

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)
)
REVISING LICENSE DETERMINATION) RM - _____
RULES FOR NON-GEOSTATIONARY)
(“NGSO”) LICENSE APPLICATIONS)
)
)

To: FCC Secretary

PETITION FOR RULEMAKING

Pursuant to Section 1.401 of the Commission’s rules, the Olin Satellite + Spectrum Technology & Policy (“OSSTP”) Group hereby requests that the Commission expand its ongoing efforts to 1) address staffing needs¹ and 2) review and revise non-geostationary (“NGSO”) satellite system requirements to include a clearly defined period of time within which the Commission must make a license determination on NGSO applications.

The creation of such license determination rules aligns with the goals of the bipartisan discussion draft legislation, “SAT Streaming Act of 2022” that the Republican and Democratic leaders of the House Energy and Commerce Committee circulated publicly to Congress in September 2022.² This would also serve the public interest in offering a reasonable sense of regulatory certainty and long-term technical and financial clarity, given the milestone and surety bond requirements, defined in 25.164³ and 25.165,⁴ respectively.

¹ Press Release, FCC, Chairwoman Rosenworcel Proposes Space Bureau (Nov 3, 2022), <https://www.fcc.gov/document/chairwoman-rosenworcel-proposes-space-bureau>

² See Satellite And Telecommunications Streamlining Act of 2022 – Discussion Draft Legislation, 117th Congress 2D Session, (2022) (“SAT Streamlining Act of 2022”)

³ See 47 C.F.R. § 25.164 (2021) (“Milestones”)

⁴ See 47 C.F.R. § 25.165 (2021) (“Surety Bonds”)

BACKGROUND

The OSSTP Group is funded in part through the National Science Foundation (“NSF”)’s Spectrum Innovation Center: SpectrumX⁵ and the Amateur Radio Digital Communications (ARDC) Grant, and consists of researchers and satellite industry mentors who apply data analytics and modeling tools to develop technology, and influence policy pertaining to satellite systems and spectrum. The ultimate vision of the OSSTP Group is to aid in the creation of a safe and sustainable space environment in which many spectrum-users coexist for years to come, all while educating the next generation of policymakers and technologists through apprenticeship-styled learning experiences.

The OSSTP Group stresses that the primary goals of this petition are 1) to acknowledge the level to which the International Bureau (“IB”) is overloaded and understaffed, and 2) to identify systematic issues with the NGSO filing process, requesting the Commission explore areas that will holistically streamline authorization. The OSSTP Group commends the IB for all that it has processed given the unprecedented challenges of the issues at hand and its staffing shortage. The OSSTP Group urges the Commission to continue to expeditiously allocate resources in staff count and process so that pressing issues like market access applications and rulemakings are addressed with increased efficiency.

In 2003, the Commission adopted a new regime in processing NGSO Fixed Satellite Service (“FSS”) applications incorporating Processing Rounds with the aim of authorizing such systems expeditiously and in an efficient manner.⁶ When the Processing Round regime was initiated, it was unlikely that the Commission expected that two decades later they would face a

⁵ SpectrumX, <https://www.spectrumx.org/>

⁶ See Amendment of the Commission’s Space Station Licensing Rules and Policies, 18 FCC Rcd. 10760, (2003) (“2003 Licensing Reform Order”).

complex cascade of processing rounds, each with approximately ten applicants, nor did the Commission likely expect multiple systems to launch and come to fruition. Aspects of the licensing approach need review, as the uncertainty due to the increasingly long application processing time alone threatens to undermine the efficiency, certainty, and fairness of the Processing Round licensing regime. The processing round system was crucial to the rapid growth of the NGSO satellite sector today, which has attracted billions of dollars worth of investments and has already supported the connection of more than half a million users (Starlink and SES Networks consumer and enterprise combined).⁷

An April 2022 OSSTP Group report, authored by A. Kriezis and W. Q. Lohmeyer, showed that since 2016, more than twenty distinct FSS entities have filed for a total of more than 70,000 satellites to serve the U.S. Market.⁸ Additional detail on the specific frequency ranges and operator information of each round is contained within the April 2022 OSSTP Group’s Industry Report, but in summary, these applications took place across four processing rounds with the following submission dates and frequencies:

- November 15, 2016: Ku-/Ka-band⁹
- March 1, 2017: V-band¹⁰
- May 26, 2020: Ku-/Ka-band¹¹
- November 4, 2021: V-band¹²

In the 2016 Ku-/Ka-band Processing Round, it took an average of 2.0 years (ranging

⁷ Michael Sheetz, SpaceX’s Starlink satellite internet surpasses 400,000 subscribers globally, CNBC, May 25, 2022, <https://www.cnbc.com/2022/05/25/spacexs-starlink-surpasses-400000-subscribers-globally.html>

⁸ See A. Kriezis and W. Q. Lohmeyer, *U.S. Market Access Authorization Timeline Analysis for Megaconstellation Networks*, OSSTP (Apr, 2022), <https://www.osstp.org/fcc-analysis> (“OSSTP Group Industry Report”)

⁹ <https://docs.fcc.gov/public/attachments/DA-16-804A1.pdf>

¹⁰ <https://docs.fcc.gov/public/attachments/DA-16-1244A1.pdf>

¹¹ <https://docs.fcc.gov/public/attachments/DA-20-325A1.pdf>

¹² <https://docs.fcc.gov/public/attachments/DA-21-941A1.docx>

approximately 1.0 - 3.8 years) from the point at which an operator first submitted an FCC U.S. Market Access Application to the time at which the FCC made their First Action. In the second round (March 2017: V-band), this value increased by nearly a year to 2.9 years (ranging from 1.3 - 4.1 years).¹³ However, this analysis does not tell the whole story. Delays are cascading due to a variety of reasons including, but not limited to, IB understaffing and the parallel processing of complex rulemakings and modifications. The Commission has a major backlog of applications, processing times for modifications are increasing, and a fifth Processing Round is imminent. All of which ultimately does not align with the Commission's goals to put spectrum to use quickly.¹⁴

Furthermore, of the 2016 Ku-/Ka-band and 2017 V-band Processing Round applicants that have received authorization, three systems, Kepler, SpaceX and OneWeb, have already started launching their systems. Figure 1 depicts the individual launch events as well as the cumulative number of OneWeb and Starlink satellites already in orbit. Kepler was not included in this figure, but has launched nineteen satellites.¹⁵

¹³ OSSTP Group Industry Report

¹⁴ See Filing of Applications for New Space Stations in the Fixed-Satellite Service, 93 F.C.C.2d 1260, ¶ 11 (1983).

¹⁵ Press Release, Kepler, Kepler Communications Announces Successful Launch of 4 New GEN1 Satellites Including Test Bed for ÆTHER™ Service (Jan. 13, 2022),

<https://www.globenewswire.com/news-release/2022/01/13/2366739/0/en/Kepler-Communications-Announces-Successful-Launch-of-4-New-GEN1-Satellites-Including-Test-Bed-for-%C3%86THER-Service.html>

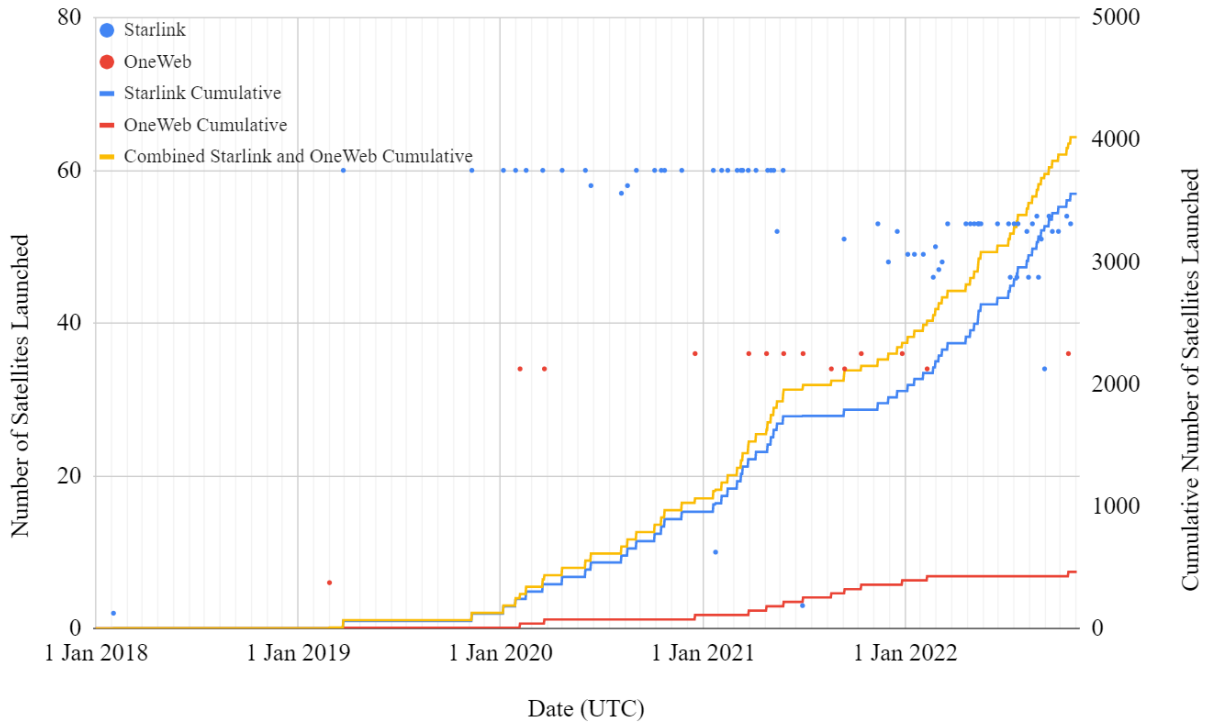


Fig. 1: Number of satellites launched by Starlink and OneWeb by launch and cumulatively

As of November 9, 2022, Starlink had deployed a total of 3,558 satellites,¹⁶ and OneWeb had deployed 464 satellites,¹⁷ totaling 4,022 satellites across the two networks. The first two Starlink satellites launched on February 2, 2018, followed by regular launches of approximately sixty satellites per launch on March 24, 2019.¹⁸ The first six OneWeb satellites launched on February 27, 2019, followed by a launch of thirty-four satellites on February 6, 2020.¹⁹

As of the date of this petition, only two of the ten 2020 Ku-/Ka-band Processing Round applications have received a First Action: one of the two applicants (Amazon Kuiper²⁰) received

¹⁶ SpaceX, <https://www.spacex.com/launches/> (“SpaceX Launches”)

¹⁷ OneWeb, <https://oneweb.net/resources/launch-programme> (“OneWeb Launches”)

¹⁸ SpaceX Launches

¹⁹ OneWeb Launches

²⁰ See Application For Satellite Space Station Authorizations, IBFS File No. SAT-LOA-20190704-00057 (Jul. 4, 2019) (“Amazon Application”).

a grant of approval and the other (EOS Defense²¹) withdrew their application. Amazon Kuiper’s application²² was processed and granted in 391 days (1.07 years) while the remaining applications have remained under review for over two years. This trend of increasingly long wait times continues to hold in the most recent 2021 V-band round, in which all twelve of the submitted applications have been under review for more than a year (as of November 9, 2022).

DISCUSSION

As time progresses, one might expect the FCC’s application processing time to decrease. Unfortunately, despite the Commission gaining familiarity with reviewing the FSS networks, the duration of time from application submission to FCC First Action has increased. This can potentially be attributed to the FCC’s parallel efforts to address: 1) Multiple, complex rulemakings (e.g. the R&O and NPRM on “Revising Spectrum Sharing Rules for Non-Geostationary Orbit, Fixed-Satellite Service Systems”, referred to as the “NGSO Sharing R&O/NPRM”²³ and the R&O and FNPRM on the “Mitigation of Orbital Debris in the New Space Age”²⁴), 2) Contentious modification requests of NGSO FSS system parameters,²⁵ as well as the depletion of staff in the FCC’s International Bureau (IB).

The OSSTP Group is encouraged to see Chairwoman Rosenworcel’s plan to reorganize the agency and establish a Space Bureau with a standalone Office of International Affairs, and urges the Commission to thoughtfully and expeditiously establish the new Space Bureau and

²¹ See FCC Application For Space And Earth Station: MOD or AMD, IBFS File No. SAT-MOD-20200526-00057 (May 26 2020).

²² Amazon Application

²³ See FCC Moves to Facilitate Satellite Broadband Competition, 87 FR 3481 (2022). *Systems*, 35 FCC Rcd 4156 (5), (2021) (“NGSO Sharing R&O/NPRM”)

²⁴ See *FCC Updates Orbital Debris Mitigation Rules for the New Space Age*, FCC 35 FCC Rcd 4156 (5)(2020) (“Orbital Debris Mitigation Rules for the New Space Age R&O/ FNPRM”)

²⁵ See Application For Satellite Space Station Authorizations, IBFS File No. SAT-LOA-20200526-00055 (May. 20, 2020) (“SpaceX Mod-2 Application”).

increase staff count in a way does not contribute to additional delays in NGSO application processing.²⁶ The OSSTP Group also commends the Commission's efforts to address rulemakings and their dedication to defining policies that foster innovation, and urges the Commission to address the increased processing time of applications - as the uncertainty creates an environment that is not conducive to the large-scale investment in and deployment of spectrally efficient NGSO systems.

Due to the nature of the Processing Rounds, applicants must file a market access application within a given window, or potentially risk being considered in a later round, impacting their priority. To avoid this, network operators often file for over-designed systems, and request to submit orbital debris showings once their design has matured past key design milestones like Critical Design Review. As a result, the Commission often grants conditional licenses, requiring the licensee to file a modification that shows how it will comply with certain conditions like orbital debris rules. Currently, this means that after at least a two-year delay in license grant, the licensee could have a second multi-year delay in obtaining the modification approval required for launch.

With the current variability in NGSO FSS application processing time, it is difficult for applicants to make informed decisions around the technical buildout and financial timelines of their systems. One of the numerous financial requirements pertains to the payment schedules for the \$5M escalating surety bond required thirty days after authorization grant under 25.165.²⁷ While one might think that \$5M is minimal compared to the billions of dollars required to deploy these networks, funding, securing and scheduling this payment is not necessarily trivial for

²⁶ Press Release, FCC, Chairwoman Rosenworcel Proposes Space Bureau (Nov 3, 2022), <https://www.fcc.gov/document/chairwoman-rosenworcel-proposes-space-bureau>

²⁷ See 47 C.F.R. § 25.164 (2021)

smaller entities and startups working to enter the sector. Smaller companies must also plan for the buildout and deployment of their system, but due to the uncertainty in the licensing process, have no clear visibility into when they will be authorized to start or under what conditions their license will stipulate operations. When the license is granted, these companies must ensure their launch schedule is designed to meet the milestone requirements codified in 25.164 of the Commission's Rules. In other words, entrants are on the hook to build - nor not build - while they wait for the Commission to act.

In September 2022, the Republican and Democratic leaders of the House Energy and Commerce Committee circulated new bipartisan discussion draft legislation titled "SAT Streaming Act of 2022" to secure American leadership in Satellite Communications.²⁸ If adopted, this Bill would require the Commission amend Part 25, Title 47, Code of Federal Regulations to determine whether to grant NGSO licenses (as well as GSO licenses) and major modifications no later than one year after the date on which a written application is submitted to the Commission. This draft Bill would also require that the Commission determine the sufficiency, whether a license meets a set of additional criteria (primarily pertaining to transmission performance metrics, orbital parameters, maneuverability, debris mitigation) not later than sixty-days after which a written application is submitted to the Commission, and determine whether to grant minor modifications within ninety-days of receiving the request to modify.²⁹ The Energy and Commerce Committee stresses further that American companies are revolutionizing the communications marketplace and that we must streamline our regulatory process to usher in a new era of American innovation and investment, particularly as our economic competitors, like

²⁸ Press Release: New Bipartisan E&C Draft Legislation Will Secure American Leadership in Satellite Communications, <https://republicans-energycommerce.house.gov/news/new-bipartisan-ec-draft-legislation-will-secure-american-leadership-in-satellite-communications/> (2022) ("Energy & Commerce Committee Press Release")

²⁹ SAT Streamlining Act of 2022

China, race to dominate this industry.³⁰

At this time, there is no clear consensus across the NGSO or GSO FSS industry as to the length or general efficacy of a “shot-clock” on license determination. However, the OSSTP Group is aligned with the discussion draft legislation, and petitions the FCC to implement a default one-year “shot-clock” on the license determination for NGSO FSS systems, and to seek comment on the need for, and duration of, “shot-clocks” for FSS application sufficiency and license modifications.

The implementation of such a standards, in tandem with the recent review of NGSO Sharing³¹ and Orbital Debris Mitigation Rules,³² would revitalize the NGSO application process, alleviating stakeholders’ grievances with the current open-ended process and enabling the financing and technical deployment of NGSO systems at a more predictable pace. A default one-year “shot-clock” on NGSO U.S. Market Applications would also address the increasingly long wait times that existing and future applicants face, while also offering regulatory certainty that will better enable predictable technical development, and funding of NGSO systems.³³ Of course, applicants could seek a waiver for this rule, should license determination within one-year of application submission not be desired.

It is clear that the goals of this discussion draft legislation: to promote responsible space use, incentivize investment and innovation, and advance U.S. leadership in next-generation satellite systems align with the goals of this petition. In acting on this necessary petition to review and revise its NGSO licensing rules, the Commission can proactively effectuate Congressional intent, as passage of legislation can be uncertain and take extended periods of time.

³⁰ Energy and Commerce Committee Press Release

³¹ NGSO Sharing R&O/NPRM

³² Orbital Debris Mitigation Rules for the New Space Age R&O/ FNPRM

³³ OSSTP Group Industry Report

CONCLUSION

Historically, the Commission has found that significant delays in satellite licensing impose costs on society that are not consistent with good spectrum policy,³⁴ and has worked to address concerns with the open-ended nature of the application process, such as the establishment of the processing round licensing regime that occurred in 2003.³⁵ While the Commission aims to provide finality, certainty, and fairness to the NGSO processing round regime, the current uncertainty of application processing times has subverted this intent and does not serve the public interest.

The implementation of a one-year “shot-clock” on NGSO applications would fulfill the Commission’s goals, elegantly offer applicants technical and financial clarity - eliminating concerns related to the uncertainty of an application’s processing time - and incentivize the rapid development and deployment of these systems, allowing them to expeditiously reach underserved and unserved communities. Accordingly, the Olin Satellite + Spectrum Technology & Policy (OSSTP) Group respectfully requests that the Commission initiate a rulemaking proceeding to revise its current license determination rules for non-geostationary (“NGSO”) satellite systems, requiring determination of authorization within one year of NGSO application submission.

³⁴ See Filing of Applications for New Space Stations in the Fixed-Satellite Service, 93 F.C.C.2d 1260, ¶ 11 (1983).

³⁵ 2003 Licensing Reform Order

Respectfully submitted,

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