Order* also codifies a post-mission disposal lifetime requirement of five years or less, thus providing a clear and objective benchmark for small entities to comply with. Additionally, the Commission has opted to adopt this new requirement as a performance-based rule, instead of prescribing specific design standards or requirements.

List of Subjects

47 CFR Parts 5 and 97

Radio, Reporting and recordkeeping requirements, Satellites.

47 CFR Part 25

Administrative practice and procedure, Earth stations, Satellites.
Federal Communications Commission.

Katura Jackson,

Federal Register Liaison Officer, Office of the Secretary.

Final Rules

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR parts 5, 25, and 97 as follows:

PART 5—EXPERIMENTAL RADIO SERVICE

- 1. The authority citation for part 5 continues to read as follows:

Authority: 47 U.S.C. 154, 301, 302, 303, 307, 336.

- 2. Amend § 5.64 by revising paragraph (b)(7)(iv)(A) to read as follows:

§ 5.64 Special provisions for satellite systems.

* * * * *

(b) * * *

(7) * * *

(iv) * * *

(A) The statement must include a demonstration that the probability of success of the chosen disposal method will be 0.9 or greater for any individual space station. For space station systems consisting of multiple space stations, the demonstration should include additional information regarding efforts to achieve a higher probability of success, with a goal, for large systems, of a probability of success for any individual space station of 0.99 or better. For space stations under paragraph (b)(7)(ii) of this section that will be terminating operations in or passing through the low-Earth orbit region below 2000 km altitude, successful disposal is defined, for the

purposes of this paragraph (b)(7)(iv)(A), as atmospheric re-entry of the spacecraft as soon as practicable, but no later than five years following completion of the mission. For space stations under paragraph (b)(7)(iii) of this section, successful disposal will be assessed on a case-by-case basis.

* * * * *

PART 25—SATELLITE COMMUNICATIONS

- 3. The authority citation for part 25 continues to read as follows:

Authority: 47 U.S.C. 154, 301, 302, 303, 307, 309, 310, 319, 332, 605, and 721, unless otherwise noted.

- 4. Amend § 25.114 by revising paragraph (d)(14)(vii)(D)(1) to read as follows:

§ 25.114 Applications for space station authorizations.

* * * * *

(d) * * *

(14) * * *

(vii) * * *

(D) * * *

(1) The statement must include a demonstration that the probability of success of the chosen disposal method will be 0.9 or greater for any individual space station. For space station systems consisting of multiple space stations, the demonstration should include additional information regarding efforts to achieve a higher probability of success, with a goal, for large systems, of a probability of success for any individual space station of 0.99 or better. For space stations under paragraph (d)(14)(vii)(B) of this section ending their mission in or passing through the low-Earth orbit region below 2000 km altitude, successful disposal is defined, for the purposes of this paragraph (d)(14)(vii)(D)(1), as atmospheric re-entry of the spacecraft as soon as practicable, but no later than five years following completion of the mission. For all other space stations under paragraphs (d)(14)(vii)(B) and (C) of this section, successful disposal will be assessed on a case-by-case basis.

* * * * *

- 5. Amend § 25.283 by adding headings to paragraphs (b) and (d) and adding paragraph (e) to read as follows:

§ 25.283 End-of-life disposal.

* * * * *

(b) *Geostationary orbit space station end of life operations.* * * *

* * * * *

(d) *Applicability of minimum perigee for geostationary orbit space stations.*

* * *

(e) *Low-Earth orbit space stations.* For space stations ending their mission in or passing through the low-Earth orbit region below 2000 km altitude and planning disposal through uncontrolled atmospheric re-entry, 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.

PART 97—AMATEUR RADIO SERVICE

- 6. The authority citation for part 97 continues to read as follows:

Authority: 47 U.S.C. 151–155, 301–609, unless otherwise noted.

- 7. Amend § 97.207 by revising paragraph (g)(1)(vii)(D)(1) to read as follows:

§ 97.207 Space station.

* * * * *

(g) * * *

(1) * * *

(vii) * * *

(D) * * *

(1) The statement must include a demonstration that the probability of success of the chosen disposal method will be 0.9 or greater for any individual space station. For space station systems consisting of multiple space stations, the demonstration should include additional information regarding efforts to achieve a higher probability of success, with a goal, for large systems, of a probability of success for any individual space station of 0.99 or better. For space stations under paragraph (g)(1)(vii)(B) of this section that will be terminating operations in or passing through the low-Earth orbit region below 2000 km altitude, successful disposal, for the purposes of this paragraph (g)(1)(vii)(D)(1), is defined as atmospheric re-entry of the spacecraft as soon as practicable, but no later than five years following completion of the mission. For space stations under paragraph (g)(1)(vii)(C) of this section, successful disposal will be assessed on a case-by-case basis.

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