Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
Blue Origin, LLC	)	File No. _____
	)	
for Authority to Launch and Operate the	)	
Blue Origin Orbital Data Center System	)	Call Sign: _____
	)	
	)	

APPLICATION

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APPLICATION

Blue Origin seeks authority to launch and operate a non-geostationary satellite orbit ("NGSO") constellation to support data centers in space ("Project Sunrise"). A Form 312, Schedule S, and Technical Annex are included with this application, consistent with the Commission's rules. This system will consist of up to 51,600 satellites operating in circular, sun-synchronous orbits from 500–1,800 km in altitude, with inclinations between 97 degrees and 104 degrees, with each orbital plane containing approximately 300–1,000 satellites.

In order to enhance operational efficiency across the various orbital planes, Blue Origin will develop and deploy multiple versions of satellite hardware. Particular spacecraft groupings may differ by the installed antenna hardware, which will have at least three (3) antenna variations to address the specific coverage requirements. The RF requirements will remain uniform across the entire constellation.

Blue Origin's Project Sunrise will rely largely on optical links to support its communications by routing traffic through its TeraWave system and other mesh backhaul networks to transmit to the ground. To support early- and post-mission phases and to ensure additional operational reliability, this system will utilize onboard communications systems capable

of conducting telemetry, tracking, and command ("TT&C") functions. These TT&C operations will be conducted in the NGSO primary portions of the Ka-band on a non-interference, unprotected basis and may be used during nominal operations as well as mission-critical phases. For the reasons set forth in this application, Blue Origin respectfully requests grant of its application.

I. BLUE ORIGIN BACKGROUND

Blue Origin's mission objective is to radically reduce the cost of access to space through reusability, harness the vast resources of space to enable exploration and development, and inspire and mobilize future generations by building the road to space for the benefit of Earth. Blue Origin has designed, built, launched, and reused two space launch vehicles, New Shepard and New Glenn. New Shepard was the first vehicle of any kind to fly into space and then land vertically upon the Earth. New Glenn is a heavy lift launch vehicle capable of delivering 70 metric tons into orbit. These vehicles are powered by Blue Origin-designed and -manufactured engines. Blue Origin is also developing landers in support of NASA missions to the Moon, enabling the delivery of astronauts and heavy cargo and fostering a durable, permanent lunar presence. Blue Ring is an all-in-one, multi-mission, multi-orbit space mobility vehicle capable of maneuvering, hosting, and deploying payloads and infrastructure services in Earth orbits, to the Moon, interplanetary, and near-Earth asteroids. Our offerings enable government, commercial, and academic customers to do more in orbit and beyond: conduct breakthrough science, deliver critical services, and extend human presence deeper into space.

Blue Origin has shown commitment to each of its programs through investment in next generation facilities and by hiring and developing the best talent to support our ambitious mission. Leveraging the experience we have gleaned through the design, development, and execution of

these programs, Blue Origin is excited to begin a new chapter with its recent announcement of TeraWave, its NGSO system with unprecedented connectivity for critical operations,[1] and its upcoming Project Sunrise.

II. GRANT OF THIS APPLICATION WILL SERVE THE PUBLIC INTEREST

Reliable, scalable access to computing infrastructure is integral to economic competitiveness, technological innovation, and broad societal benefit. Explosive growth in artificial intelligence ("AI") workloads, machine learning, and cloud computing is driving unprecedented demand for data center capacity that is already encountering severe roadblocks to scale through terrestrial infrastructure alone.

Blue Origin seeks to expand the availability of compute infrastructure by deploying orbital data centers to harness the unique physical advantages of the space environment. Grant of this application will serve the public interest by augmenting existing terrestrial capacity with scalable, sustainable compute infrastructure, expanding the frontiers of performance, resiliency, and accessibility for AI and cloud services, and ensuring the efficient use of spectrum resources, as described below.

A. Space-based Data Centers Address a Critical Infrastructure Gap and Expand Sustainable Capacity

The insatiable demand for AI workloads has led to the rapid buildout of terrestrial data centers globally. Space-based data centers will be a complement to terrestrial infrastructure by introducing a new compute tier that operates independently of Earth-based constraints. Satellites

[1] *See* Application of Blue Origin, ICFS File No. SAT-LOA-20260120-00033 (filed Jan. 21, 2026).

operating in sun-synchronous orbits have access to near-constant solar power, enabling continuous baseload compute without additional draw from terrestrial electrical grids or water supplies. By adding compute capacity to orbit, the constellation will expand total industry capacity and introduce new sources of clean power for compute workloads while preserving terrestrial infrastructure for uses that cannot be replicated in space.

The demand for space-based compute power is growing. Competition among these systems will drive innovation and enhance service quality. Encouraging diverse participation in the space-based data center market will catalyze advancements in technology and resource efficiency, ultimately leading to more robust and sustainable solutions. Blue Origin contends that this application will foster a competitive environment that will benefit consumers and industry alike. Therefore, expeditious grant of this authorization is in the public interest.

B. Orbital Data Centers Will Make AI Compute More Accessible

The transformative potential of AI extends well beyond the technology sector. AI-driven applications are already improving patient outcomes through earlier disease detection and more accessible diagnostics in healthcare, increasing agricultural productivity through precision monitoring of weather and soil, expanding educational access through personalized instruction and intelligent tutoring, and advancing climate science through higher-resolution modeling and predictive analytics. Yet the societal benefits of AI are fundamentally constrained by the availability and affordability of the computing infrastructure that powers it.

Space-based data centers can help break this bottleneck. The built-in efficiencies of solar-powered satellites, always-on solar energy, lack of land or displacement costs, and nonexistent grid infrastructure disparities, fundamentally lower the marginal cost of compute capacity

compared to terrestrial alternatives. Empowered by the revolutionary capability of New Glenn's launch capacity, the economics of space-based compute will enable access at price points that were previously unattainable. Blue Origin's Project Sunrise will serve the broad AI data center market and enable U.S. companies developing and using AI to flourish, accelerating breakthroughs in machine learning, autonomous systems, and predictive analytics in support of broad societal benefit.

C. The Constellation Will Use Spectrum Efficiently and Operate on a Non-Interference Basis

Project Sunrise will primarily rely upon optical inter-satellite links as a means of communication, with no planned use of radio frequency transmissions under nominal operating conditions. To enhance system reliability, particularly during early-mission, post-mission, and emergency phases, satellites will be capable of conducting TT&C operations in the Ka-band on a non-interference, unprotected basis. The constellation will use the 18.8–19.3 GHz (space-to-Earth) and 28.6–29.1 GHz (Earth-to-space) bands, which the Commission allocates for NGSO fixed-satellite service ("FSS") operations on a primary basis.

Safety is core to the Blue Origin mission, and this extends to operation of our satellites. Use of this spectrum is in the public interest, as the Commission has repeatedly found, to ensure the reliability of the satellites during early-mission, post-mission, and emergency operations. Blue Origin seeks to operate on a non-interference basis in bands that are already allocated for NGSO FSS operations, further ensuring compatibility with current and future users.

III. DESCRIPTION OF PROJECT SUNRISE

A. Space and Earth Station Parameters

Project Sunrise will consist of up to 51,600 satellites operating in sun-synchronous orbits from 500–1,800 km, with inclinations between 97 degrees and 104 degrees, with each orbital plane containing approximately 300–1,000 satellites. For data, Project Sunrise will rely on optical links to support its communications by routing traffic through its TeraWave system and other mesh backhaul networks to transmit to the ground.

B. Frequency Use

For primary payload data transfer, Data Center satellites will communicate with each other and with other satellite networks via optical intersatellite links. The requested radio frequency spectrum will be used to support TT&C functions during routine nominal operations as well as contingency and mission-critical phases. This includes the Launch and Early Orbit Phase ("LEOP"), supplemental support to nominal operations where required, and the end-of-mission deorbit phase.

Blue Origin requests authority to operate in the Ka-band, specifically 18.8–19.3 GHz for space-to-Earth transmissions and 28.6–29.1 GHz for Earth-to-space transmissions. These frequencies are allocated to NGSO FSS on a primary basis. Nonetheless, Blue Origin will operate in these bands on a non-interference, non-protected basis. Accordingly, Project Sunrise will not cause harmful interference to current or future operators.

IV. WAIVER REQUESTS

The Commission may waive any of its rules if there is "good cause" to do so.[2] In general, waiver is appropriate if (1) special circumstances warrant a deviation from the general rule; and (2) such deviation would better serve the public interest than would strict adherence to the rule.[3] Generally, the Commission will grant a waiver of its rules in a particular case if the relief requested would not undermine the policy objective of the rule in question and would otherwise serve the public interest.[4] Blue Origin submits that good cause exists to waive the following rules.

C. Waiver of Processing Round Procedures 47 C.F.R. §§ 25.155(b), 25.157(c)

47 C.F.R. § 25.157 sets forth the procedures for conducting processing rounds to process applications for authority to launch and operate for NGSO-like systems. Under that framework, a processing round is initiated by a lead application being placed on Public Notice and establishing a cut-off date before which competing applications must file an application to be considered within the processing round under 47 C.F.R. § 25.155(b).[5] The purpose of the processing round procedures is to establish a sharing environment among NGSO systems that prevent one applicant from precluding entry by other satellite operators in the same frequency band with a measure of certainty.[6]

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[2] *See* 47 C.F.R. § 1.3; *Northeast Cellular Tel. Co. v. FCC*, 897 F.2d 1164 (D.C. Cir. 1990); *WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir. 1969).

[3] *See Northeast Cellular*, 897 F.2d at 1166.

[4] *See WAIT Radio*, 418 F.2d at 1157.

[5] *See* 47 C.F.R. § 25.157(c)(2).

[6] See Amendment of the Commission's Space Station Licensing Rules and Policies, 18 FCC Rcd. 10760, ¶ 25 (2003); see also Update to Parts 2 and 25 Concerning Non-Geostationary, Fixed-Satellite Service Systems and Related Matters, 32 FCC Rcd. 7829, ¶ 61 (2017).

In turn, the Commission has previously waived the processing round rules for NGSO systems when doing so would not preclude entry of additional operators in the same frequency band or cause harmful interference to existing licensees, undermining the purpose of the rule.[7] Further, the Commission has previously declined to open processing rounds to enable NGSO FSS operations in instances in which the Commission determined that the requested operations would not create new spectrum conflicts with other operators and instead that there was efficiency in authorizing the requested operations with conditions rather than open a new processing round.[8] Because Blue Origin's proposed use of the requested frequencies would not preclude entry of additional operators in the same frequency band or present frequency conflicts, good cause exists to waive the processing round requirements here.

In this case, Blue Origin requests limited use of the NGSO FSS-primary portion of the Ka-band and seeks authority to operate on a non-interference, non-protected basis. As described above, this system will primarily rely on optical links for nominal communications. Because TT&C operations can use low bandwidth, the Project Sunrise satellites will be equipped with dynamic frequency-flexible transmitters capable of dynamically selecting low-bandwidth

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[7] *See, e.g.*, *Iridium Constellation LLC*, 31 FCC Rcd. 8675, ¶ 41 (IB & OET 2016) (waiving processing round requirements for an NGSO system because access will not preclude additional entry); *Northrop Grumman Space & Mission Systems Corporation*, 24 FCC Rcd. 2330, ¶¶ 23-34 (IB 2009) (same); *Space Imaging, LLC*, 20 FCC Rcd. 11964, ¶ 10 (IB 2005) (same); *Lockheed Martin Corporation*, 20 FCC Rcd. 11023, ¶ 15 (IB 2005) (same).

[8] See, e.g., Audacy Corporation, Application for Authority to Launch and Operate a Non-Geostationary Medium Earth Orbit Satellite System in the Fixed- and Inter-Satellite Service, Order and Authorization, 33 FCC Rcd 5554, 5562, para. 21 (2018) (Audacy Order); The Boeing Company, Application for Authority to Launch and Operate a Non-Geostationary Satellite Orbit System in the Fixed-Satellite Service, Order and Authorization, 36 FCC Rcd 16067, 16075-76, paras. 21-23 (2021) (Boeing Order); Space Exploration Holdings, LLC, Request for Orbital Deployment and Operating Authority for the SpaceX Gen2 NGSO Satellite System, Order and Authorization, 39 FCC Rcd 2159, paras. 10-13 (2024) (SpaceX Gen2 Order).

operating frequencies as needed, further ensuring that no interference to other operators will occur. Between the frequency agility and operational controls, Blue Origin can avoid causing harmful interference while still maintaining the reliability and safety-critical integrity of its TT&C links.

Finally, grant of this waiver is in the public interest. The Project Sunrise system will ease mounting pressure on U.S. communities and natural resources by shifting energy- and water-intensive compute away from terrestrial data centers, reducing demand on land, water supplies, and electrical grids. Through expeditious grant of this authorization, we can more quickly begin harnessing abundant, near-continuous solar power in space, enabling this system to deliver reliable, low-carbon compute, help to make AI more accessible, and advance innovation.

The Commission is already appropriately acknowledging the need to evolve its rules alongside rapidly changing NGSO system technology in order to adequately support innovation by U.S. businesses.[9] By granting a waiver of the processing round rules, the Commission can further its proposed modernization efforts and enable faster deployment of these critical services without undermining the intent of processing rounds designed to ensure shared access to these frequencies.

D. Waiver Milestone and Surety Bond Requirements, 47 C.F.R. §§ 25.164, 25.165

Under Section 25.164 of the Commission's rules, an operator is required to launch 50 percent of its proposed constellation within six years following grant of the authorization, and the

[9] *See Space Modernization for the 21st Century*, Notice of Proposed Rulemaking, SB Docket No. 25-306, FCC 25-69, para. 133 (rel. Oct. 29, 2025) (*Space Modernization NPRM*); *see also* 90 Fed. Reg. 56338 (Dec. 5, 2025).

remainder of its proposed constellation no later than nine years after grant of the authorization. An applicant's failure to launch satellites within the timelines established in Section 25.164 incurs a financial penalty in the form of a bond, the value of which escalates from one million to five million dollars.[10]

In the same rulemaking where the Commission seeks to update its processing round requirements, it also reevaluates the milestone and surety bond requirements to better reflect current operations by U.S. companies. The Commission noted that following other recent updates to its fee structures, the existing surety bond structure is no longer necessary to prevent spectrum warehousing, an original aim of the milestone and surety bond requirements.[11] In doing so, the Commission acknowledges the limited benefit of adding the cost of a bond when a system will not preclude others nor seeks priority use.[12] Blue Origin agrees.

In this case, Blue Origin submits that a waiver of the milestone and surety bond requirements is consistent with the proposed aims of the modernized rules. Blue Origin seeks limited use of a band allocated for its purpose on a non-protected, non-interference basis. Accordingly, there can be no spectrum warehousing concerns. Additionally, Blue Origin is proposing to waive the processing round requirement and therefore is not requesting any priority use of this band. Because Blue Origin's operations would not undermine the purposes of the

[10] *See* 47 CFR 25.165.

[11] *Space Modernization NPRM*, 177.

[12] *Id.* at 177.

milestone and bond requirements, therefore waiver of the milestone and bond requirements is warranted.

E. Substantial Completion

Blue Origin requests waiver of Section 25.112(a) of the Commission's rules to the extent necessary. 47 C.F.R. § 25.112 provides that an application will be unacceptable for filing and will be returned to the applicant if the application lacks completeness of answers to questions or informational showings,[13] and that such an application may still be found acceptable for filing if accompanied by a waiver request.[14] As discussed in the Technical Annex, the Project Sunrise satellite design is currently being matured, and accordingly, Blue Origin intends to revise our orbital debris mitigation plan as the system and satellite design continues to mature. Pending design maturity, Blue Origin has instead disclosed its design plans and certifications to meet Commission rules. Accordingly, this application should be found acceptable for filing, and a waiver of 47 C.F.R. § 25.112 should be granted to the extent necessary.

F. Limitations of Schedule S

Blue Origin, to the extent necessary, requests a limited waiver of 47 C.F.R. § 25.114(c), which requires certain technical information to be provided in the Schedule S.[15] It is impracticable to submit complete orbital parameter data for using the Schedule S web form. Accordingly, Blue Origin is providing a representative sample of this data in the Schedule S that captures the

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[13] 47 C.F.R. § 25.112(a)(1).

[14] *See id.*

[15] 47 C.F.R. § 25.114(c).

operational bounds of the system, including the minimum and maximum satellite parameters and select intermediate orbital configurations representative of the constellation. Strict application of the rules here is unnecessary to serve the purposes of the rules, which is to ensure that the Commission has all the relevant information to evaluate the application. Because Blue Origin has provided all relevant technical information in the Technical Annex, including data sufficient to characterize the full operational envelop of the system, the representative Schedule S submission satisfies the Commission's underlying informational objectives. Accordingly, waiver of these Schedule S requirements is appropriate.

V. ITU COMPLIANCE

Blue Origin has not yet submitted system information for ITU publication. Blue Origin will submit this information when appropriate.

VI. CONCLUSION

For the reasons stated above, Blue Origin submits that the public interest would be served by grant of this application.

Respectfully submitted,

/s/

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