

**Before the  
U.S. DEPARTMENT OF COMMERCE  
NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION  
Washington, D.C. 20230**

In the Matter of	)	
	)	NTIA Docket No. 230308-0068
	)	
<b>DEVELOPMENT OF A NATIONAL SPECTRUM STRATEGY</b>	)	Docket NTIA-2023-0003
	)	
	)	

**COMMENTS OF SPACE EXPLORATION HOLDINGS, LLC**

The National Spectrum Strategy presents a welcome framework for advancing America’s leadership by promoting a competitive, innovative ecosystem that serves all users.<sup>1</sup> America’s connectivity needs cannot depend on just one technology, and the Strategy correctly recognizes that satellite- and space-based connectivity is a necessary part of any plan to reach American consumers today and enable emerging networks of the future.<sup>2</sup> As NTIA implements the Strategy’s policies for spectrum access and management in the near term,<sup>3</sup> it should prioritize two goals: (1) expanding access to low-, mid-, and high-band spectrum for satellite systems to meet growing consumer demand; and (2) adopting flexible policies that drive innovation and promote efficient sharing between systems.

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<sup>1</sup> See Memorandum on Modernizing United States Spectrum Policy and Establishing a National Spectrum Strategy, 2023 DAILY COMP. PRES. DOC. 1008 (Nov. 13, 2023); see also NAT’L TELECOMM. & INFO. ADMIN (“NTIA”), NATIONAL SPECTRUM STRATEGY (2023) (“National Spectrum Strategy” or “Strategy”).

<sup>2</sup> See, e.g., Comments of Space Exploration Holdings, LLC, NTIA Docket No. 230308-0068, at 8-11 (“SpaceX Comments”) (describing modern network architectures that will interweave terrestrial and satellite components into a unified, ubiquitous experience).

<sup>3</sup> See *Implementation of the National Spectrum Strategy*, 88 Fed. Reg. 85266 (Dec. 7, 2023).

## **I. THE STRATEGY SHOULD ENSURE SUFFICIENT SPECTRUM ACCESS FOR NEXT-GENERATION SATELLITE NETWORKS TO MEET GROWING CONSUMER DEMAND**

The Strategy correctly recognizes that next-generation satellite technologies will need access to more spectrum to meet demand and ensure U.S. leadership.<sup>4</sup> Next-generation satellite operators have faced a surge in demand from users across the country and around the world, particularly those in areas that are unserved or underserved by other technologies.<sup>5</sup> These systems not only provide a standalone service for connecting consumer, enterprise, and government end users, they also provide robust backhaul services and complement terrestrial wireless networks, including in some of the hardest-to-reach areas of the country. With improvements in capacity and latency over older satellite technologies, next-generation satellite systems can now satisfy consumer needs in urban and suburban areas, enhancing consumer choice. Over the next few years, next-generation satellite systems will become increasingly integrated into a network architecture and communications ecosystem that interweaves terrestrial and satellite components into a unified consumer experience.

As NTIA works with other federal agencies to implement the Strategy, it should seize near-term opportunities to promote satellite innovation by increasing satellite access to Ka-band spectrum, while expanding underutilized high-band frequencies for satellite use and opening low-band MSS spectrum to additional competition. At the same time, NTIA should preserve satellite access to established Ku- and Ka-band frequencies and the rapidly growing satellite uses of Q/V- and E-band frequencies that millions of consumers rely on daily for critical services.

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<sup>4</sup> Strategy at 2.

<sup>5</sup> *Id.* at 4 (recognizing that “demand for satellite-based services is exploding”); *see also Communications Marketplace Report*, FCC 22-103, ¶ 6 (2022) (approximately 98% of all satellite launches in 2021 were deployed into low-Earth orbit to provide internet connectivity).

***Realize immediate opportunities for expanded satellite access to Ka-band frequencies.***

More operational and anticipated next-generation satellite systems (fifteen) rely on the Ka-band than any other set of frequencies, collectively supporting millions of users.<sup>6</sup> NTIA has therefore correctly identified the 18.1-18.6 GHz (“18 GHz”) band for expanded satellite use,<sup>7</sup> consistent with the United States position and the adopted resolution at 2023 World Radio Conference (“WRC-23”).<sup>8</sup> These frequencies will facilitate critical commercial space-to-Earth and space-to-space communications that will foster a growing, and internationally harmonized, communications ecosystem in space. This same rationale also supports rapidly expanding access to the 17.3-17.8 GHz (“17 GHz”) band for next-generation satellite services.<sup>9</sup> As such, NTIA should coordinate with the FCC to expeditiously adopt a co-primary non-geostationary orbit (“NGSO”) satellite allocation in the neighboring band, consistent with the U.S. position during WRC-23 and the final acts of the conference.<sup>10</sup> Making both 17 and 18 GHz frequencies immediately available for NGSO use would help satellite operators keep pace with consumer needs and enhance coexistence between co-primary users of the bands.

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<sup>6</sup> See *Cut-Off Established for Additional NGSO-Like Satellite Applications or Petitions in the 10.7-12.7 GHz, 14.0-14.5 GHz, 17.8-18.6 GHz, 18.8-19.3 GHz, 27.5-28.35 GHz, 28.35-29.1 GHz, and 29.5-30.0 GHz Bands*, 31 FCC Rcd. 7666 (July 15, 2016); *Cut-Off Established for Additional NGSO-Like Satellite Applications or Petitions for Operations in the 12.75-13.25 GHz, 13.85-14.0 GHz, 18.6-18.8 GHz, 19.3-20.2 GHz, and 29.1-29.5 GHz Bands*, 32 FCC Rcd. 4180 (May 26, 2017).

<sup>7</sup> Strategy at 7.

<sup>8</sup> See INT’L TELECOMM. UNION, World Radiocommunication Conference 2023 (WRC-23) Provisional Final Acts, 539 (Resolution Com5/8) (“WRC-23 Final Acts”) (adopting agenda item 1.17 for use of the 18.1-18.6, 18.8-20.2, and 27.5-30 GHz bands for expanded satellite use).

<sup>9</sup> See *Amendment of Parts 2 and 25 of the Commission’s Rules to Enable GSO Fixed-Satellite Service (Space-to-Earth) Operations in the 17.3-17.8 GHz Band, to Modernize Certain Rules Applicable to 17/24 GHz BSS Space Stations, and to Establish Off-Axis Uplink Power Limits for Extended Ka-Band FSS Operations*, IB Docket Nos. 20-330 et al., FCC 22-63, ¶¶ 74-78 (rel. Aug. 3, 2022).

<sup>10</sup> See ITU Final Acts at 606 (Resolution Com6/24) (allocating the 17.3-17.8 GHz band for NGSO FSS use in Region 2); see also Working Document on WRC-23 Agenda Item 1.19, Contribution to WP4A from the United States of America, Annex 19 to Document 4A/856-E (Sept. 30, 2022); see also Draft CPM Text for WRC-23 Agenda Item 1.19, Contribution to WP4A from the United States of America, Annex 25 to Document 4A/856-E (last updated Oct. 7, 2022).

***Leverage underutilized spectrum to facilitate, rather than react, to spectrum innovations.***

NTIA and the FCC can realize the Strategy’s core objective of “expand[ing] opportunities for spectrum access and harmonious coexistence”<sup>11</sup> by bringing long-overdue competition to Mobile-Satellite Service (“MSS”) frequencies. Next-generation satellite operators are capable of enhanced, efficient use of mobile satellite service (“MSS”) frequencies—137-460 MHz (“VHF-band”), 1-2 GHz (“L-band”), and 2-4 GHz (“S-band”)—that the FCC designed for sharing between multiple operators. A robust record demonstrates that current real-world use of these frequencies is sparse, with many bands supporting only a single licensee that provides limited service or is not operational at all.<sup>12</sup> These MSS frequencies are an untapped opportunity to facilitate the massive growth in mobile data traffic that the Strategy recognizes by ushering in a new generation of expanded mobile services for consumers.

The Strategy should also prioritize high-band spectrum, including the E-, W-, and D-bands, which will play a key role in satellite networks in the coming years.<sup>13</sup> These bands feature large, contiguous blocks of spectrum ideal for high-capacity backhaul to support millions of end user devices. Further, because these frequencies require high-gain “pencil beams” to overcome propagation limitations, sharing among co-primary users and between federal and non-federal users is significantly easier. NTIA and the FCC should ensure that any efforts to develop commercial rules for these bands accommodate co-primary satellite operators.

***Maintain foundational spectrum bands for all transmission technologies, including critical satellite services.*** The Strategy should ensure that proposals to expand spectrum access

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<sup>11</sup> Strategy at 10.

<sup>12</sup> See, e.g., Application of Space Exploration Holdings, LLC for Modification of Authorization for the SpaceX Gen2 NGSO Satellite System to Add a Mobile-Satellite Service System, IBFS File No. SAT-MOD-20230207-00022 (Feb. 7, 2023).

<sup>13</sup> SpaceX Comments at 6-7.

are rooted in technical data demonstrating that such access protects current co-primary users from harmful interference,<sup>14</sup> consistent with the approach the FCC took when it prevented speculators from adding mobile services that would harm millions of Americans that depend on satellite operations in the 12.2-12.7 GHz (“12 GHz”) band.<sup>15</sup> For example, next-generation satellite systems currently rely heavily on the Ku-, Ka-, Q/V-, and E-bands to provide a high-quality of service to millions of consumers.<sup>16</sup> While next-generation satellite systems share spectrum by design, any new inter-service sharing must be technically feasible and practically advisable.

## **II. A MODERN SPECTRUM LICENSING AND MANAGEMENT REGIME IS NECESSARY TO OPTIMIZE SPECTRUM USE AND COEXISTENCE**

The Strategy rightly notes that, in addition to ensuring that operators have sufficient spectrum access, agencies must also “enhance[e] the frameworks, processes, and tools for spectrum access and management” to maximize spectrum efficiency.<sup>17</sup> While emerging technologies such as artificial intelligence and machine learning may play a future role in assessing spectrum access and facilitating sharing between different users, NTIA and the FCC should first focus on well-established technical and policy solutions to eliminate outdated rules and streamline processes.

***Modernize sharing rules between NGSO and GSO networks.*** Many satellite sharing rules are decades old and have not kept pace with innovation, preserving inefficiencies and needlessly restricting next-generation satellite use to the detriment of consumers and without any benefit to legacy technologies. Following numerous technical studies, the United States officially declared

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<sup>14</sup> Strategy at 11, 17.

<sup>15</sup> *Expanding Flexible Use of the 12.2-12.7 GHz Band*, FCC 23-36, ¶ 2 (rel. May 19, 2023).

<sup>16</sup> These bands include the frequency ranges 10.7-14.5 GHz (“Ku-band”), 17.3-30.0 GHz (“Ka-band”), 37.5-51.4 GHz band (“Q/V-band”), and 71-76 and 81-86 GHz (“E-band”).

<sup>17</sup> Strategy at 13.

at WRC-23 that existing EPFD limits over-protect GSO operators and must be revised to enable productive co-existence in shared satellite bands.<sup>18</sup> Just as the FCC followed SpaceX’s recommendation to sunset protections for NGSO systems, the FCC and NTIA should now act on their official position by updating the EPFD limits to reflect the modern operating circumstances for next-generation satellite systems and create a co-existence framework that evolves with the systems before it. For example, the current operating regime in the Q- and V-bands present a potential roadmap for interference protection and sharing that can be extended to other bands.<sup>19</sup>

*Adopt “flexible use” licensing policies for satellite systems.* NTIA and the FCC should also take immediate steps to modernize satellite licensing rules and procedures by more closely aligning satellite licensing and coordination frameworks with successful flexible use policies for terrestrial systems.<sup>20</sup> The United States’ pioneering flexible-use licensing framework for terrestrial wireless services has allowed it to lead the world in communications innovation and deployment by establishing broad, performance-based rules. These flexible licenses allow operators to continually innovate and quickly upgrade their networks to meet customer demand. Unfortunately, the FCC has not yet upgraded its licensing for satellite systems with the same flexible approach that has proven successful, instead forcing licensees to frequently file formal applications for upgrades to their systems that then take years to review. The United States recognized the flaws in this type of command-and-control regulatory regime for terrestrial systems decades ago. Maintaining this outdated approach for satellite operators has driven many U.S.-based satellite companies to license their systems overseas, while delaying deployment of

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<sup>18</sup> See, e.g., INTER-AMERICAN TELECOMM. COMM’N (“CITEL”), United States Delegation Draft Proposal on Agenda Item 10: Article 22 EPFD Limits (Aug. 13, 2023).

<sup>19</sup> See ITU, Resolution 770, *adopted at* ITU-RR 22.5M; see also Recommendation ITU-R S.2131-1 (2022); Recommendation ITU-R S.1323-2 (2002).

<sup>20</sup> Strategy at 10.

American systems by years.<sup>21</sup> As foreign governments seek to build next-generation satellite systems of their own, expressly to compete with U.S.-licensed systems, NTIA and the FCC must quickly move to a flexible licensing approach or risk being left behind to the detriment to U.S. national security goals and American consumers.

NTIA and the FCC can take a number of near-term steps within the Strategy to modernize satellite licensing and promote rapid deployment of innovative services to consumers. For example, the FCC should allow satellite operators to make improvements to their satellite systems without seeking prior approval in situations where those modifications present no increased interference or orbital debris risk. Moreover, the FCC should adopt shot clocks for taking ultimate action on the merits of satellite applications, incorporating time to accommodate inter-agency review. The FCC should also abandon its unwritten policy of using informal “pocket vetoes” over certain applications by not even putting them out for comment, which is inconsistent with Commission rules but unfortunately still takes place. Finally, the NTIA should bring greater transparency to the inter-agency spectrum coordination process, including by integrating non-federal applicants when questions arise and expanding existing “green light/yellow light” databases to enable more efficiency coordination in federal and non-federal users share.<sup>22</sup>

## CONCLUSION

A comprehensive strategy for modernizing U.S. spectrum policy must both recognize new opportunities for spectrum access and implements novel frameworks for efficient co-existence and management. Next-generation satellite networks are essential to future communications capabilities and should be a focal considerations in both of these decisions as NTIA implements

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<sup>21</sup> *Id.* at 17.

<sup>22</sup> *Id.* at 2.

each pillar and corresponding objective of its National Spectrum Strategy. SpaceX looks forward to continued engagement with NTIA and other partners and stakeholders to ensure these policies are realized and the public interest is maximized.

Respectfully submitted,

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