

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

In the Matter of)	
)	
Revising Spectrum Sharing Rules for)	
Non-Geostationary Orbit, Fixed-Satellite)	IB Docket No. 21-456
Service Systems)	

COMMENTS OF TECHFREEDOM

Pursuant to sections 1.415 and 1.419 of the Commission’s rules,¹ TechFreedom submits the following comments in response to the Commission Further Notice of Proposed Rulemaking (FNPRM), in the above-referenced proceeding.²

I. About TechFreedom

TechFreedom is a nonprofit think tank dedicated to promoting the progress of technology that improves the human condition. To this end, we seek to advance public policy that makes experimentation, entrepreneurship, and investment possible, and thus unleashes the ultimate resource: human ingenuity. We have commented often on the metes and bounds of the FCC’s authority to regulate, and specifically when the FCC is in danger of proceeding

¹ 47 C.F.R. §§ 1.415, 1.419.

² Revising Spectrum Sharing Rules for Non-Geostationary Orbit, Fixed-Satellite Service Systems, Report and Order and Further Notice of Proposed Rulemaking, 88 Fed. Reg. 40142, FCC 23-29 (released April 21, 2023) (to be codified at 47 C.F.R. § 25) [hereinafter *Satellite Spectrum Sharing FNPRM*]. The FNPRM appeared in the Federal Register on June 21, 2023, 88 Fed. Reg. 40142 (June 21, 2023), and set the comment date as August 7, 2023, and the reply date as September 5, 2023. These comments are timely filed.

too hastily, before it has all the information it needs to determine whether it should promulgate rules, and what those rules should look like.³ That is the crux of these comments.

II. The Commission Should Have Issued a Notice of Inquiry Rather Than a Further Notice of Rulemaking

This FNPRM has all the hallmarks of an NOI, not an FNPRM. It (and accompanying Commissioner statements) asks more than two dozen distinct questions about how the Commission should approach spectrum sharing for satellite systems, but it proposes no draft rules.⁴ Many of these questions involve critical and complicated engineering analyses which have yet to be undertaken,⁵ as well as complex policy decisions. Thus, commenters cannot

³ TechFreedom and the International Center for Law & Economics Reply Comments on Modernizing the E-rate Program for Schools and Libraries at 4 n.8 (Nov. 7, 2013), http://docs.techfreedom.org/E_Rate_Reply_Comments.pdf (“Indeed, the FCC should have issued a Notice of Inquiry before issuing this NPRM for precisely this reason—a mistake the FCC all too often makes, frequently putting the Commission in the awkward position of being on the verge of rulemaking without first properly exploring the facts on the ground. This is the worst kind of putting the cart before the horse.”); TechFreedom Comments on Expanding Flexible Use of the 12.2-12.7 GHz Band at 3 (May 7, 2021), <https://techfreedom.org/wp-content/uploads/2021/05/TF-Comments-12-GHz-NPRM-4-7-21.pdf> (“The Commission Should Have Issued a Notice of Inquiry (NOI), not a Notice of Proposed Rulemaking”); TechFreedom Comments on Petition for Rulemaking of FUSE, LLC To Establish a New Content Vendor Diversity Report at 5 (July 22, 2022), <https://techfreedom.org/wp-content/uploads/2022/07/TechFreedom-Comments-7-22-22.pdf> (“If the Commission moves forward at all, it should begin a proceeding by issuing a broad Notice of Inquiry (NOI) rather than an NPRM”); *Congress, not FCC, should Decide Future of Internet Regulation*, TECHFREEDOM (May 15, 2014), <https://techfreedom.org/congress-not-fcc-should-decide-future-of/> (“[T]here was no need to rush today’s NPRM, as Commissioners Rosenworcel and Pai noted.”); *FCC Violates Basic Legal Principles in Rush to Regulate Set-Top Boxes*, TECHFREEDOM (Feb. 18, 2016), <https://techfreedom.org/fcc-violates-basic-legal-principles-in-rush-to/> (“FCC Chairman Tom Wheeler . . . insist[s] that ‘this is just the beginning of a fact-finding process.’ Do not believe him. If that were true, the FCC would issue a Notice of Inquiry to gather data to inform a regulatory proposal. Instead, the FCC has issued a Notice of Proposed Rulemaking. That means the FCC Chairman has already made up his mind, and that the agency is unlikely to adjust course.”).

⁴ See, e.g., *Satellite Spectrum Sharing FNPRM*, *supra* note 2, ¶ 40 (where ten distinct questions are asked).

⁵ *Id.*

provide meaningful comments that could lead to actual rules as a next step in this proceeding. The Commission should propose draft rules and seek further comment before issuing final rules.

TechFreedom has long urged the FCC not to issue an NPRM when it was just at the “asking questions” stage in a proceeding.⁶ This is simply the latest example of the Commission issuing an NPRM instead of an NOI. Whatever discretion the Commission enjoys under the Administrative Procedure Act⁷ to configure its rulemaking process, this pattern denies interested parties adequate opportunity to shape the FCC’s proposal, insofar as the FCC merges analysis of basic legal questions with analysis of highly technical, yet unformulated (or at least unarticulated) rules into a single round of comments. Once the NPRM is issued, the gun is loaded, and the Commission may fire at any time. Ready, fire, aim!⁸

Former FCC Chair Pai wrote about the wisdom of conducting an NOI before an NPRM:

We simply ask a lot of questions about where things stand, which is typically what we would do in a Notice of Inquiry. While I of course support soliciting comment as we begin this journey, I think the better approach here would have been to ask for input on where we intend to go. The public is better served if attention can be focused on proposed rules, and the FCC’s ultimate decisions are better informed by direct, as opposed to general, public engagement.⁹

⁶ See, e.g., TechFreedom Comments on Expanding Flexible Use of the 12.2-12.7 GHz Band, *supra* note 3.

⁷ Pub. L. No. 79-404, 60 Stat. 237 (1946) (codified as amended at 5 U.S.C. § 551 et seq.).

⁸ See also TECHFREEDOM on *Set-Top Boxes*, *supra* note 3 (“This is simply the latest example of the FCC abusing the rulemaking process by bypassing the Notice of Inquiry . . . Every time the FCC does this, it means the gun is already loaded, and ‘fact-finding’ is a mere formality.”).

⁹ Policies Regarding Mobile Spectrum Holdings, WT Docket No. 12-269 (Statement of Chairman Pai), https://transition.fcc.gov/ftp/Daily_Releases/Daily_Business/2012/db0928/DOC-316480A6.doc.

Chair Rosenworcel had similar concerns regarding the NPRM that led to the 2015 Open Internet Order:¹⁰ “I would have done this differently. Before proceeding, I would have taken the time to understand the future[.]” and “taken time for more input.”¹¹ For the same reasons, the FCC Process Reform Act, which commanded such broad bipartisan support that it passed the House in the 113th Congress on a voice vote, would generally have required the FCC to issue a Notice of Inquiry prior to conducting a rulemaking.¹² Especially where most of the proposed solutions contained in the *Satellite Spectrum Sharing FNPRM* involve complex spectrum sharing arrangements, the sharing rules must be available for full review and comment prior to adoption.¹³

A. The “Gym Membership” Model for Satellite Spectrum Sharing Can’t Work Over the Long Term

The “gym membership” business model is clear: Invite as many people as possible to sign up for a monthly fee, and hope that only a small fraction of those paying actually use the

¹⁰ Open Internet Order, 30 FCC Rcd 5601 (2015), https://docs.fcc.gov/public/attachments/FCC-15-24A1_Rcd.pdf.

¹¹ Protecting and Promoting the Open Internet, Notice of Proposed Rulemaking, GN Docket No. 14-28, at 92 (May 15, 2014), <https://docs.fcc.gov/public/attachments/FCC-14-61A1.pdf> (Commissioner Rosenworcel, concurring).

¹² See Federal Communications Commission Process Reform Act of 2013, H.R. __, 113th Cong. § 13(a)(1)(A)(i)(I), <http://docs.house.gov/meetings/IF/IF16/20130724/101215/BILLS-113pih-FCCProcessReform.pdf>.

¹³ As much as TechFreedom applauds the FCC for publicly circulating drafts of items prior to adoption (and hopes that the current FCC will continue the tradition established by the prior FCC), providing a copy of rules less than 30 days prior to adoption cannot be deemed proper notice and comment under the APA.

facilities, or if they show up at all, they don't stay long.¹⁴ The Commission's approach to spectrum sharing for satellite services seems to favor a similar approach: craft detailed sharing rules that invite as many users as possible to share spectrum and cross your fingers that most of the proposed NGSO satellite systems are never deployed. It's understandable why the Commission should continue to think this way, since several generations of NGSO systems failed to materialize, even after the Commission granted multiple licenses in the 1990s.¹⁵ But today, launch cost and satellite production costs are a fraction of what they were three decades ago. There is now every likelihood that many, if not most, of the proposed systems will be deployed. Accordingly, the Commission's approach to this proceeding should assume satellite deployments and spectrum use that will begin to match the cadence of commercial space launches, many of which are ferrying new communications satellites to orbit nearly every week.¹⁶

¹⁴ See Stacey Vanek Smith, *Why We Sign Up for Gym Memberships But Never Go to the Gym*, NATIONAL PUBLIC RADIO (Dec. 30, 2014), <https://www.npr.org/sections/money/2014/12/30/373996649/why-we-sign-up-for-gym-memberships-but-don-t-go-to-the-gym> ("Gyms have built their business model around us not showing up . . . After all, if everyone who had a gym membership showed up at the gym, it would be Thunderdome. If you are not going to the gym, you are actually the gym's best customer.").

¹⁵ See, e.g., James E. Dunstan, *Bring on the Space Barons*, Medium (Sept. 14, 2021), <https://medium.com/@TechFreedom/bring-on-the-space-barons-e425129fbff6> (describing the failure of "barons" Bill Gates and Craig McCaw to deploy the Teledesic system in the 1990s, quoting Sharon Pian Chan, *The birth and demise of an idea: Teledesic's 'Internet in the sky'*, THE SEATTLE TIMES (Oct. 7, 2002), <https://archive.seattletimes.com/archive/?date=20021007&slug=teledesic070>).

¹⁶ Loren Grush et al., *The commercial space industry, led by Elon Musk's SpaceX, is expected to blast off with 41% growth over the next 5 years*, FORTUNE (July 24, 2023, 5:04 PM), <https://fortune.com/2023/07/24/space-industry-revenue-growth-five-years/>; Zach Wichter, *FAA: New guidance for commercial space launches will help balance air traffic flow*, USA TODAY (Apr. 17, 2023, 11:48 AM), <https://www.usatoday.com/story/travel/news/2023/04/17/faa-space-launch-guidance/11681070002/> ("Why is the FAA changing space launch guidelines? According to the agency, the cadence of commercial space launches has increased significantly since 2014").

Rather than jumping right into questions regarding a workable “degraded throughput analysis” to be undertaken by future NGSO operators,¹⁷ the FCC should first focus on two gating issues. First, how many NGSO systems (and of what size) can a given frequency band support? There must be some upper limit on the number of “members” that can fit into this frequency “gym.” Second, will sharing rules encourage efficient spectrum use?¹⁸

¹⁷ *Satellite Spectrum Sharing FNPRM*, *supra* note 2, ¶ 39.

¹⁸ *See generally* TechFreedom Comments on Development of a National Spectrum Strategy at 3, 4, 10 (Apr. 17, 2023), <https://techfreedom.org/wp-content/uploads/2023/04/Comment-NTIA-RFC-4-17-23.pdf> (“Spectrum Efficiency Must Be the Bulwark of the NSS”) (“[S]pectrum efficiency . . . should be job one for NTIA in this process.”) (“Given the lack of ‘greenfield’ spectrum, future spectrum management must focus on making all systems, both commercial and governmental, as efficient as possible to encourage the best use of spectrum across all users.”). *See also* TechFreedom Comments on Modernizing and Expanding Access to the 70/80/90 GHz Bands at 8 (Dec. 2, 2021), <https://techfreedom.org/wp-content/uploads/2021/12/TechFreedom-Comments-70-GHz-12-2-21.pdf> (“The use of databases to coordinate spectrum assignments has evolved but is nothing new . . . What is new is . . . significant improvements in the computation power to efficiently and rapidly run advanced propagation analysis and coordinate devices and users in near realtime” (quoting DYNAMIC SPECTRUM ALLIANCE, AUTOMATED FREQUENCY COORDINATION RESEARCH REPORT 2 (2019), https://dynamicspectrumalliance.org/wp-content/uploads/2019/03/DSA_DB-Report_Final_03122019.pdf)); TechFreedom Reply Comments on Revising Spectrum Sharing Rules For Non-Geostationary Orbit, Fixed-Satellite Service Systems et al. at 3, 9 (April 25, 2022), <https://techfreedom.org/wp-content/uploads/2022/04/TechFreedom-Reply-Comments-4-25-22.pdf> (“[T]he FCC can expect, and indeed, can demand, that satellite operators continue to improve their systems to make more efficient use of spectrum.”) (“[The FCC] should take the opportunity to reward innovation and spectral efficiency and combat ‘moat building’ by earlier-round licensees. Only in this way can the FCC truly capitalize on the satellite revolution we are currently witnessing.”); TechFreedom Comments on Promoting Efficient Use of Spectrum through Improved Receiver Interference Immunity Performance at 3-4, 9 (June 27, 2022), <https://techfreedom.org/wp-content/uploads/2022/06/TechFreedom-Receiver-Performance-Comments-6-27-22.pdf> (“Without engaging government users, there will be little progress made toward finding broad solutions to increased spectrum congestion. The FCC can work to make commercial spectrum users more efficient, but if the government doesn’t deal with highly inefficient legacy government systems, this proceeding cannot achieve its intended purpose.”) (The FCC “should explore true incentives” for equipment manufacturers and spectrum licensees to improve efficiency such as “making future allocations of spectrum contingent on a demonstration of spectral efficiency and receiver tolerance to in-band and adjacent interference.”).

B. There Is No International Consensus on Interference Issues or Spectrum Sharing Related to NGSO Systems

TechFreedom applauds the Commission for getting out in front of spectrum sharing for NGSO systems. But in doing so, the Commission should acknowledge that there is no international consensus on many of these issues. The International Telecommunication Union's (ITU) Working Party 4A is struggling to adopt standards in this area, and their current work indicates that little consensus has been reached heading into the upcoming WRC-23 meeting this December.¹⁹ While waiting on the ITU can be akin to waiting for Godot, the struggles by the international community to come to a consensus on NGSO spectrum sharing should provide a note of caution to the Commission before it settles on a structure for its rules. This again provides a reason for the FCC to refrain from jumping directly from the current FNPRM to adopting rules which will impact current and future satellite operators.

C. The Commission Should Use All Available Tools at Its Disposal to Seek Input on These Issues

Given the nascent state of NGSO systems, and more important, given the overall immaturity of analysis found in the *Satellite Spectrum Sharing FNPRM*, comments and reply comments alone likely will not provide the record the FCC needs to draft effective spectrum sharing rules. Instead, the Commission should first convene stakeholder workshops and use other mechanisms to tease out the critical issues that appear somewhat preordained in the *FNPRM*. A robust dialog involving existing and future users of satellite spectrum is in order.

¹⁹ Int'l Telecomm. Union ("ITU"), *Working Document Toward a Preliminary Draft New Recommendation/Report ITU-R S. [Interference-NGSO]*, Annex 4 to Working Party 4A Chairman's Report, Document 4A/691 (last updated July 13, 2023).

Yes, the Commission needs to move quickly to maintain U.S. leadership in space and provide certainty that will allow for speedy licensing of new NGSO systems.²⁰ But speed alone is not enough. These are tough engineering questions that need to be evaluated fully to ensure functional and efficient interference standards.

III. Conclusion

A revolution in satellite communications is underway. Exciting new services reaching millions (perhaps billions) of unserved or underserved users are being deployed, with more just around the corner. But like a flashing yellow light at an intersection, the Commission should proceed with caution in adopting NGSO spectrum sharing rules. Too many questions, some fundamental, still need to be asked before the FCC can adopt rules. As our parents cautioned us, look both ways before stepping into traffic.

Respectfully submitted,

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²⁰ James Dunstan, *Regulating Outer Space: Of Gaps, Overlaps, and Stovepipes*, THE CENTER FOR GROWTH AND OPPORTUNITY (July 10, 2023), <https://www.thecgo.org/research/regulating-outer-space-of-gaps-overlaps-and-stovepipes/>.