

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, DC 20554**

In the Matter of)	
)	
Mitigation of Orbital Debris in the)	IB Docket No. 18-313
New Space Age)	
)	
Space Innovation)	IB Docket No. 22-271

REPLY COMMENTS OF TECHFREEDOM

TechFreedom, pursuant to Sections 1.415 and 1.419 of the Commission’s rules,¹ hereby files these Reply Comments in response to the Public Notice (“Refresh Public Notice”) released by the Commission on May 2, 2024, in the above-referenced proceedings.² As we demonstrate here, outer space is not beyond the impact of recent Supreme Court rulings.³

I. This Just In: Chevron Deference is Dead

As we predicted,⁴ the degree of deference the Commission will receive from a court reviewing the statutory authority undergirding its orbital debris rules has now changed.

Chevron is overruled. Courts must exercise their independent judgment in deciding whether an agency has acted within its statutory authority, as the APA requires. Careful attention to the judgment of the Executive Branch may help inform that inquiry. And when a particular statute delegates authority to an agency consistent with constitutional limits, courts must respect the delegation, while ensuring that the agency acts within it. But courts need not

¹ 47 C.F.R. §§ 1.415 & 1.419.

² The Public Notice set the comment period as 30 days after publication in the Federal Register. The item appeared in the Federal Register on May 28, 2024. 89 Fed. Reg. 46052 (May 28, 2024), establishing the comment date as June 27, 2024, and the reply comment date as July 12, 2024 [hereinafter “Refresh Public Notice”]. These Reply Comments are timely filed.

³ See J. Dunstan, *Regulating Outer Space After Loper Bright*, SPACENEWS (July 5, 2024), <https://space-news.com/regulating-outer-space-after-loper-bright/>.

⁴ Comments of TechFreedom at 6-8.

and under the APA may not defer to an agency interpretation of the law simply because a statute is ambiguous.⁵

No longer can the FCC merely gesture at its “broad authority” to grant licenses if it finds a “public convenience, interest, or necessity.”⁶ A vague standard adopted in 1934 may no longer validate “new rules” for a “new space race.”⁷

The experience of the last 40 years has thus done little to rehabilitate *Chevron*. It has only made clear that *Chevron*’s fictional presumption of congressional intent was always unmoored from the APA’s demand that courts exercise independent judgment in construing statutes administered by agencies. At best, our intricate *Chevron* doctrine has been nothing more than a distraction from the question that matters: Does the statute authorize the challenged agency action? And at worst, it has required courts to violate the APA by yielding to an agency the express responsibility, vested in “the reviewing court,” to “decide all relevant questions of law” and “interpret . . . statutory provisions.”⁸

Even if the FCC claims technical expertise in this area (which, as we discuss below, it can’t), that is no longer sufficient under the *Loper Bright* standard.

But even when an ambiguity happens to implicate a technical matter, it does not follow that Congress has taken the power to authoritatively interpret the statute from the courts and given it to the agency. Congress expects courts to handle technical statutory questions. “[M]any statutory cases” call upon “courts [to] interpret the mass of technical detail that is the ordinary diet of the law,” *Egelhoff v. Egelhoff*, 532 U. S. 141, 161 (2001) (Breyer, J., dissenting), and courts did so without issue in agency cases before *Chevron*.⁹

⁵ *Loper Bright Enters. v. Raimondo*, No. 22-451, slip op. at 35 (June 28, 2024).

⁶ *Mitigation of Orbital Debris*, IB Docket No. 02-54, Second Report and Order, 19 FCC Rcd. 11567 ¶ 14 (2004), <https://docs.fcc.gov/public/attachments/FCC-04-130A1.pdf>.

⁷ See *Space Exploration Holdings, LLC*, Application for Approval for Orbital Deployment and Operating Authority for the SpaceX NGSO Satellite System, IBFS File No. SAT-LOA20161115-0018; Call Sign S2983; Application for Approval for Orbital Deployment and Operating Authority for the SpaceX NGSO Satellite System Supplement, SAT-LOA20170726-00110, Call Sign S3018; Fed. Commc’ns Comm’n, Memorandum Opinion, Order and Authorization (Mar. 28, 2018), <https://docs.fcc.gov/public/attachments/FCC-18-38A1.docx> (statement of Comm’r Rosenworcel).

⁸ *Loper Bright Enters.*, slip op. at 29 (quoting 5 U.S.C. § 706).

⁹ *Id.* at 24.

A. Even under *Skidmore* Deference, FCC-Imposed Orbital Debris Rules May Not Prevail

After *Loper Bright*, the only deference agencies will get is the older, and weaker, *Skidmore* Deference,¹⁰ and the arbitrary and capricious standard in Section 706 of the APA.¹¹

Loper Bright describes *Skidmore* Deference as follows:

[I]n *Skidmore v. Swift & Co.*, 323 U. S. 134 (1944), the Court explained that the “interpretations and opinions” of the relevant agency, “made in pursuance of official duty” and “based upon . . . specialized experience,” “constitute[d] a body of experience and informed judgment to which courts and litigants [could] properly resort for guidance,” even on legal questions. *Id.*, at 139–140. “The weight of such a judgment in a particular case,” the Court observed, would “depend upon the thoroughness evident in its consideration, the validity of its reasoning, its consistency with earlier and later pronouncements, and all those factors which give it power to persuade, if lacking power to control.”¹²

Here too, the Commission is likely to fail, as demonstrated below.

1. Comments in This Proceeding Demonstrate That NASA Is the Expert Agency on Orbital Debris, Not the FCC

As *Loper Bright* warns: “When the agency has no comparative expertise in resolving a regulatory ambiguity, Congress presumably would not grant it that authority.”¹³ The Commission must demonstrate that it has subject matter expertise on orbital debris.

In adopting the 2020 order in this proceeding (and the record of which the FCC now seeks to refresh),¹⁴ FCC Commissioners freely acknowledged that NASA is the expert agency

¹⁰ *Skidmore v. Swift & Co.*, 323 U.S. 134 (1944).

¹¹ Administrative Procedure Act, 5 U.S.C. § 706.

¹² *Loper Bright Enters.*, slip op. at 18.

¹³ *Loper Bright Enters.*, slip op. at 24 (quoting *Kisor v. Wilkie*, 588 U.S. 588, 578 (2019)).

¹⁴ Orbital Debris in the New Space Age, IB Docket No. 18-313, Report and Order and Further Notice of Proposed Rulemaking, 35 FCC Rcd. 4156 (2020) (hereinafter “2020 Order”).

on orbital debris. “I strongly believe that we should pay close attention to NASA’s expertise when it comes to setting specific standards in space policy.”¹⁵ This came after the 2019 NPRM questioned both the FCC’s authority and expertise in this area, as noted in our Comments.¹⁶ The comments filed in response to the Refresh Public Notice reinforce that only NASA has the necessary expertise to craft rules and norms for space operations related to orbital debris. Virtually all of them cite to and rely on NASA’s work.¹⁷

2. Even When It Comes to Establishing Orbital Debris Policies and Standards, the FCC Has Only a “Supporting Role”

The White House’s Office of Science and Technology Policy (OSTP) has said this about who is to lead the administration’s work on orbital debris:

Numerous U.S. Government departments and agencies are involved in orbital debris risk management... *NASA also leads the development of the U.S.*

¹⁵ See 2020 Order, Statement of Comm’r Geoffrey Starks at 1. See also *id.*, Statement of Comm’r Brendan Carr at 1 (“The changes we proposed together align this item more closely with the positions held by expert agencies that have experience in aerospace engineering like NASA, NOAA, and the FAA.”).

¹⁶ Comments of TechFreedom at 2 (“Did the 2004 order cite all relevant and potential sources of Commission authority in this area? Do the provisions discussed, or other statutory provisions, provide the Commission with requisite legal authority to adopt the rules we propose today?” Mitigation of Orbital Debris in the New Space Age, IB Docket No. 18-313, Notice of Proposed Rulemaking, 33 FCC Rcd. 11352 ¶ 15 (2018)).

¹⁷ See Comments of Com. Spaceflight Fed’n on at 1 (“CSF recommends that the FCC further consult with expert agencies, such as NASA”); Comments of Telesat Canada at 3 (“Telesat urges the Commission to continue to evaluate collision risks on an individual satellite basis in accordance with the NASA Technical Standard NASA-STD8719.14C (the ‘NASA Standard’). This approach has a record of success.”); Comments of Kuiper at 6 (“Indeed, NASA has suggested that the Commission implement a ‘more stringent conjunction risk mitigation threshold’ for constellations (regardless of size)” and suggests a reasonable modification would be “an order of magnitude increase.”); Comments of Lynk at 2 (reproducing NASA Likelihood/Consequence Risk Matrix); Comments of SpaceX at 3-4 (“all operators should share on these platforms ephemerides that include planned maneuvers . . . following NASA’s best practices.”); Comments of Viasat at 16 (referring to NASA’s Debris Assessment Software as “a foundational tool relied upon by the Commission.”); Comments of Com. Smallsat Spectrum Mgmt. Ass’n at 3 (“CSSMA encourages the adoption of technology-neutral collision avoidance standards, consistent with those set by NASA and other recognized standards-setting bodies.”);

*Government Orbital Debris Mitigation Standard Practices (ODMSP), which are directly applicable to U.S. Government operators. NASA also maintains an office to monitor the space environment for its own satellites.*¹⁸

OSTP assigns the FCC only a “supporting” role.¹⁹ In none of the tasks assigned by OSTP is the FCC the lead agency. In our Comments, we referenced numerous other executive branch directives that make clear that other agencies, not the FCC, are to establish technical standards for orbital debris.²⁰ Based on this, any rules that impose technical requirements on licensees related to orbital operations, as opposed to technical rules related to radio signal transmissions, will receive no deference from the courts. The FCC will be hard-pressed to defend such rules under the APA’s “arbitrary and capricious” standard.²¹

B. The FCC May Impose Reasonable Reporting Requirements on Licensees

This is not to say that the FCC has no role in protecting the outer space environment from collisions and orbital debris. As the licensor of communications satellites, the FCC can play a pivotal role in monitoring the space environment by imposing reporting requirements on its licensees. Probably the most important question asked in the Refresh Public Notice is “Are there other reporting conditions that could be used to address collision risks?”²²

¹⁸ NAT’L SCI. & TECH. COUNCIL, NAT’L ORBITAL DEBRIS IMPLEMENTATION PLAN 7 (July 2022), <https://www.whitehouse.gov/wp-content/uploads/2022/07/07-2022-NATIONAL-ORBITAL-DEBRIS-IMPLEMENTATION-PLAN.pdf> (emphasis added, footnotes omitted).

¹⁹ *Id.* at 9 (the task of deorbit guidelines, “Lead: NASA; Support: DOC, DOD, FAA, FCC”. The task of “refin[ing] techniques for conjunction risk assessment and collision avoidance,” “Lead: FAA; Support: NASA, DOD, DOC, FCC, DOS.”). *See also id.* at 14 (FCC to “support” “policy, regulation, and cooperation” on active debris removal (ADR) development and consideration of international issues related to debris remediation).

²⁰ Comments of TechFreedom at 3-4.

²¹ 5 U.S.C. § 706.

²² Refresh Public Notice at 4.

Many of the comments filed in response to the Refresh Public Notice agree that reporting rules would benefit all interested stakeholders.²³ Armed with this information, the FCC can fulfill its “supporting” position within the interagency group that has been tasked with implementing an overall approach to orbital debris and protecting the outer space environment.²⁴ As with any regulation, of course, reporting requirements must remain reasonable, and must be applied consistently to all licensees.²⁵

II. Comments in This “Refresh” Reflect the Complexity of Orbital Debris Regulation

Only about twenty comments were filed in response to the Refresh Public Notice, representing highly divergent positions. On technical matters especially, there was nothing approaching consensus.

A. There Is No Widely Accepted Metric for Determining Constellation-Wide Collision Risk

On the issue of per-satellite versus per-constellation collision analysis, views still diverge.²⁶ Those commenters willing to be honest, however, pointed out that the ODMSP 0.001 collision probability metric was developed by NASA on a per-satellite basis only, and

²³ Comments of Com. Spaceflight Fed’n at 3; Comments of Com. Smallsat Spectrum Mgmt. Ass’n at 6; Comments of Planet at 4; Comments of Telesat Canada at 6; Comments of Viasat at 2.

²⁴ *See supra* note 19.

²⁵ *See* Comments of TechFreedom at 10-13 (discussing the FCC’s current inconsistent and illogical approach to applying piecemeal conditions on licensees).

²⁶ *See* Comments of Com. Spaceflight Fed’n at 2; Comments of Planet at 2; Comments of Kuiper at 3 (supporting per-satellite analysis) *But see* Comments of SES at 6; Comments of Varda at 2; Comments of Viasat at 4; Comments of Clear Space at 2 (supporting per-constellation analysis).

that no constellation-wide metric has yet to be developed.²⁷ But that has not stopped some commenters from suggesting that the Commission simply apply the ODMSP 0.001 probability metric on a system-wide basis.²⁸

Fundamentally, the Such proposed probability models might not work in today's space environment, where order-of-magnitude reductions in launch costs have fueled the rise of megaconstellations.²⁹ As one commenter correctly noted:

ClearSpace believes the current process of estimating collision risk over a system's orbital lifetime by computing collision probability is fundamentally flawed. . . . [A]s recent years have illustrated quite dramatically, it is an impossible task to try to predict with any accuracy even five years forward how many satellites will be launched into which orbits; and when, where, or what may fail, collide, or explode to create new orbiting debris fields.³⁰

Obviously, much more work needs to be done in this area, and as demonstrated above, other expert agencies, not the FCC, need to develop system-wide standards.

B. No Consensus Exists for Adopting an Object-Years Standard

Use of an Object-Years Standard in FCC licensing remains controversial. It is unclear, for example, whether it can be applied to all orbits. For example, SES points out that applying a 100 Object-Years standard to a MEO system would forbid MEO launches, since MEO

²⁷ See, e.g., Comments of Planet at 1-2 ("In particular, Planet urges the Commission not to use the ODMSP 0.001 probability of collision metric as the safe harbor threshold for aggregate system risk. This is a metric to measure single satellite collision risk, and there is no scientific or widely accepted basis for using such a metric for evaluating aggregate collision risk.") (footnotes omitted); Comments of Lynk at 1 (no "effective total system risk analysis tools" exist for satellite constellations).

²⁸ See, e.g., Comments of SES at 4; Comments of Astroscale at 2; Comments of Clearspace at 2; Comments of WorldVu at 12; Comments of Viasat at 6.

²⁹ AIR UNIV., FAST SPACE: LEVERAGING ULTRA LOW-COST SPACE ACCESS FOR 21ST CENTURY CHALLENGES 3 fig. 1 (Jan. 13, 2017), https://www.airuniversity.af.edu/Portals/10/Research/Space-Horizons/documents/Fast%20Space_Public_2017.pdf.

³⁰ Comments of Clear Space at 3.

constellations rely on moving satellites to a graveyard orbit rather than atmospheric reentry at end of satellite life.³¹ One frequent theme in the comments is that an Object-Years analysis that factors in only the number of satellites and their altitude is far too simplistic.³² We among others recommended that the Object-Years equation include additional variables.³³ Commentors seem to agree that additional factors such as satellite mass,³⁴ cross-section,³⁵ and inclination³⁶ matter. Before any government agency imposes new rules or conditions on future licenses, experts and stakeholders must reach a consensus as to whether an Object-Years metric can be adopted that is better fine-tuned to the current and future state of space operations.³⁷

³¹ Comments of SES at 4 (“Thus for the O3b system, remaining in orbit for 100 years or more defines a successful satellite disposal, not a failed one.”). But just saying that the Object-Years rule will apply only to LEO constellations leaves no standard for MEO constellations. Graveyard orbits themselves pose risks that must be analyzed. *See* Luke Shadbolt, *HDI Global Specialty Technical Study Space Debris 13* (2023), https://www.hdi.global/globalassets/_local/international/newsroom/hdi_global_specialty_study_space_debris_2023_corpv5.pdf (“Despite this there are additional risks inherent to the MEO region, including the fact that unlike the disposal mechanisms of deorbit and natural decay in LEO and graveyard orbits in GEO, satellites in MEO do not always have a clear method of disposal.”). *See also* Despoina K. Skoulidou et al., *Medium Earth Orbit dynamical survey and its use in passive debris removal*, 63 *ADVANCES SPACE RESEARCH* 3646 (2019), <https://www.sciencedirect.com/science/article/abs/pii/S027311771930119X> (noting that MEO graveyard orbits are already crowded).

³² *See, e.g.*, Comments of Planet at 3 (“For example, it disproportionately focuses on altitude of the system but does not consider mass and cross-section, which are significant driving factors for collision risk. The object-years approach also does not address the measures that space operators may take in satellite design or operations (for example, shielding, maneuverability, orbit selection, method of collision avoidance operations, and robust exchange of information with other space operators) that reduce collision and debris risk.”) (footnote omitted).

³³ Comments of TechFreedom at 34-38.

³⁴ *See, e.g.*, Comments of SIA at 2; Comments of Astrodynamics at 2; Comments of Planet at 3; Comments of Lynk at 1; Comments of Viasat at 15; Comments of Kuiper at 18.

³⁵ *See, e.g.*, Comments of SIA at 4; Comments of Astrodynamics at 2; Comments of Planet at 3; Comments of Lynk at 3; Comments of Viasat, White Paper at 8.

³⁶ *See, e.g.*, Comments of Astrodynamics at 2; Comments of Viasat at 12; Comments of Kuiper at 18

³⁷ *See* Comments of TechFreedom at 9-10 (discussion of “condition creep” in FCC satellite licensing).

C. Get the Standards Wrong, and Bad Things Will Happen

All regulation may bring unintended consequences.³⁸ Ultimately, most experts agree that orbital debris *mitigation* will get us only so far, and that we must develop technologies for *remediation*—i.e. Active Debris Removal (ADR).³⁹ As ClearSpace notes in its comments, however, applying strict mitigation rules may hamper, or possibly prohibit, ADR technology deployment.

For example, consider an active debris removal (ADR) mission designed to deorbit a large, derelict satellite, and imagine that the client’s configuration (e.g., deployed solar arrays) make it difficult to access a secure point of capture. The ADR service provider might be able to reduce complexity and cost by severing and discarding a solar wing while still removing the vast majority of a client’s mass from orbit. Conducting such an operation without intentionally releasing debris would undoubtedly drive up mission complexity and cost to impractical levels. Yet authorizing the mission as proposed is unlikely, despite the fact that its execution would lower collision risk. The solar wing remains in orbit but poses far less risk than the original object, owing to its smaller size, lower mass, shorter orbital lifetime, and likelihood of complete demise during its ultimate atmospheric reentry.⁴⁰

Great caution, therefore, is necessary in crafting new rules which might inadvertently make the long-term reduction of orbital debris more difficult or costly.

³⁸ Cybersecurity Labeling for Internet of Things, Report and Order and Further Notice of Proposed Rulemaking 124, Statement of Comm’r Nathan Simington, FCC 24-26, released March 15, 2024, <https://docs.fcc.gov/public/attachments/FCC-24-26A1.pdf> (“The risk of inadvertently stifling [technology] with overregulation is real.”); Patrick McLaughlin and Robert Green, *The Unintended Consequences of Federal Regulatory Accumulation*, (Mercatus Center, George Mason Univ.), <https://www.mercatus.org/research/policy-briefs/unintended-consequences-federal-regulatory-accumulation>.

³⁹ See J. Dunstan and B. Werb, Legal and Economics Implications of Orbital Debris Removal: Comments of the Space Frontier Foundation, DARPA Orbital Debris Removal (ODR) Request for Information for Tactical Technology Office (TTO), DARPA-SN-09-68 (Oct. 30, 2009). See generally THOMAS J. COLVIN ET. AL, NASA, COST & BENEFIT ANALYSIS OF ORBITAL DEBRIS REMEDIATION 8-11 (Mar. 10, 2023), https://www.nasa.gov/wp-content/uploads/2023/03/otps_-_cost_and_benefit_analysis_of_orbital_debris_remediation_-_final.pdf.

⁴⁰ Comments of ClearSpace at 4.

III. Conclusion

Loper Bright casts doubt on the Commission's stance in this proceeding. In today's changed legal environment, the FCC cannot go it alone and promulgate technical rules related to orbital debris. Instead, it should defer to other expert agencies regarding orbital debris prevention. What it can do is impose reasonable reporting requirements on licensees in order to properly perform its supporting function on this vital issue.

Respectfully submitted,

_____/s/_____

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