

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of:

Assessment and Collection of Regulatory)	
Fees for Fiscal Year 2018)	MD Docket No. 18-175
Streamlining Licensing Procedures for)	IB Docket No. 18-86
Small Satellites)	

Comments of University Small-Satellite Researchers

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The above-listed academic researchers in the areas of aerospace engineering, space sciences, and other related fields respectfully comment on the Commission's Notice of Proposed Rulemaking addressing the assessment and collection of regulatory fees for fiscal year 2018 (*FY 2018 NPRM*).² In particular, we write to address the proposed annual regulatory fees for small satellite applicants under the Commission's recently proposed streamlined process,³ which is the subject of a separate Notice of Proposed Rulemaking (*Small Satellite NPRM*).⁴ We urge the Commission to place the application and regulatory fees for small satellite applicants from educational institutions on par with the fee structure for Part 5 experimental licenses, which many educational institutions currently rely on to launch small satellite missions.

Universities have been launching small satellite missions for more than three decades. The above-referenced researchers include principals at the following laboratories:

- The Colorado Center for Astrodynamics Research (CCAR) at the University of Colorado is dedicated to the study of astrodynamics and the application of satellites to science, navigation, and remote sensing of the Earth and planets.
- The Precision Space Systems Lab at the University of Florida relies heavily on nanosatellite missions to demonstrate new technologies for future space navigation, time transfer, communications and astrophysics observations.
- The Space Systems Group at the University of Florida conducts and facilitates research that addresses the technological challenges associated with the development of next generation high performance pico- and nano-class satellites for addressing socio-economic problems.

² Assessment and Collection of Regulatory Fees for Fiscal Year 2018, Report and Order and Notice of Proposed Rulemaking, MD Docket No. 18-175 (May 22, 2018) (*FY 2018 NPRM*), <https://www.fcc.gov/document/fy-2018-regulatory-fees-nprm>.

³ *Id.* at ¶ 32.

⁴ Streamlining Licensing Procedures for Small Satellites, Draft Notice of Proposed Rulemaking, IB Dkt. No. 18-86 (Mar. 27, 2018) (*Small Satellite NPRM*), <https://www.fcc.gov/document/streamlining-licensing-procedures-small-satellites>.

- The Space Science and Engineering Laboratory at Montana State University performs fundamental studies of the space environment, while engaging students in Space Physics research and in the design and development of small satellites with enhanced technical capabilities to further these research objectives.
- The Space Science Center at Morehead State University focuses on the development and operation of small satellites. The Center provides Telemetry, Tracking, Command (TT&C) services with the 21-meter Antenna LEO missions and TT&C and Ranging services for inner solar system interplanetary smallsat missions. The Center provides spacecraft environmental testing services including: vibration analysis, T-Vac, EMI/EMC, and antenna characterization.
- The Haystack Observatory is an interdisciplinary research center of the Massachusetts Institute of Technology (MIT) engaged in radio astronomy, geodesy, upper atmospheric physics, and radar applications. Its missions include study of the structure of our galaxy and the larger universe, advancement of scientific knowledge of our planet and its atmosphere, and advancement of technology and applications of radio science and radar sensing.

In general, we support the Commission's overall effort to streamline the licensing process for small satellite programs. By acknowledging the fundamental differences between traditional and small satellites systems and taking the important step of proposing rules tailored to the needs of small satellite system operators, the Commission is fostering critically important innovation and research. Efforts to accommodate educational small satellites will stimulate the economic development of the small satellite industry and help maintain the U.S.'s leadership in technological innovation. In addition to advancing space systems technologies and contributing to space-based research, CubeSat programs, in particular, have allowed dozens of U.S. universities to produce graduates with invaluable experiences in space systems development, integration and testing and space mission operations. These experienced graduates have already contributed significantly to the U.S. space and defense workforce.

A streamlined licensing process for small satellites systems is needed to promote the continued deployment of innovative and low-cost small satellite systems, and the current Part 25 application process is not suitable for educational small satellite systems because of the high cost of the Commission's application and regulatory fees.⁵ As the Commission explained in the *Small Satellite NPRM*, "obtaining a Part 25 regular commercial authorization for [a non-geostationary orbit (NGSO)] system can be challenging for some small satellite applicants because of the costs . . . involved, as compared to the overall scope of most small satellite enterprises," which, "[i]n some instances, . . . constitute a large percentage of the cost of the small satellite system, and could even exceed the total cost of a small satellite mission."⁶

Accordingly, the Commission has proposed in the *Small Satellite NPRM* to lower the application fees for small satellite applicants qualifying for the streamlined Part 25 procedure from Part 25's current \$474,705 fee to \$30,000,⁷ and in the *FY 2018 NPRM* to lower the annual regulatory fee to 1/20th of the current \$135,350 fee, or \$6,767.50.⁸

While the Commission is addressing the application and regulatory fees in separate proceedings for legal reasons,⁹ we urge the Commission to holistically consider the aggregate impact of the fees on small satellite missions. In particular, the small satellite missions that most educational institutions are interested in pursuing generally last no longer than two years. Thus, the aggregate of the application fee and two years of the ongoing regulatory fees to receive a license for such a mission could run as high as \$43,535.00 (\$30,000.00 up-front and an additional \$6767.50 during each year of operation).

The Commission should also bear in mind in considering the ability for educational missions to shoulder new fees that most educational missions have relied for much of the past decade on the

⁵ *Small Satellite NPRM* at ¶ 3.

⁶ *Id.*

⁷ *Id.* at ¶¶ 75-76.

⁸ *FY 2018 NPRM* at ¶ 32. We agree with the Commission's conclusion that adopting a new regulatory category for small satellites would be permissible. *See id.* at ¶ 33.

⁹ *See Small Satellite NPRM* at ¶ 77 & n.216.

Part 5 experimental licensing process. Experimental licenses require only a \$70.00 up-front application fee¹⁰ and no annual fee. Accordingly, the aggregate \$43,535.00 cost of a two-year mission under the streamlined process would represent more than a 600-fold increase in cost for most educational institutions.

In addition to representing a massive increase over the current fee structure researchers currently rely upon, the proposed fee is untenable in an absolute sense for the budgets of many educational satellite missions. According to an informal survey we conducted with several university researchers, even sophisticated small satellite research projects ordinarily have access to budgets averaging approximately \$300,000. A \$43,535 fee would represent more than 15% of the budget of such a mission—a prohibitive cost considering the significant other costs entailed in launching such a mission, such as the acquisition and assembly of the satellite’s constituent parts, access to a launch vehicle, integration and testing, and mission operations. These costs are likely to be prohibitive even for well-resourced missions, much less missions conducted by smaller institutions working on tighter budgets. The affordance of additional interference protections and other benefits of the streamlined Part 25 process will not provide additional financial resources to enable educational institutions to shoulder this massive increase in cost.

Against this backdrop, we urge the Commission, at a bare minimum, to make it clear in implementing the *FY 2018 NPRM* that the non-profit exemption in 47 U.S.C. § 159(h)(1) and 47 C.F.R. § 1.1162(c) will apply to the streamlined Part 25 process. Section 159(h)(1) specifically requires the Commission to exempt nonprofit entities, which includes the vast majority of educational institutions conducting small satellite research missions, from paying annual regulatory fees for Part 25 licenses. Eliminating \$43,535.00 of the application cost would take an important first step toward mitigating the overall burden of the fees. To the extent the Commission is uncertain about the applicability of the non-profit exemption to educational institutions that

¹⁰ 47 C.F.R. § 1.1103.

conduct small satellite missions, it should eliminate the annual regulatory fees for educational applicants, consistent with the Part 5 fee structure and the letter and spirit of Section 159(h)(1).

In addition to exempting educational missions from any annual regulatory fee, the Commission must also significantly lower the application fee to make the streamlined Part 25 application process tenable. While we welcome the proposed change to reduce application fee from the full-fledged Part 25 process, the proposed \$30,000.00 application fee of is still many orders of magnitude higher than the \$70.00 experimental license fee that most educational users currently incur and will impose a considerable hurdle for educational small satellite research programs. Accordingly, we encourage the Commission to substantially lower the streamlined Part 25 application fee for educational users to be in line with the \$70.00 experimental licensing fee, with no more than a modest increase to reflect the additional processing and interference protection benefits.

Respectfully submitted,

/s/

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