

115TH CONGRESS  
2D SESSION

# H. R. 5503

To authorize the programs of the National Aeronautics and Space Administration for fiscal years 2018 and 2019, and for other purposes.

---

## IN THE HOUSE OF REPRESENTATIVES

APRIL 13, 2018

Mr. BABIN (for himself, Mr. SMITH of Texas, Mr. BROOKS of Alabama, Mr. ROHRABACHER, Mr. KNIGHT, Mr. HIGGINS of Louisiana, and Mr. NORMAN) introduced the following bill; which was referred to the Committee on Science, Space, and Technology

---

## A BILL

To authorize the programs of the National Aeronautics and Space Administration for fiscal years 2018 and 2019, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*  
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE; TABLE OF CONTENTS.**

4 (a) SHORT TITLE.—This Act may be cited as the  
5 “National Aeronautics and Space Administration Author-  
6 ization Act of 2018”.

7 (b) TABLE OF CONTENTS.—The table of contents for  
8 this Act is the following:

Sec. 1. Short title; table of contents.

Sec. 2. Definitions.

#### TITLE I—AUTHORIZATION OF APPROPRIATIONS

Sec. 101. Fiscal year 2018.

Sec. 102. Fiscal year 2019.

#### TITLE II—HUMAN EXPLORATION

Sec. 201. Space facilities beyond low-Earth orbit.

Sec. 202. ISS transition.

Sec. 203. Human spaceflight research.

Sec. 204. Critical path redundancy for human spaceflight.

Sec. 205. Space suits.

#### TITLE III—SCIENCE

##### Subtitle A—Earth Science

Sec. 301. Reimbursable basis for development of sensors and instruments.

Sec. 302. Earth observations study.

Sec. 303. Land imaging.

Sec. 304. Landsat data policy.

Sec. 305. Earth science missions.

Sec. 306. Goddard Institute for Space Studies Inspector General report.

##### Subtitle B—Astronomy and Astrophysics

Sec. 311. Search for the origin, evolution, distribution, and future of life in the universe.

Sec. 312. Wide-Field Infrared Space Telescope.

##### Subtitle C—Planetary Science

Sec. 321. Near-Earth Object Survey.

Sec. 322. Space nuclear power.

#### TITLE IV—AERONAUTICS

Sec. 401. Supersonic research.

Sec. 402. Unmanned aircraft systems research.

Sec. 403. 21st Century Aeronautics Research Capabilities Initiative.

Sec. 404. Experimental plane program.

Sec. 405. Hypersonic Technology project.

#### TITLE V—COMMERCIAL

Sec. 501. Commercial supply of space products.

Sec. 502. Commercial provision of services.

Sec. 503. Commercial in-space infrastructure.

Sec. 504. Preference for launch vehicles manufactured in the United States.

Sec. 505. Studies on industrial base.

Sec. 506. Spectrum coordination.

Sec. 507. Enhanced-use leasing.

Sec. 508. Satellite servicing technologies.

#### TITLE VI—POLICY

Sec. 601. NASA-funded institutes.

Sec. 602. Baseline and cost controls.  
Sec. 603. Reports to Congress.  
Sec. 604. International technical and operational standards.  
Sec. 605. NASA contractor responsibility watch list.  
Sec. 606. Human space exploration risk.

1 **SEC. 2. DEFINITIONS.**

2 In this Act:

3 (1) ADMINISTRATOR.—The term “Adminis-  
4 trator” means the Administrator of NASA.

5 (2) CIS-LUNAR SPACE.—The term “cis-lunar  
6 space” means the region of space from the Earth  
7 out to and including the region around the surface  
8 of the Moon.

9 (3) ISS.—The term “ISS” means the Inter-  
10 national Space Station.

11 (4) NASA.—The term “NASA” means the Na-  
12 tional Aeronautics and Space Administration.

13 (5) NEAR-EARTH ASTEROID.—The term “near-  
14 Earth asteroid” means an asteroid with a perihelion  
15 distance of less than 1.3 Astronomical Units from  
16 the Sun.

17 (6) NEAR-EARTH OBJECT.—The term “near-  
18 Earth object” means an asteroid or comet with a  
19 perihelion distance of less than 1.3 Astronomical  
20 Units from the Sun.

21 (7) NONPROFIT ORGANIZATION.—The term  
22 “nonprofit organization” means an organization de-  
23 termined by the Secretary of the Treasury to be an

1 organization described in section 501(c)(3) of the  
2 Internal Revenue Code of 1986 (26 U.S.C.  
3 501(c)(3)) which is exempt from taxation under sec-  
4 tion 501(a) of such Code.

5 (8) ORION.—The term “Orion” means the mul-  
6 tipurpose crew vehicle described under section 303  
7 of the National Aeronautics and Space Administra-  
8 tion Authorization Act of 2010 (42 U.S.C. 18323).

9 (9) SPACE LAUNCH SYSTEM.—The term “Space  
10 Launch System” has the meaning given the term in  
11 section 3 of the National Aeronautics and Space Ad-  
12 ministration Authorization Act of 2010 (42 U.S.C.  
13 18302).

## 14 **TITLE I—AUTHORIZATION OF** 15 **APPROPRIATIONS**

### 16 **SEC. 101. FISCAL YEAR 2018.**

17 There are authorized to be appropriated to NASA for  
18 fiscal year 2018, \$20,736,140,000, as follows:

19 (1) For Science, \$6,221,500,000, of which—

20 (A) \$1,921,000,000 is for Earth Science;

21 (B) \$2,227,900,000 is for Planetary  
22 Science;

23 (C) \$850,400,000 is for Astrophysics;

24 (D) \$533,700,000 is for the James Webb  
25 Space Telescope; and

1 (E) \$688,500,000 is for Heliophysics.

2 (2) For Aeronautics, \$685,000,000.

3 (3) For Space Technology, \$760,000,000.

4 (4) For Exploration, \$4,790,000,000, of  
5 which—

6 (A) \$1,350,000,000 is for Orion and asso-  
7 ciated program and other necessary support;

8 (B) \$2,150,000,000 is for the Space  
9 Launch System and associated program and  
10 other necessary support;

11 (C) \$895,000,000 is for Exploration  
12 Ground Systems; and

13 (D) \$395,000,000 is for Exploration Re-  
14 search and Development.

15 (5) For Space Operations, \$4,751,500,000.

16 (6) For Education, \$100,000,000, of which—

17 (A) \$18,000,000 is for the Experimental  
18 Program to Stimulate Competitive Research;  
19 and

20 (B) \$40,000,000 is for the National Space  
21 Grant College and Fellowship Program.

22 (7) For Safety, Security, and Mission Services,  
23 \$2,826,900,000.

24 (8) For Construction and Environmental Com-  
25 pliance and Restoration, \$562,240,000.

1 (9) For Inspector General, \$39,000,000.

2 **SEC. 102. FISCAL YEAR 2019.**

3 There are authorized to be appropriated to NASA for  
4 fiscal year 2019, \$20,736,140,000, as follows:

5 (1) For Deep Space Exploration Systems,  
6 \$4,929,000,000, of which—

7 (A) \$4,040,000,000 is for Exploration Sys-  
8 tems Development, of which—

9 (i) \$2,150,000,000 is for Orion and  
10 associated program and other necessary  
11 support;

12 (ii) \$1,350,000,000 is for the Space  
13 Launch System and associated program  
14 and other necessary support; and

15 (iii) \$540,000,000 is for Exploration  
16 Ground Systems; and

17 (B) \$889,000,000 is for Advanced Explo-  
18 ration Systems, of which—

19 (i) \$504,300,000 is for the Lunar Or-  
20 bital Platform–Gateway and associated  
21 program and other necessary support;

22 (ii) \$116,500,000 is for Advanced  
23 Cislunar and Surface Capabilities; and

24 (iii) \$268,200,000 is for Exploration  
25 Advanced Systems.

1           (2) For Exploration and Research Technology,  
2           \$1,017,700,000, of which—

3                   (A) \$108,500,000 is for Early Stage Inno-  
4                   vation and Partnerships;

5                   (B) \$216,500,000 if for Technology Matu-  
6                   ration, of which \$75,000,000 is for nuclear fis-  
7                   sion and cryogenic fluid management develop-  
8                   ment;

9                   (C) \$332,700,000 is for Technology Dem-  
10                  onstration.

11                  (D) \$140,000,000 is for Human Research  
12                  Program; and

13                  (E) \$205,000,000 is for Small Business  
14                  Innovation Research and Small Business Tech-  
15                  nology Transfer.

16           (3) For Low-Earth Orbit and Spaceflight Oper-  
17           ations, \$4,624,600,000, of which—

18                   (A) \$1,462,200,000 is for the Inter-  
19                   national Space Station;

20                   (B) \$2,108,700,000 is for Space Transpor-  
21                   tation;

22                   (C) \$903,700,000 is for Space Flight Sup-  
23                   port; and

24                   (D) \$150,000,000 is for Commercial Low-  
25                   Earth Orbit Development.

- 1 (4) For Science, \$6,152,600,000, of which—  
2 (A) \$1,450,000,000 is for Earth Science;  
3 (B) \$2,636,500,000 is for Planetary  
4 Science;  
5 (C) \$1,375,400,000 is for Astrophysics;  
6 and  
7 (D) \$690,700,000 is for Heliophysics.
- 8 (5) For Aeronautics, \$685,000,000.
- 9 (6) For Education, \$100,000,000, of which—  
10 (A) \$18,000,000 is for the Established  
11 Program to Stimulate Competitive Research;  
12 and  
13 (B) \$40,000,000 is for Space Grant.
- 14 (7) For Safety, Security, and Mission Services,  
15 \$2,749,700,000.
- 16 (8) For Construction and Environmental Com-  
17 pliance and Restoration, \$438,200,000.
- 18 (9) For Inspector General, \$39,300,000.

## 19 **TITLE II—HUMAN EXPLORATION**

### 20 **SEC. 201. SPACE FACILITIES BEYOND LOW-EARTH ORBIT.**

21 (a) SENSE OF CONGRESS.—It is the sense of Con-  
22 gress that space facilities for use beyond low-Earth orbit  
23 play a significant role in NASA’s long-term pursuit of its  
24 exploration goals under section 202(a) of the National



1 Aeronautics and Space Administration Authorization Act  
2 of 2010 (42 U.S.C. 18312(a)).

3 (b) CREWED AND CREW-TENDED SPACE FACILITIES  
4 REPORT.—

5 (1) IN GENERAL.—Not later than 90 days after  
6 the date of enactment of this Act, the Administrator  
7 shall submit to the Committee on Science, Space,  
8 and Technology of the House of Representatives and  
9 the Committee on Commerce, Science, and Trans-  
10 portation of the Senate a report on the potential de-  
11 velopment of space facilities for use beyond low-  
12 Earth orbit.

13 (2) CONTENTS.—The report required under  
14 paragraph (1) shall include a description of—

15 (A) how each such space facility can ad-  
16 vance, enable, or complement human explo-  
17 ration of the Solar System, including of the at-  
18 mosphere and the surface of celestial bodies;

19 (B) the role of the space facility as a stag-  
20 ging, logistics, and operations hub in an explo-  
21 ration architecture;

22 (C) how the space facility could support  
23 the research, development, testing, validation,  
24 operation, and launch of space exploration sys-  
25 tems and technologies;

1 (D) opportunities and strategies for com-  
2 mercial operation or public-private partnerships  
3 that protect taxpayer interests and foster com-  
4 petition; and

5 (E) the role of such a space facility in  
6 making, developing, and refining the case for  
7 further crewed and uncrewed exploration invest-  
8 ments.

9 **SEC. 202. ISS TRANSITION.**

10 (a) FINDINGS.—Congress finds the following:

11 (1) The ISS is a valuable national asset that  
12 can continue to produce worthwhile scientific re-  
13 search and valuable technology.

14 (2) The ISS mission should be to carry out  
15 microgravity research and development, research in  
16 support of deep space human exploration, and low-  
17 Earth orbit commercialization.

18 (3) The ISS is the best platform currently  
19 available to conduct certain types of research needed  
20 for NASA's deep space human exploration program  
21 with such research currently scheduled to be com-  
22 pleted by the end of fiscal year 2024.

23 (4) The ISS transition report, submitted pursu-  
24 ant to section 50111(c)(2) of title 51, United States  
25 Code, provides an explanation of NASA's plans to

1 foster the development of private industry capabili-  
2 ties and private demand with a goal of ending direct  
3 NASA support for ISS operations by the end of fis-  
4 cal year 2024.

5 (5) The plans laid out in the ISS transition re-  
6 port are conditionally flexible and require feedback  
7 to inform next steps. In addition, the feasibility of  
8 ending direct NASA support for ISS operations by  
9 the end of fiscal year 2024 is dependent on many  
10 factors, some of which are indeterminate until the  
11 Administration carries out the initial phases of the  
12 ISS transition plan.

13 (6) The value of any in-space facility, such as  
14 the ISS, depends both on its contributions to further  
15 expansion of human presence throughout the solar  
16 system, pursuant to section 202 of the National Aer-  
17 onautics and Space Administration Authorization  
18 Act of 2010 (42 U.S.C. 18312) and to making exist-  
19 ing presence self-sustaining.

20 (7) As the United States moves towards a com-  
21 mitment to a human presence off the surface of the  
22 Earth, other Government agencies should seek to  
23 benefit from and capitalize upon the ongoing human  
24 presence in space.

1 (b) IN GENERAL.—The Administration shall support  
2 Johnson Space Center as a center of innovation and lead-  
3 ership in developing human operations, including surfaces  
4 of celestial bodies, beyond Earth, to the cis-lunar region,  
5 the Moon, Mars, and beyond.

6 (c) ISS OPERATION.—

7 (1) IN GENERAL.—NASA shall continue oper-  
8 ation of the International Space Station for such  
9 time as Congress authorizes its operations.

10 (2) INTERNATIONAL AGREEMENTS.—NASA  
11 shall pursue international agreements to provide  
12 maximum flexibility for ISS utilization.

13 (3) LOW-EARTH ORBIT.—NASA shall pursue a  
14 step-wise transition of low-Earth orbit human  
15 spaceflight operations from a Government-directed  
16 activity to a model where private industry is respon-  
17 sible for how to meet and execute NASA’s require-  
18 ments.

19 (4) TRANSITION REPORT.—NASA shall carry  
20 out activities in fiscal year 2019 as proposed in the  
21 ISS transition report, delivered pursuant to section  
22 50111(c) of title 51, United States Code.

23 (d) REPORTING.—In addition to the biennial report-  
24 ing requirement under section 50111(c) of title 51, United  
25 States Code, the Administrator shall brief the Committee

1 on Science, Space, and Technology of the House of Rep-  
2 resentatives and the Committee on Commerce, Science,  
3 and Transportation of the Senate quarterly, beginning on  
4 the date that is 3 months after the date of enactment of  
5 this Act, on the status of, and all progress, changes, and  
6 other developments related to carrying out the plans in  
7 the ISS transition report.

8 (e) AUTHORIZED FUNDING.—Subject to the avail-  
9 ability of appropriations, shall make available at least  
10 \$150,000,000 for fiscal year 2019 for commercial low-  
11 Earth orbit development out of the LEO and Spaceflight  
12 Operations account.

13 **SEC. 203. HUMAN SPACEFLIGHT RESEARCH.**

14 (a) SENSE OF CONGRESS.—It is the sense of Con-  
15 gress that—

16 (1) the benefits derived from the peaceful use  
17 of space depend on the extent to which ground-based  
18 space infrastructure, facilities, and research are well-  
19 integrated; and

20 (2) NASA Johnson Space Center (hereinafter  
21 referred to as “JSC”) has the expertise and facilities  
22 to support the development of the major techno-  
23 logical innovations necessary to enable and support  
24 the nation’s ongoing commitment to human

1 spaceflight, exploration, and continued human pres-  
2 ence in space.

3 (b) JOHNSON SPACE CENTER RESEARCH OFFICE.—

4 (1) ESTABLISHMENT.—The Administrator shall  
5 establish a research office at JSC to build upon the  
6 Center’s existing expertise in human space flight  
7 missions for future challenges.

8 (2) RESEARCH DIRECTOR.—The head of the re-  
9 search office shall be the research director, who shall  
10 report directly to the Director of JSC.

11 (3) DUTIES.—The research director shall have,  
12 at a minimum, the following duties:

13 (A) Oversee a research portfolio focused on  
14 human space flight.

15 (B) Recommend infrastructure and equip-  
16 ment necessary to carry out a research mission.

17 (C) Oversee professional development and  
18 continuing education, as necessary and appro-  
19 priate, for the civil workforce as the research  
20 and innovation focus of the center increases.

21 (4) SCOPE OF RESEARCH.—The research office  
22 shall focus on aspects of research that are directly  
23 relevant to the endeavor of human space flight, in-  
24 cluding problems of human spaceflight and robotics  
25 supporting human space exploration.

1           (5) SUPPORT FOR HUMAN SPACEFLIGHT AC-  
2           TIVITIES.—JSC shall, consistent with its primary re-  
3           sponsibilities to NASA and other government cus-  
4           tomers, endeavor to make the fullest possible use of  
5           its facilities and infrastructure to support all U.S.  
6           human spaceflight activities, including those of the  
7           private sector.

8           (c) REPORT.—Not later than 180 days after the en-  
9           actment of this Act, NASA and JSC shall submit to the  
10          Committee on Science, Space, and Technology of the  
11          House of Representatives and the Committee on Com-  
12          merce, Science, and Transportation of the Senate a report  
13          on NASA’s progress on, and other developments related  
14          to, carrying out the requirements of this section.

15          (d) AUTHORIZED FUNDING.—Subject to the avail-  
16          ability of appropriations, the Administrator shall make  
17          available at least \$15,000,000 in fiscal year 2019 out of  
18          the Exploration Research and Technology account to carry  
19          out this section.

20       **SEC. 204. CRITICAL PATH REDUNDANCY FOR HUMAN**  
21                               **SPACEFLIGHT.**

22          (a) FINDINGS.—Congress finds that NASA, in co-  
23          operation with private sector and international partners,  
24          has facilitated the development of a wide array of cargo

1 and crew transportation options for operations in low-  
2 Earth orbit and beyond.

3 (b) SENSE OF CONGRESS.—It is the sense of Con-  
4 gress that the availability of a multitude of launch vehicles  
5 and crew and cargo vehicles provides critical path redun-  
6 dancy.

7 (c) LOGISTICAL AND TRANSPORT REDUNDANCY.—  
8 Not later than 3 months after the date of the enactment  
9 of this Act, the Administrator shall submit to the Com-  
10 mittee on Commerce, Science, and Transportation of the  
11 Senate and the Committee on Science, Space, and Tech-  
12 nology of the House of Representatives a report that con-  
13 tains an evaluation of the suitability and performance, in-  
14 cluding cost, reliability, and availability, of—

15 (1) all available crew and cargo vehicles for des-  
16 tinations in low-Earth orbit, cis-lunar space, and be-  
17 yond; and

18 (2) all available launch vehicles that are capable  
19 of delivering more than 20 tons to, or beyond, low-  
20 Earth orbit to support exploration and scientific  
21 missions, particularly to outer planets.

22 **SEC. 205. SPACE SUITS.**

23 (a) FINDINGS.—Congress finds the following:



1           (1) Space suits and associated extravehicular  
2 activity (in this section, referred to as “EVA”) tech-  
3 nologies are critical space exploration technologies.

4           (2) The NASA civil service workforce at the  
5 Johnson Space Center possesses unique capabilities  
6 to integrate, design, and validate space suits and as-  
7 sociated EVA technologies.

8           (3) Maintaining a strong core competency in  
9 the design, development, manufacture, and operation  
10 of space suits and related technologies allows NASA  
11 to be an informed purchaser of competitively award-  
12 ed commercial space suits and associated EVA tech-  
13 nologies.

14           (4) NASA should fully utilize the International  
15 Space Station by 2025 to test future space suits and  
16 associated EVA technologies to reduce risk and im-  
17 prove safety.

18           (b) SPACE SUITS.—

19           (1) IN GENERAL.—NASA shall develop space  
20 suits and associated EVA technologies.

21           (2) MANAGEMENT.—The Johnson Space Center  
22 shall manage the space suit and EVA programs of  
23 NASA.

24           (3) PRIVATE SECTOR.—In carrying out this  
25 subsection, the Administrator may enter into agree-

1       ments with the private sector as the Administrator  
2       considers appropriate.

### 3                                   **TITLE III—SCIENCE**

#### 4                                   **Subtitle A—Earth Science**

##### 5       **SEC. 301. REIMBURSABLE BASIS FOR DEVELOPMENT OF** 6                                   **SENSORS AND INSTRUMENTS.**

7       Chapter 605 of title 51, United States Code, is  
8       amended by adding at the end the following:

##### 9       **“§ 60507. Reimbursable basis for development of sen-** 10                                   **sors and instruments**

11       “Any work undertaken by the Administration for the  
12       benefit of another agency shall be conducted on a reim-  
13       bursable basis that accounts for the full cost of the work,  
14       including work undertaken for the development of oper-  
15       ational Earth science systems, including satellite, sensor,  
16       or instrument development, acquisition, and operations, as  
17       well as product development and data analysis.”.

18                   (1) **TECHNICAL AMENDMENT.**—The table of  
19       sections for chapter 605 of title 51, United States  
20       Code, is amended by adding at the end the fol-  
21       lowing:

      “60507. Reimbursable basis for development of sensors and instruments.”.

##### 22       **SEC. 302. EARTH OBSERVATIONS STUDY.**

23       Section 702 of the National Aeronautics and Space  
24       Administration Authorization Act of 2010 (42 U.S.C.  
25       18371) is amended—

1           (1) by striking “The Director of” and inserting  
2           the following:

3           “(a) IN GENERAL.—The Director of”; and

4           (2) by adding at the end the following:

5           “(b) CONSIDERATION.—In carrying out the strategic  
6           implementation plan under subsection (a), the Director  
7           shall take into account and incorporate into such plan, as  
8           appropriate, purchasing Earth observation data and serv-  
9           ices from the private sector or through public-private part-  
10          nerships to meet Earth observation requirements.”.

11   **SEC. 303. LAND IMAGING.**

12          (a) SENSE OF CONGRESS.—It is the sense of Con-  
13          gress that—

14               (1) the continuous collection and utilization of  
15               land remote sensing data from space are of major  
16               benefit in studying and understanding human im-  
17               pacts on the global environment, in managing the  
18               Earth’s natural resources, in carrying out national  
19               security functions, and in planning and conducting  
20               many other activities of scientific, economic, and so-  
21               cial importance; and

22               (2) to the greatest extent practicable, the  
23               United States should foster the development of U.S.  
24               private sector remote sensing capabilities and anal-  
25               yses that can satisfy the public interest in long-term

1 continuous collection of medium-resolution land re-  
2 mote sensing data.

3 (b) CONTINUOUS LAND REMOTE SENSING DATA  
4 COLLECTION.—

5 (1) IN GENERAL.—Subchapter IV of chapter  
6 601 of title 51, United States Code, is amended by  
7 adding at the end the following new section:

8 **“§ 60135. Continuous land remote sensing data collec-**  
9 **tion**

10 “(a) POLICY.—It is the policy of the United States  
11 to—

12 “(1) ensure, to the greatest extent practicable,  
13 the continuous collection of space-based, medium-  
14 resolution observations of the Earth’s land cover;

15 “(2) ensure that the collected data are made  
16 available in such ways as to facilitate the widest pos-  
17 sible use; and

18 “(3) to the greatest extent practicable, foster  
19 the development of U.S. private sector remote sens-  
20 ing capabilities and analyses that can satisfy the  
21 public interest in long-term continuous collection of  
22 medium-resolution land remote sensing data.

23 “(b) COORDINATION.—The National Space Council,  
24 in consultation with other relevant Federal agencies, shall

1 coordinate United States Government activities described  
2 under paragraphs (1) through (3) of subsection (a).”.

3 (2) CONFORMING AMENDMENT.—The table of  
4 sections for subchapter IV of chapter 601 of title 51,  
5 United States Code, is amended by adding at the  
6 end the following new section:

“60135. Continuous land remote sensing data collection.”.

7 **SEC. 304. LANDSAT DATA POLICY.**

8 (a) IN GENERAL.—

9 (1) LIMITATION ON USE OF FUNDS.—No funds  
10 may be obligated or expended for Landsat 11 or any  
11 other subsequent Landsat system until the Adminis-  
12 trator has completed a study assessing which aspects  
13 of Landsat system observations and associated  
14 science requirements can be provided by purchasing  
15 data from the private sector or through public-pri-  
16 vate partnerships.

17 (2) REPORT.—Not later than 1 year after the  
18 date of enactment of this Act, the Administrator  
19 shall transmit to the Committee on Science, Space,  
20 and Technology of the House of Representatives and  
21 the Committee on Commerce, Science, and Trans-  
22 portation of the Senate, a report containing the re-  
23 sults of the study required under paragraph (1).

1 (b) DEFINITION OF LANDSAT SYSTEM.—In this sec-  
2 tion, the term “Landsat system” has the meaning given  
3 that term in section 60101 of title 51, United States Code.

4 **SEC. 305. EARTH SCIENCE MISSIONS.**

5 The Administrator shall continue to restructure the  
6 Earth science portfolio of NASA to reduce overall costs,  
7 support innovative and sustainable programs and missions  
8 with commercial and international partners, and align  
9 with the recommendations of the National Academy of  
10 Sciences included in the publication published in 2018 ti-  
11 tled “Thriving on Our Changing Planet: A Decadal Strat-  
12 egy for Earth Observation from Space” to ensure that the  
13 Earth science portfolio is focused on the highest priority  
14 missions for the science and applications communities  
15 within a balanced, comprehensive Earth science program.

16 **SEC. 306. GODDARD INSTITUTE FOR SPACE STUDIES IN-**  
17 **SPECTOR GENERAL REPORT.**

18 Not later than 180 days after the date of enactment  
19 of this Act, the Administrator shall transmit to the Com-  
20 mittee on Science, Space, and Technology of the House  
21 of Representatives and the Committee on Commerce,  
22 Science, and Transportation of the Senate, a report con-  
23 taining the results of NASA’s implementation of the rec-  
24 ommendations identified in the report published by the  
25 NASA Office of Inspector General on April 5, 2018, titled

1 “NASA’s Management GISS: The Goddard Institute for  
2 Space Studies”.

3 **Subtitle B—Astronomy and**  
4 **Astrophysics**

5 **SEC. 311. SEARCH FOR THE ORIGIN, EVOLUTION, DISTRIBUTION,**  
6 **AND FUTURE OF LIFE IN THE UNI-**  
7 **VERSE.**

8 (a) POLICY.—Section 20102(d)(10) of title 51,  
9 United States Code, includes the search for life’s origin,  
10 evolution, distribution, and future in the universe as an  
11 objective of U.S. aeronautical and space activities.

12 (b) IN GENERAL.—NASA shall partner with the pri-  
13 vate sector and philanthropic organizations to the max-  
14 imum extent practicable to search for technosignatures,  
15 such as radio transmissions, in order to meet the NASA  
16 objective to search for life’s origin, evolution, distribution,  
17 and future in the universe.

18 (c) REPORT.—Not later than 90 days after the date  
19 of enactment of this Act, the Administrator shall submit  
20 to the Committee on Science, Space, and Technology of  
21 the House of Representatives and the Committee on Com-  
22 merce, Science, and Transportation of the Senate a report,  
23 produced in consultation with industry and academia, on  
24 all NASA programs, including partnerships with the pri-  
25 vate sector and philanthropic organizations, that con-

1 tribute to the search for life’s origin, evolution, distribu-  
2 tion, and future in the universe.

3 (d) **AUTHORIZED FUNDING.**—Subject to the avail-  
4 ability of appropriations, the Administrator shall make  
5 available at least \$10,000,000 for each of fiscal years  
6 2018 and 2019 for the search for technosignatures.

7 **SEC. 312. WIDE-FIELD INFRARED SPACE TELESCOPE.**

8 (a) **FINDINGS.**—Congress finds the following:

9 (1) Concurrent flagship programs challenge sig-  
10 nificantly NASA’s program management capacity,  
11 especially during later stages of the program man-  
12 agement process.

13 (2) The Wide-Field Infrared Space Telescope  
14 (hereinafter referred to as “WFIRST”) was can-  
15 celled in the President’s fiscal year 2019 budget re-  
16 quest.

17 (3) WFIRST was funded in the amount of  
18 \$150,000,000 in NASA’s appropriation for fiscal  
19 year 2018.

20 (4) Pursuant to direction in NASA’s appropria-  
21 tion for fiscal year 2018, NASA is conducting a pre-  
22 liminary life-cycle cost estimate, including any addi-  
23 tions needed to achieve Class A classification, along  
24 with a year-by-year breakout of development costs.



1           (5) Until such preliminary life-cycle cost esti-  
2           mate is complete, Congress has insufficient informa-  
3           tion to judge whether or not WFIRST should be au-  
4           thorized to proceed in fiscal year 2019.

5           (b) TOTAL COST.—The total formulation and devel-  
6           opment cost, as such term is defined in section 30104 of  
7           title 51, United States Code, for the Wide-Field Infrared  
8           Space Telescope shall not exceed \$3,200,000,000.

9           (c) BUDGET.—The Administrator shall include in the  
10          budget for fiscal year 2020 a 5-year funding profile nec-  
11          essary to achieve the goal in subsection (b).

12          (d) LIMITATION.—The Administrator shall not pro-  
13          cure a launch vehicle for the Wide-Field Infrared Space  
14          Telescope until the James Webb Space Telescope is oper-  
15          ational in space.

## 16           **Subtitle C—Planetary Science**

### 17           **SEC. 321. NEAR-EARTH OBJECT SURVEY.**

18          (a) FINDINGS.—Congress finds the following:

19           (1) The George E. Brown, Jr. Near-Earth Ob-  
20           ject Survey Act (Public Law 109–155) established  
21           the Near-Earth Object Survey program to detect,  
22           track, and catalogue the physical characteristics of  
23           near-Earth objects equal to or greater than 140 me-  
24           ters in diameter in order to assess the threat of such  
25           objects to Earth.

1           (2) The goal of the Survey program is to  
2 achieve 90 percent completion of the near-Earth  
3 project catalogue (based on statistically predicted  
4 populations of near-Earth objects) not later than 15  
5 years after the date of the enactment of the George  
6 E. Brown, Jr. Near-Earth Object Survey Act.

7           (3) NASA has been successful finding more  
8 than 90 percent of the near-Earth asteroids larger  
9 than one kilometer but has only found about 30 per-  
10 cent of the near-Earth objects larger than 140 me-  
11 ters.

12           (4) The vast majority of near-Earth object dis-  
13 coveries have been made by NASA-supported  
14 ground-based telescopic surveys.

15       (b) SENSE OF CONGRESS.—It is the sense of Con-  
16 gress that—

17           (1) in order to meet the statutory requirements  
18 of the George E Brown, Jr. Near-Earth Object Sur-  
19 vey Act (Public Law 109–155), a space-based tele-  
20 scope mission should be fully funded and supported  
21 by NASA and carried out by the Planetary Defense  
22 Coordination Office; and

23           (2) the space-based telescope Near-Earth Ob-  
24 ject Camera mission, or a similar infrared telescope  
25 concept optimized for near-Earth object search and

1        characterization, could discover and characterize  
2        most of the potentially hazardous asteroids that are  
3        near the Earth.

4    **SEC. 322. SPACE NUCLEAR POWER.**

5        (a) FINDING.—Congress finds that in-space nuclear  
6        fission power complements the use of Plutonium-238 radi-  
7        oisotope thermoelectric generators (in this section referred  
8        to as “RTG”) for spacecraft power needs.

9        (b) POLICY.—It is the policy of the United States—  
10        (1) to continue the development of in-space nu-  
11        clear fission technology, as necessary, for purposes  
12        including—

13                (A) in-space power generation for advanced  
14                in-space propulsion;

15                (B) onboard power generation to replace or  
16                supplement RTG systems;

17                (C) power generation on the surface of ce-  
18                lestial bodies;

19                (D) extraction and processing of in situ re-  
20                sources; and

21                (E) nuclear thermal and nuclear electric  
22                propulsion able to transport crew or cargo  
23                among Earth and other celestial bodies much  
24                more rapidly than is practical with non-nuclear  
25                systems;

1           (2) that research and development of in-space  
2 nuclear fission power should be carried out as part  
3 of a portfolio that appropriately balances develop-  
4 ment of power systems at different sizes and matu-  
5 rities, with an emphasis on early development of ma-  
6 ture, operational systems; and

7           (3) that NASA should continually seek to  
8 streamline the process for space launch approval of  
9 nuclear materials, eliminate redundant and  
10 unneeded processes, and regularize the process for  
11 efficient, regular functioning, and toward that end,  
12 the Administrator should update the launch approval  
13 process and seek to establish a licensing process for  
14 private nuclear power sources in space.

15 (c) SPACE NUCLEAR POWER REPORT.—

16           (1) IN GENERAL.—Not later than 180 days  
17 after the date of enactment of this Act, the Adminis-  
18 trator shall submit to the Committee on Science,  
19 Space, and Technology of the House of Representa-  
20 tives and the Committee on Commerce, Science, and  
21 Transportation of the Senate a report, produced in  
22 consultation with industry and academia, on the use  
23 and role of nuclear fission power in space.

24           (2) CONTENTS.—The report required under  
25 paragraph (1) shall include—

1 (A) an assessment of the prospects for in-  
2 space nuclear fission reactors, describing par-  
3 ticular roles and missions for which nuclear  
4 power is uniquely well-suited;

5 (B) a description of the convergence be-  
6 tween NASA's existing Plutonium-238 RTG  
7 programs and ongoing nuclear thermal propul-  
8 sion and nuclear power generation development  
9 programs;

10 (C) a detailed plan for encouraging conver-  
11 gence between NASA's various nuclear power  
12 and propulsion efforts;

13 (D) an identification of key infrastructure  
14 and facilities needed for the development of in-  
15 space nuclear fission power reactors;

16 (E) an identification of particular legal  
17 issues, including regulatory challenges, that  
18 must be addressed for the use of nuclear fission  
19 power systems;

20 (F) how small in-space nuclear fission re-  
21 actors can complement or replace existing and  
22 planned radioisotope thermal generator capa-  
23 bilities; and

1 (G) information on very low cost, high reli-  
2 ability designs that can be made operational  
3 quickly.

4 (d) DEMONSTRATION.—NASA should demonstrate a  
5 nuclear electric power reactor for use in space using exist-  
6 ing authorized funding levels and within a schedule made  
7 possible by appropriated funding.

## 8 **TITLE IV—AERONAUTICS**

### 9 **SEC. 401. SUPERSONIC RESEARCH.**

10 (a) POLICY.—It is the policy of the United States to  
11 reduce Government barriers to the development of civil su-  
12 personic transportation.

13 (b) RESEARCH.—Section 40112(a) of title 51, United  
14 States Code, is amended—

15 (1) by striking “The Administrator” and insert-  
16 ing the following:

17 “(1) IN GENERAL.—The Administrator”; and

18 (2) by adding at the end the following:

19 “(2) RESEARCH.—The Administrator, in con-  
20 sultation with the Administrator of the Federal  
21 Aviation Administration, shall undertake research on  
22 supersonic transport to inform and accelerate the  
23 promulgation of domestic regulations and inter-  
24 national standards and recommended practices that

1 will open up the U.S. civil airspace to civil super-  
2 sonic transport.”.

3 **SEC. 402. UNMANNED AIRCRAFT SYSTEMS RESEARCH.**

4 (a) IN GENERAL.—

5 (1) TITLE 51.—Chapter 315 of title 51, United  
6 States Code, is amended by adding at the end the  
7 following:

8 **“§ 31506. Unmanned aircraft systems research**

9 “The Administrator, in consultation with the Admin-  
10 istrator of the Federal Aviation Administration and other  
11 Federal agencies, shall conduct research on facilitating the  
12 safe integration of unmanned aircraft systems into the na-  
13 tional airspace system, including—

14 “(1) positioning and navigation systems;

15 “(2) sense-and-avoid capabilities;

16 “(3) secure data and communication links;

17 “(4) flight recovery systems; and

18 “(5) human systems integration.”.

19 (2) CONFORMING AMENDMENT.—The table of  
20 sections for chapter 315 of title 51, United States  
21 Code, is amended by adding at the end the following  
22 new item:

“31506. Unmanned aircraft systems research.”.

23 (b) COOPERATIVE UNMANNED AERIAL VEHICLE AC-  
24 TIVITIES.—Section 31504 of title 51, United States Code,  
25 is amended by adding at the end the following: “Oper-

1 ational flight data derived from such cooperative agree-  
2 ments shall be made available, in appropriate and usable  
3 formats, to the Administration and the Federal Aviation  
4 Administration for the development of regulatory stand-  
5 ards.”.

6 **SEC. 403. 21ST CENTURY AERONAUTICS RESEARCH CAPA-**  
7 **BILITIES INITIATIVE.**

8 (a) **ESTABLISHMENT.**—The Administrator shall es-  
9 tablish an initiative to be known as the 21st Century Aero-  
10 nautics Research Capabilities Initiative, funded through  
11 the Construction of Facilities account, to ensure that  
12 NASA possesses the infrastructure capabilities and com-  
13 putational tools necessary to conduct flight demonstration  
14 projects across the range of NASA aeronautics interests.

15 (b) **ACTIVITIES.**—In carrying out the 21st Century  
16 Aeronautics Research Capabilities Initiative, the Adminis-  
17 trator shall—

18 (1) upgrade and create facilities for civil and  
19 national security aeronautics research; and

20 (2) support flight testing activities.

21 (c) **OPERATING MODEL.**—In carrying out the 21st  
22 Century Aeronautics Research Capabilities Initiative, the  
23 Administrator shall, to the greatest extent practicable,  
24 build on NASA’s work on developing its Operating Model



1 and the results of the Technical Capabilities Assessment  
2 Team.

3 (d) REPORT.—

4 (1) REPORT REQUIRED.—Not later than 120  
5 days after the date of enactment of this Act, the Ad-  
6 ministrator shall submit to the Committee on  
7 Science, Space, and Technology of the House of  
8 Representatives and the Committee on Commerce,  
9 Science, and Transportation of the Senate a report  
10 containing a 5-year plan for the implementation of  
11 the 21st Century Aeronautics Research Capabilities  
12 Initiative.

13 (2) ELEMENTS.—The report required under  
14 this subsection shall include—

15 (A) a description of proposed projects;

16 (B) a description of how the projects align  
17 with the Aeronautics Strategic Implementation  
18 Plan; and

19 (C) a timetable for carrying out activities  
20 and initiatives authorized under this section.

21 (e) AUTHORIZATION OF APPROPRIATIONS.—There  
22 are authorized to be appropriated \$50,000,000, funded  
23 through the Construction of Facilities account, for fiscal  
24 year 2019 to carry out this section.

1 **SEC. 404. EXPERIMENTAL PLANE PROGRAM.**

2 (a) POLICY.—It is the policy of the United States to  
3 maintain the role of the United States as a world leader  
4 in aeronautical science and technology.

5 (b) OBJECTIVE.—A fundamental objective of NASA  
6 aeronautics research is the steady progression and expansion  
7 of high-speed flight research and capabilities, including  
8 the science and technology of critical underlying disciplines  
9 and competencies, the most important of which  
10 are computational-based analytical and predictive tools  
11 and methodologies, aero thermodynamics, high-speed  
12 flight propulsion, high-temperature structures and materials,  
13 and flight controls.

14 **SEC. 405. HYPERSONIC TECHNOLOGY PROJECT.**

15 (a) FINDINGS.—Congress finds that—

16 (1) the development of new hypersonic flight  
17 technologies is important to the United States;

18 (2) though hypersonic flight technologies are  
19 likely to be applied to enhance defense systems in  
20 the near-term, in the long-term, application of such  
21 technologies may expand to include improved access-  
22 to-space capabilities that benefit NASA; and

23 (3) NASA maintains specialized facilities and  
24 experts who will focus on research areas that explore  
25 challenges in hypersonic flight.

1 (b) POLICY.—In carrying out the Hypersonic Tech-  
2 nology project, NASA should focus research and develop-  
3 ment efforts on high-speed propulsion systems, reusable  
4 vehicle technologies, high-temperature materials, and sys-  
5 tems analysis.

6 (c) AUTHORIZED FUNDING.—Subject to the avail-  
7 ability of appropriations, the Administrator shall make  
8 available at least \$30,000,000 for fiscal year 2019 for the  
9 Hypersonic Technology project.

## 10 **TITLE V—COMMERCIAL**

### 11 **SEC. 501. COMMERCIAL SUPPLY OF SPACE PRODUCTS.**

12 (a) IN GENERAL.—Subchapter II of chapter 501 of  
13 title 51, United States Code, is amended by adding at the  
14 end the following:

#### 15 **“§ 50117. Commercial supply of space products**

16 “(a) IN GENERAL.—In planning and carrying out  
17 space exploration missions, the Administrator shall, to the  
18 greatest extent practicable, prioritize the acquisition and  
19 use of space products provided by a United States com-  
20 mercial provider or through a public-private partnership  
21 with a United States commercial provider.

22 “(b) SPACE PRODUCT DEFINED.—In this section, the  
23 term ‘space product’ means a tangible good, including a  
24 finished good, or commodity, including a propellant, water,  
25 oxygen, or gas, that—

1           “(1) is required for space exploration activities;  
2           and

3           “(2) originates in outer space.

4           “(c) COMMODITIES USED IN SPACE.—

5           “(1) LIST OF COMMODITIES.—In planning a  
6           space exploration mission, the Administrator shall  
7           create a list of commodities to be used during such  
8           mission. The list shall include specification of each  
9           commodity, anticipated quantity, and the location  
10          and the timeframe of need.

11          “(2) COMMODITY COST BASIS.—For each com-  
12          modity listed pursuant paragraph (1), NASA shall  
13          establish a commodity cost basis that shall represent  
14          the lesser of—

15                 “(A) the estimated cost to procure the  
16                 commodity on Earth and deliver the commodity  
17                 to the location of use; and

18                 “(B) the estimated cost for the Govern-  
19                 ment to procure the equivalent commodity that  
20                 is a space product.

21          “(3) PUBLICATION.—The Administrator shall  
22          annually publish the information compiled under  
23          paragraphs (1) and (2) during the previous calendar  
24          year.

1       “(d) EXCEPTIONS.—The Administrator shall not be  
2 required to prioritize the acquisition of space products for  
3 the purposes described in subsection (a) if, on a case-by-  
4 case basis—

5               “(1) the Administrator determines that—

6                       “(A) cost-effective space products that  
7 meet specific mission requirements would not be  
8 reasonably available from United States com-  
9 mercial providers when required;

10                      “(B) the use of space products from  
11 United States commercial providers poses an  
12 unacceptable mission risk; or

13                      “(C) the use of space products is incon-  
14 sistent with international agreements for inter-  
15 national collaborative efforts relating to science  
16 and technology; or

17               “(2) the Secretary of the Air Force determines  
18 that the use of space commodities from United  
19 States commercial providers is inconsistent with na-  
20 tional security objectives.

21       “(e) AGREEMENTS WITH FOREIGN ENTITIES.—  
22 Nothing in this section shall prevent the Administrator  
23 from planning or negotiating agreements with foreign gov-  
24 ernmental entities for the provision of space products.”.

1 (b) CONFORMING AMENDMENT.—Subchapter II of  
2 chapter 501 of title 51, United States Code, is amended  
3 by adding at the end the following:

“50117. Commercial supply of space products.”.

4 **SEC. 502. COMMERCIAL PROVISION OF SERVICES.**

5 (a) IN GENERAL.—Subchapter II of chapter 501 of  
6 title 51, United States Code, is further amended by adding  
7 at the end the following:

8 **“§ 50118. Commercial provision of services**

9 “(a) IN GENERAL.—In planning and carrying out  
10 space exploration missions, the Administrator shall, to the  
11 greatest extent practicable, acquire services to be carried  
12 out in outer space by a United States commercial provider  
13 or through a public-private partnership with a United  
14 States commercial provider to support such missions.

15 “(b) EXCEPTIONS.—The Administrator shall not be  
16 required to acquire services under subsection (a) from a  
17 United States commercial provider or through a public-  
18 private partnership with a United States commercial pro-  
19 vider if, on a case-by-case basis—

20 “(1) the Administrator determines that—

21 “(A) cost-effective services that meet spe-  
22 cific mission requirements would not be reason-  
23 ably available from United States commercial  
24 providers when required;

1           “(B) the use of such services from United  
2 States commercial providers poses an unaccept-  
3 able mission risk; or

4           “(C) the use of such services is incon-  
5 sistent with international agreements for inter-  
6 national collaborative efforts relating to science  
7 and technology; or

8           “(2) the Secretary of the Air Force determines  
9 that the use of services from United States commer-  
10 cial providers is inconsistent with national security  
11 objectives.

12       “(c) AGREEMENTS WITH FOREIGN ENTITIES.—  
13 Nothing in this section shall prevent the Administrator  
14 from planning or negotiating agreements with foreign gov-  
15 ernmental entities for the provision of support services to  
16 be carried out in outer space.”.

17       (b) CONFORMING AMENDMENT.—Subchapter II of  
18 chapter 501 of title 51, United States Code, is further  
19 amended by adding at the end the following:

“50118. Commercial provision of services.”.

20 **SEC. 503. COMMERCIAL IN-SPACE INFRASTRUCTURE.**

21       (a) IN GENERAL.—Subchapter II of chapter 501 of  
22 title 51, United States Code, is further amended by adding  
23 at the end the following:

1 **“§ 50119. Commercial in-space infrastructure**

2 “(a) IN GENERAL.—In planning and carrying out  
3 space exploration missions, the Administrator shall, to the  
4 greatest extent practicable, make use of commercial in-  
5 space infrastructure to support such missions.

6 “(b) COMMERCIAL IN-SPACE INFRASTRUCTURE.—In  
7 this section, the term ‘commercial in-space infrastructure’  
8 means infrastructure that is—

9 “(1) owned, managed, or built by a United  
10 States commercial provider or through a public-pri-  
11 vate partnership with a United States commercial  
12 provider; and

13 “(2) located more than 320,000 kilometers  
14 from the Earth’s surface.

15 “(c) EXCEPTIONS.—The Administrator shall not be  
16 required to use commercial in-space infrastructure if, on  
17 a case-by-case basis—

18 “(1) the Administrator determines that—

19 “(A) cost-effective infrastructure that  
20 meets specific mission requirements would not  
21 be reasonably available from United States  
22 commercial providers when required;

23 “(B) the use of commercial in-space infra-  
24 structure poses an unacceptable mission risk; or

25 “(C) the use of commercial in-space infra-  
26 structure is inconsistent with international



1 agreements for international collaborative ef-  
2 forts relating to science and technology; or

3 “(2) the Secretary of the Air Force determines  
4 that the use of commercial in-space infrastructure is  
5 inconsistent with national security objectives.

6 “(d) AGREEMENTS WITH FOREIGN ENTITIES.—  
7 Nothing in this section shall prevent the Administrator  
8 from planning or negotiating agreements with foreign gov-  
9 ernmental entities for the use infrastructure in support  
10 of United States civil government activities in outer  
11 space.”.

12 (b) CONFORMING AMENDMENT.—Subchapter II of  
13 chapter 501 of title 51, United States Code, is further  
14 amended by adding at the end the following:

“50119. Commercial in-space infrastructure.”.

15 **SEC. 504. PREFERENCE FOR LAUNCH VEHICLES MANUFAC-**  
16 **TURED IN THE UNITED STATES.**

17 It is the sense of Congress that the Administrator  
18 should, to the greatest extent possible, with respect to en-  
19 tering into contracts for commercial space data and serv-  
20 ices, provide weighed preference, selection points, and  
21 other incentives for the use of launch vehicles that are  
22 manufactured in the United States.

23 **SEC. 505. STUDIES ON INDUSTRIAL BASE.**

24 No funds may be obligated or expended by the Ad-  
25 ministrator for purposes of carrying out a Bureau of In-

1 industry and Security survey of the United States aerospace  
2 industrial base until the date that is 30 days after the  
3 date on which the Administrator submits to the Com-  
4 mittee on Science, Space, and Technology of the House  
5 of Representatives and the Committee on Commerce,  
6 Science, and Transportation of the Senate a written notifi-  
7 cation that includes—

8           (1) the proposed subject matter of such survey;

9           (2) a description of the information to be re-  
10       quired of survey respondents; and

11           (3) any penalties proposed to be assessed by the  
12       Federal Government against respondents for non-  
13       compliance with survey requirements.

14 **SEC. 506. SPECTRUM COORDINATION.**

15       (a) IN GENERAL.—The Administrator shall develop  
16 and implement a plan to more effectively and efficiently,  
17 taking into account NASA’s spectrum requirements, share  
18 electromagnetic spectrum assigned to NASA with United  
19 States nongovernmental entities operating or proposing to  
20 operate space objects.

21       (b) REPORT.—Not later than 180 days after the date  
22 of enactment of this Act, the Administrator shall submit  
23 to the Committee on Science, Space, and Technology of  
24 the House of Representatives and the Committee on Com-

1 merce, Science, and Transportation of the Senate a report  
2 on the plan developed under subsection (a).

3 **SEC. 507. ENHANCED-USE LEASING.**

4 (a) SENSE OF CONGRESS.—It is the sense of Con-  
5 gress that—

6 (1) NASA possesses a variety of unique and  
7 world-class facilities;

8 (2) NASA is developing and using many dif-  
9 ferent methods to offset the cost of maintaining and  
10 operating such facilities;

11 (3) nongovernmental entities may be able to use  
12 such facilities in a manner that is cost-effective; and

13 (4) agreements between NASA and nongovern-  
14 mental entities regarding the use of such facilities  
15 may offset a portion of the spending of NASA.

16 (b) EXTENSION OF AUTHORITY TO LEASE NON-EX-  
17 CESS PROPERTY.—Section 20145(g) of title 51, United  
18 States Code, is amended by striking “December 31, 2018”  
19 and inserting “December 31, 2020”.

20 (c) CONDITION ON USE OF FUNDS.—For any year  
21 for which funds are made available under section 20145  
22 of title 51, United States Code, (as amended by subsection  
23 (b)), no funds may be expended by the Administrator  
24 under such section after January 31 unless Administrator  
25 submits, before such date, to the Committee on Science,

1 Space, and Technology of the House of Representatives  
2 and the Committee on Commerce, Science, and Transpor-  
3 tation of the Senate the annual report required under such  
4 section for the prior year.

5 **SEC. 508. SATELLITE SERVICING TECHNOLOGIES.**

6 The Administrator shall continue to restructure  
7 NASA investments in the development of satellite serv-  
8 icing technologies to reduce the overall cost to NASA and  
9 align with NASA needs for exploration.

10 **TITLE VI—POLICY**

11 **SEC. 601. NASA-FUNDED INSTITUTES.**

12 (a) FINDINGS.—Congress finds that on June 9,  
13 2016, the Office of Inspector General of NASA reported  
14 that—

15 (1) NASA does not aggregate information on  
16 the universe, status, or funding levels for the many  
17 institutes it supports;

18 (2) the absence of this information makes it dif-  
19 ficult for NASA leaders to strategically evaluate the  
20 scope or purpose of its institute investments and for  
21 Congress and other stakeholders to understand how  
22 NASA is spending more than three-quarters of a bil-  
23 lion dollars of its budget annually;

1           (3) absent comprehensive, centralized informa-  
2           tion about these investments, it may be difficult for  
3           NASA to avoid duplication among its efforts;

4           (4) NASA has not defined what constitutes an  
5           institute or established guidance and metrics on the  
6           management, use, or expectations for return on in-  
7           vestment;

8           (5) such guidance may enable NASA to gain a  
9           better understanding of how funds directed to  
10          NASA-funded institutes are utilized to accomplish  
11          the mission and goals of NASA, increase its return  
12          on investment, and evaluate the performance of such  
13          institutes; and

14          (6) NASA lacks a standard process to assess a  
15          potential grantee’s financial condition prior to grant  
16          award or to impose additional reporting or oversight  
17          requirements that such a condition may warrant,  
18          and without such a mechanism, NASA risks making  
19          uninformed investment decisions.

20          (b) INSTITUTE BUDGETS.—Section 30103(a) of title  
21          51, United States Code, is amended—

22                 (1) in paragraph (5), by striking “and” at the  
23                 end;

24                 (2) by redesignating paragraph (6) as para-  
25                 graph (7); and

1           (3) by inserting after paragraph (5) the fol-  
2           lowing:

3           “(6) the budget for each NASA-funded insti-  
4           tute; and”.

5           (c) REPORT.—Not later than 90 days after the date  
6 of enactment of this Act, the Administrator shall submit  
7 to the Committee on Science, Space, and Technology of  
8 the House of Representatives and the Committee on Com-  
9 merce, Science, and Transportation of the Senate a report  
10 that recommends guidance and metrics for the manage-  
11 ment, utilization, expectations for return on investment,  
12 and financial condition of NASA-funded institutes.

13 **SEC. 602. BASELINE AND COST CONTROLS.**

14           Section 30104(e)(1)(A) of title 51, United States  
15 Code, is amended—

16           (1) in clause (ii) by striking “and” at the end;

17           (2) in clause (iii) by striking “and” at the end;

18           and

19           (3) by adding at the end the following:

20                   “(iv) any changes made in the per-  
21                   formance or schedule milestones and the  
22                   degree to which such changes have contrib-  
23                   uted to the increase in total cost;

24                   “(v) new estimates of the specific  
25                   project or specific program cost; and

1                   “(vi) a statement validating that the  
2                   management structure of the project or  
3                   program is adequate to control cost; and”.

4 **SEC. 603. REPORTS TO CONGRESS.**

5           (a) IN GENERAL.—Chapter 301 of title 51, United  
6 States Code, is amended by adding at the end the fol-  
7 lowing:

8 **“§ 30105. Concurrent reports**

9           “For any report that the Administration submits to  
10 the Committee on Appropriations of the House of Rep-  
11 resentatives or the Committee on Appropriations of the  
12 Senate, the Administrator shall concurrently submit such  
13 report to the Committee on Science, Space, and Tech-  
14 nology of the House of Representatives and the Com-  
15 merce, Science, and Transportation Committee of the Sen-  
16 ate.”.

17           (b) CONFORMING AMENDMENT.—The table of sec-  
18 tions for chapter 301 of title 51, United States Code, is  
19 amended by adding at the end the following:

“30105. Concurrent reports.”.

20 **SEC. 604. INTERNATIONAL TECHNICAL AND OPERATIONAL**  
21 **STANDARDS.**

22           (a) FINDINGS.—Congress finds that—

23                   (1) section 71301 of title 51, United States  
24 Code, directs the Administrator to “enter into dis-  
25 cussions with the appropriate representatives of

1 spacefaring nations who have or plan to have crew  
2 transportation systems capable of orbital flight or  
3 flight beyond low Earth orbit for the purpose of  
4 agreeing on a common docking system standard”;

5 (2) the development of an international docking  
6 standard has been beneficial in promoting Govern-  
7 ment and private sector space exploration, interoper-  
8 ability, and United States international leadership;

9 (3) NASA continues the development described  
10 in paragraph (2) by coordinating the development of  
11 joint international deep space interoperability stand-  
12 ards; and

13 (4) the long-term goals of NASA, as described  
14 in section 202(a) of the National Aeronautics and  
15 Space Administration Authorization Act of 2010 (42  
16 U.S.C. 18312(a)), include expanding permanent  
17 human presence beyond low-Earth orbit.

18 (b) SENSE OF CONGRESS.—It is the sense of Con-  
19 gress that—

20 (1) the plans of NASA for crewed exploration  
21 beyond low-Earth orbit should involve a wide array  
22 of partners to address the technological challenges of  
23 deep space exploration;

24 (2) the development of common terminology  
25 and concepts for spacecraft design and safety will



1 help promote NASA leadership in space and space-  
2 craft design;

3 (3) the adoption of common design and safety  
4 terminology and concepts across NASA would enable  
5 NASA to pursue the long-term goals of NASA, de-  
6 scribed in section 202(a) of the National Aero-  
7 nautics and Space Administration Authorization Act  
8 of 2010 (42 U.S.C. 18312(a)), in a manner that is  
9 effective and efficient; and

10 (4) NASA should continue to develop and pro-  
11 mote common terminology and concepts for space-  
12 craft design and safety.

13 **SEC. 605. NASA CONTRACTOR RESPONSIBILITY WATCH**  
14 **LIST.**

15 (a) IN GENERAL.—The Administrator shall establish  
16 and maintain a watch list of contractors with a history  
17 of poor performance on space procurement contracts or  
18 research, development, test, and evaluation space program  
19 contracts.

20 (b) BASIS FOR INCLUSION ON LIST.—

21 (1) DETERMINATION.—The Administrator may  
22 place a contractor, including parties contracting  
23 under other transaction authorities, on the watch list  
24 established under subsection (a) upon determining  
25 that the ability of the contractor to perform a con-

1       tract specified in such subsection is uncertain be-  
2       cause of any of the following:

3               (A) Poor performance or award fee scores  
4       below 50 percent.

5               (B) Financial concerns.

6               (C) Felony convictions or civil judgements.

7               (D) Security or foreign ownership and con-  
8       trol issues.

9       (2) DISCRETION OF THE ADMINISTRATOR.—

10       The Administrator shall be responsible for deter-  
11       mining which contractors to place on the watch list,  
12       whether an entire company or a specific division  
13       should be included, and when to remove a contractor  
14       from the list.

15       (c) EFFECT OF LISTING.—

16               (1) PRIME CONTRACTS.—NASA may not solicit  
17       an offer from, award a contract to, execute an engi-  
18       neering change proposal with, or exercise an option  
19       on any program of NASA with a contractor included  
20       on the list established under subsection (a) without  
21       the prior direct approval of the Administrator.

22               (2) SUBCONTRACTS.—A prime contractor on a  
23       contract entered into with NASA may not enter into  
24       a subcontract valued in excess of \$3,000,000 or five  
25       percent of the prime contract value, whichever is

1        lesser, with a contractor included on the watch list  
2        established under subsection (a) without the prior  
3        approval of the Administrator.

4        (d) **REQUEST FOR REMOVAL FROM LIST.**—A con-  
5        tractor may submit to the Administrator a written request  
6        for removal from the watch list, including evidence that  
7        the contractor has resolved the issue that was the basis  
8        for inclusion on the list.

9        (e) **RULE OF CONSTRUCTION.**—Nothing in this sec-  
10       tion shall be construed as preventing the suspension or  
11       debarment of a contractor, but inclusion on the watch list  
12       shall not be construed as a punitive measure or de facto  
13       suspension or debarment of a contractor.

14       **SEC. 606. HUMAN SPACE EXPLORATION RISK.**

15       (a) **FINDINGS.**—Congress finds the following:

16            (1) American leadership in the peaceful explo-  
17            ration and use of outer space has been a long-stand-  
18            ing priority for the United States.

19            (2) The reestablishment of the National Space  
20            Council by President Trump demonstrates the stra-  
21            tegic importance of outer space to the Nation.

22            (3) The December 2017 National Security  
23            Strategy of the United States establishes the broad  
24            strategic importance of outer space exploration and  
25            use for the United States.

1 (b) SENSE OF CONGRESS.—It is the sense of Con-  
2 gress that—

3 (1) exploration and use of outer space is a mat-  
4 ter of broad, national strategic importance; and

5 (2) space exploration decision-making and re-  
6 quirement-setting in such a strategic context is com-  
7 plex, especially with respect to setting appropriate  
8 priorities and levels of risk tolerance.

9 (c) REPORT ON INHERENT JUSTIFIABLE RISK.—

10 (1) IN GENERAL.—Not later than 1 year after  
11 the date of enactment of this Act, the National  
12 Space Council, or its designee, shall submit to Con-  
13 gress and make available to the public a report re-  
14 lating the broad strategic national importance of  
15 space to the inherent, justifiable risk of the explo-  
16 ration and use of space.

17 (2) POLICY AND STRATEGY.—The Adminis-  
18 trator shall engage with appropriate members of the  
19 private sector, academia, and nonprofit organiza-  
20 tions on a policy and strategy of enterprise-level en-  
21 gineering and operational risk management to  
22 present in the report that addresses inherent, justifi-  
23 able risks of loss of life that may occur in space ex-  
24 ploration and use.

1           (3) CONTENTS.—The report required under  
2 paragraph (1) shall—

3           (A) clarify the broad strategic case and  
4 value of space;

5           (B) address inherent, justifiable risks of  
6 loss of life that may occur in space exploration  
7 and use; and

8           (C) discuss enterprise- and architecture-  
9 level approaches for exploration risk manage-  
10 ment.

○