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# Space Bureau Presentation USTTI Space Station Licensing

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Space  
Bureau



# Agenda

- FCC Space Bureau Overview
- Satellites' Place in Communications
- Satellite Orbits
- Space Station Licensing Processes (Commercial, Experimental, Amateur)
- Licensing of Geostationary Orbit (GSO) Space Stations
- Licensing of Non-Geostationary Orbit (NGSO) Space Stations
- Space Station Service Rules
- Licensing Process
- Orbital Debris Mitigation
- International Coordination
- US Market Access
- Bonds and Milestones
- Fees



- Space Bureau Created in 2023
  - International Bureau split into Space Bureau and Office of International Affairs
  - Space Bureau includes satellite licensing and regulation
  - Staff of Satellite Division of International Bureau moved to Space Bureau
  - New Space Bureau Leadership
    - Julie Kearney is new Chief of the Space Bureau

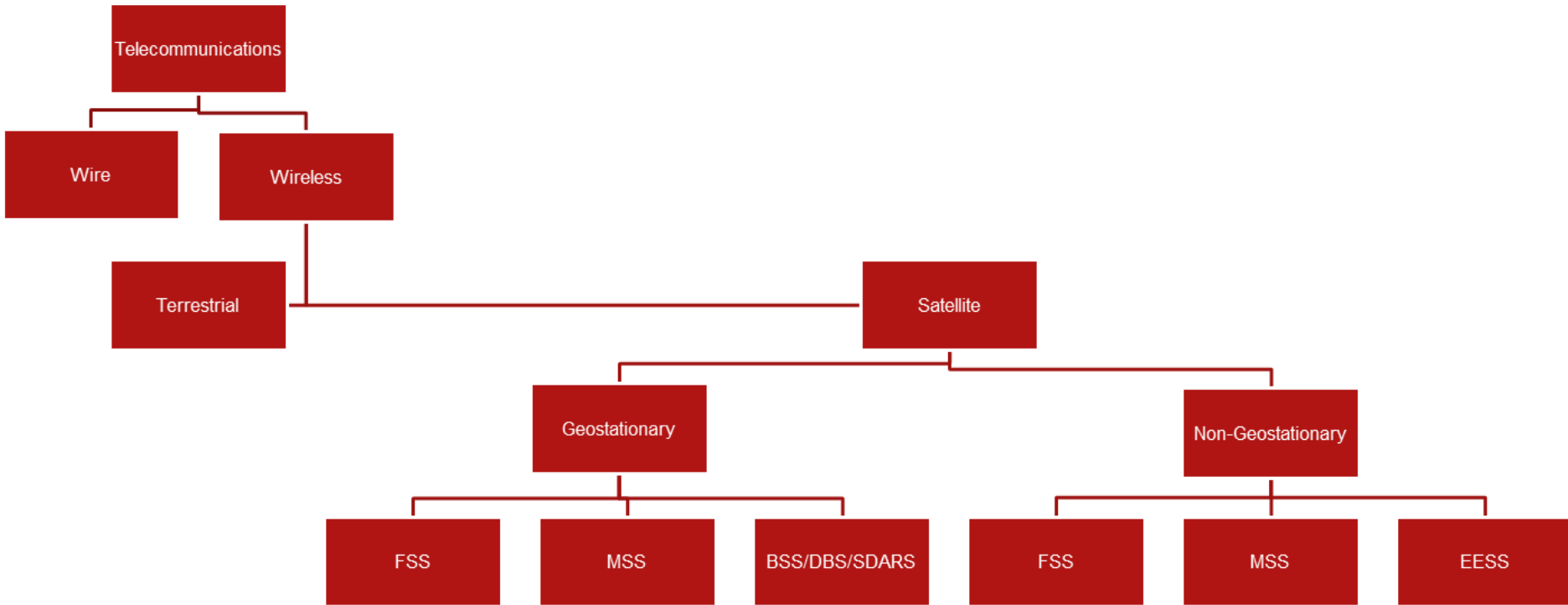


# FCC Space Bureau Overview

- The mission of the Space Bureau is to promote a competitive and innovative space-based global telecommunications marketplace.
- The Bureau strives to achieve this mission by:
  - Authorizing satellite systems for the purpose of facilitating the deployment of satellite services;
  - Streamlining regulatory processes to better meet the needs of the next generation Space Age;
  - Maximizing flexibility for operators to meet consumer needs;
  - Fostering efficient use of the radio frequency spectrum and orbital resources;
  - Serving as a focal point for coordination with other U.S. government agencies on matters of space policy and governance; and
  - Supporting the FCC’s Office of International Affairs for meetings with other countries, international organizations, and foreign governments that involve space policy matters.



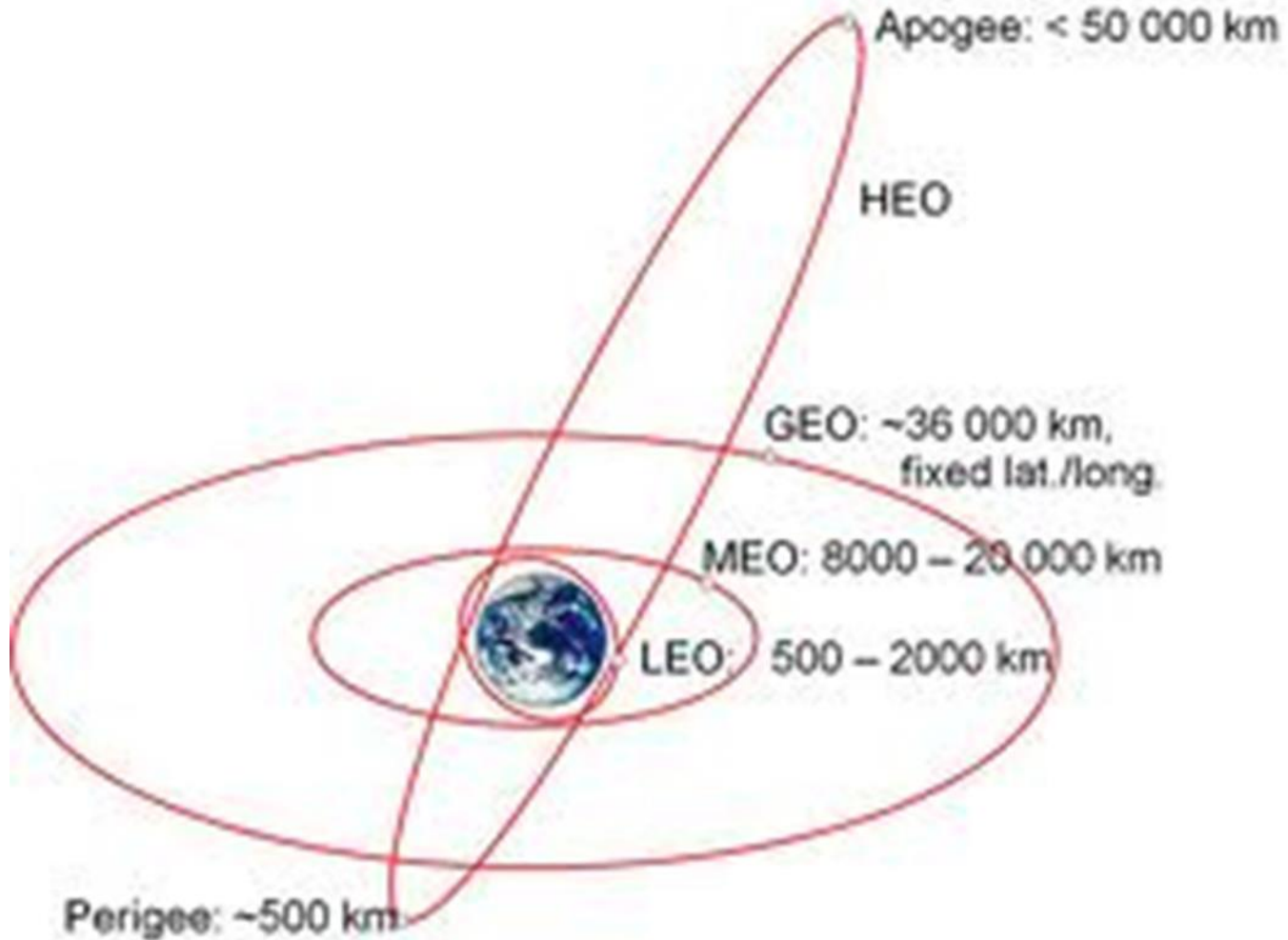
# Satellites' Place in Communications



Global satellite industry revenues in 2021: \$386B; Includes satellite services (\$118B), ground equipment (\$142B), satellite manufacturing (\$13.7B), launch industry (\$5.76B). Source: Satellite Industry Association, [www.sia.org](http://www.sia.org).



# Satellite Orbits





- FCC Satellite Licensing Processes:
  - “Part 25” -- Regular Licensing (typically commercial)
    - GSO
    - NGSO (also includes Part 25 “small satellite” licensing for qualifying applicants)
  - Experimental Licensing under Part 5 of the FCC Rules
  - Amateur Radio for communication by amateurs for permitted amateur radio purposes under Part 97 of the FCC Rules



- For new space stations - “FIRST-COME, FIRST-SERVED” FRAMEWORK (PROCESSING QUEUE)
  - Queued applications may be initiated upon filing of a U.S. ITU coordination request or Appendix 30B filing
  - Application granted if the applicant is legally and technically qualified and the proposed satellite does not conflict with previously authorized satellite or previously-filed application
  - All licenses are subject to the outcome of international coordination
  - BONDS AND MILESTONES - Mechanisms to discourage speculation and spectrum “warehousing”
  - Operators have replacement expectancy for a satellite at the same orbital location, operating on the same frequencies, with the same coverage area as the satellite being replaced
  - Queue also applies to Non-U.S. Licensed Satellites seeking access to the U.S. Market





# Licensing of Geostationary Orbit (GSO) Space Stations – Two-Degree Spacing

- Commission assigns GSO FSS satellites operating in the same frequency bands at nominal two-degree longitudinal spacing
- Ensure that GSO FSS satellites can operate without causing harmful interference to other GSO FSS satellites located as close as two degrees away
  - Satellites may be closer than two degrees away from nearest co-frequency neighbor, but must not produce any more interference than if they were two degrees away (e.g., by reducing radiated power)
  - Commission adopted requirements for providing interference analysis as well as power limits
- HIGHER LEVELS PERMITTED IF COORDINATED AND NOTIFIED
- SPACING POLICIES OF OTHER COUNTRIES VARY – but foreign GSO FSS satellites must meet two-degree spacing requirements to access U.S. market



- **“PROCESSING ROUND” FRAMEWORK**
  - Initial application placed in a processing queue
  - We establish a processing round when the initial application filed, if the proposed system does not conflict with previously-licensed U.S. satellites or previously filed application.
- **TWO LICENSING OPTIONS:**
  - FOR NGSO FSS – Requirements to coordinate, and split spectrum when  $\Delta T/T$  OF 6% threshold exceeded.
  - FOR OTHER NGSO – Assign equal, non-overlapping frequency bands
- **ALL LICENSES GRANTED SUBJECT TO THE OUTCOME OF INTERNATIONAL COORDINATION**
- **BONDS AND MILESTONES - Mechanisms to discourage speculation and spectrum “warehousing”**



- REGULATORY CLASSIFICATION – While some of the FCC’s space station rules are generally applicable, some are specific to nature of service and/or frequency band
- LICENSE TERM: 15 years (some exceptions)
- LEGAL QUALIFICATIONS
- TECHNICAL REQUIREMENTS
  - ORBITAL SPACING
  - COVERAGE AREAS
  - PREVENTION OF INTERFERENCE
  - MITIGATION OF ORBITAL DEBRIS



- Space Station applications consist of FCC Form 312, Schedule S, with an accompanying legal and technical narrative.
- FCC staff receive applications in electronic form via the International Bureau Communications Filing System (<http://licensing.fcc.gov/myibfs>)
- Review for completeness and consistency
- Place on 30-day public notice (plus additional reply comment period if comments are filed)
- Evaluate technical merits, and any comments/objections, replies.
- Grant, dismiss, or deny as appropriate
- FCC reserves right to request additional information as needed to evaluate application



- **TYPE OF SATELLITE(S):**
  - Geostationary Satellite Orbit (GSO)
  - Non-geostationary Satellite Orbit (NGSO)
- **RADIO SERVICE (examples):**
  - Fixed-Satellite Service (FSS)
  - Mobile-Satellite Service (MSS)
  - Earth-exploration Satellite Service (EESS)
- **FREQUENCY BANDS**
- **WAIVERS REQUESTED**
- **COMPLIANCE WITH THE FCC RULES**



- APPLICANTS DISCLOSE PLANS TO MITIGATE ORBITAL DEBRIS
- INCLUDES DISCLOSURES ON:
  - MINIMIZING DEBRIS RELEASED DURING AND AFTER NORMAL MISSION OPERATIONS
  - MINIMIZING RISKS OF ACCIDENTAL EXPLOSIONS
  - MINIMIZING RISK OF COLLISION
  - ADDRESSING RELIABILITY
  - ADDRESSING POST-MISSION DISPOSAL, ETC.



- TREATY OBLIGATION TO COORDINATE U.S. SATELLITES WITH THOSE OF OTHER COUNTRIES
- DESIGNED TO PROTECT SATELLITES AGAINST HARMFUL INTERFERENCE FROM OTHER SATELLITES
- COORDINATION CONDUCTED UNDER PROCEDURES ESTABLISHED BY THE INTERNATIONAL TELECOMMUNICATION UNION



- DOMESTIC/INTERNATIONAL SATELLITE CONSOLIDATION (DISCO II) REPORT & ORDER ISSUED IN 1997
  - ESTABLISHED FRAMEWORK FOR FOREIGN SATELLITES TO SERVE U.S. MARKET
- PUBLIC INTEREST DETERMINATION
  - COMPETITION CONSIDERATIONS SPECTRUM AVAILABILITY
  - ELIGIBILITY REQUIREMENTS (LEGAL, TECHNICAL, ETC.)
- OPERATING REQUIREMENTS
  - SERVICE RULES
- ACCESS PROCEDURES
  - EARTH STATION APPLICATION
  - PETITION FOR DECLARATORY RULING
  - PERMITTED LIST/ISAT LIST





- PURPOSE TO PREVENT “SPECTRUM WAREHOUSING”
- BOND DUE 30 DAYS AFTER LICENSE GRANT
  - Bond amount escalates, with updated bond filed each year until space station milestones are met.
- GSO SPACE STATIONS: from \$1M up to \$3M
  - Milestone: Launch and operate no later than 5 years after grant
- NGSO SPACE STATIONS: from \$1M up to \$5M
  - Milestone: Launch and operate 50% of maximum # of satellites no later than 6 years after grant
  - Milestone: Launch and operate the remaining satellites no later than 9 years after grant



# Fees – Application (as FY 2024)

- **SPACE STATIONS (ALSO APPLIES TO PETITIONS FOR US MARKET ACCESS)**
  - GSO Satellite: \$3,965
  - NGSO System: \$16,795
  - Small Satellites: \$2,425
  - Assignment/Transfer of License: \$830 (first call sign) + \$445 (each additional call sign)
  - Pro Forma Assignment or Transfer of Control (per Call Sign): \$445
  - Amendments (per Call Sign): \$1,810
  - Modifications (per Call Sign): \$2,785
- **EARTH STATIONS**
  - FSS Transmit/Receive Initial Application
    - Single Site: \$400
    - Multiple Sites: \$7,270
  - Receive-Only
    - Single Site: \$195
    - Multiple Sites: \$520
    - Blanket License (per Call Sign): \$400
  - Initial Application for Blanket License of Mobile Earth Stations (per Call Sign): \$910



## • SPACE STATIONS

- GSO: \$144,155
- NGSO:
  - Less Complex: \$441,925
  - Other: \$964,200
  - Small Satellite: \$12,215

## • EARTH STATIONS

- TRANSMIT/RECEIVE OR TRANSMIT-ONLY: \$2,610

*Filing fees for space and earth station applications are set forth at 47 Code of Federal Regulations (CFR), section 1.1107 (47 CFR 1.1107). Annual regulatory fees for space and earth stations are set forth at section 1.1156 (47 CFR 1.1156). The CFR is available online at [www.ecfr.gov](http://www.ecfr.gov).*



## Questions?

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