

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3354.)

HISTORICAL AND REVISION NOTES

Revised Section	Source (U.S. Code)	Source (Statutes at Large)
20163	42 U.S.C. 2483.	Pub. L. 85–568, title IV, § 403, as added Pub. L. 94–39, § 8, June 19, 1975, 89 Stat. 222.

§ 20164. International cooperation

In carrying out the provisions of this subchapter, the Administration, subject to the direction of the President and after consultation with the Secretary of State, shall make every effort to enlist the support and cooperation of appropriate scientists and engineers of other countries and international organizations.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3355.)

HISTORICAL AND REVISION NOTES

Revised Section	Source (U.S. Code)	Source (Statutes at Large)
20164	42 U.S.C. 2484.	Pub. L. 85–568, title IV, § 404, as added Pub. L. 94–39, § 8, June 19, 1975, 89 Stat. 223.

CHAPTER 203—RESPONSIBILITIES AND VISION

Sec.

- 20301. General responsibilities.
- 20302. Vision for space exploration.
- 20303. Contribution to innovation.
- 20304. Basic research enhancement.
- 20305. National Academies decadal surveys.

§ 20301. General responsibilities

(a) PROGRAMS.—The Administrator shall ensure that the Administration carries out a balanced set of programs that shall include, at a minimum, programs in—

- (1) human space flight, in accordance with section 20302 of this title;
- (2) aeronautics research and development; and
- (3) scientific research, which shall include, at a minimum—

(A) robotic missions to study the Moon and other planets and their moons, and to deepen understanding of astronomy, astrophysics, and other areas of science that can be productively studied from space;

(B) Earth science research and research on the Sun-Earth connection through the development and operation of research satellites and other means;

(C) support of university research in space science, Earth science, and microgravity science; and

(D) research on microgravity, including research that is not directly related to human exploration.

(b) CONSULTATION AND COORDINATION.—In carrying out the programs of the Administration, the Administrator shall—

(1) consult and coordinate to the extent appropriate with other relevant Federal agencies, including through the National Science and Technology Council;

(2) work closely with the private sector, including by—

(A) encouraging the work of entrepreneurs who are seeking to develop new means to launch satellites, crew, or cargo;

(B) contracting with the private sector for crew and cargo services, including to the International Space Station, to the extent practicable;

(C) using commercially available products (including software) and services to the extent practicable to support all Administration activities; and

(D) encouraging commercial use and development of space to the greatest extent practicable; and

(3) involve other nations to the extent appropriate.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3355.)

HISTORICAL AND REVISION NOTES

Revised Section	Source (U.S. Code)	Source (Statutes at Large)
20301	42 U.S.C. 16611(a).	Pub. L. 109–155, title I, § 101(a), Dec. 30, 2005, 119 Stat. 2897.

Statutory Notes and Related Subsidiaries

SPACE LAUNCH SYSTEM CONFIGURATIONS

Pub. L. 117–167, div. B, title VII, § 10812, Aug. 9, 2022, 136 Stat. 1735, provided that:

“(a) EXPLORATION GROUND SYSTEMS INFRASTRUCTURE.—The Administrator shall ensure that—

“(1) the necessary elements of a ground system infrastructure are in place to enable the preparation and use of the Space Launch System, specifically the Block 1 (at least 70 mt), Block 1B (at least 105 mt), and Block 2 (at least 130 mt) variants of the Space Launch System; and

“(2) not fewer than 2 bays of the vehicle assembly building of such ground system infrastructure are outfitted and dedicated to support Space Launch System stacking and preparations.

“(b) FLIGHT RATE AND SAFETY.—After the first crewed lunar landing of the Administration’s Moon to Mars activities, the Administrator shall, to the extent practicable, seek to carry out a flight rate of 2 integrated Space Launch System and Orion crew vehicle missions annually until the lunar activities needed to enable a human mission to Mars are completed so as to maintain the critical human spaceflight production and operations skills necessary for the safety of human spaceflight activities in deep space.

“(c) MOBILE LAUNCH PLATFORM.—

“(1) IN GENERAL.—The Administrator is authorized to maintain 2 operational mobile launch platforms to enable the launch of multiple configurations of the Space Launch System.

“(2) SECOND MOBILE LAUNCH PLATFORM.—

“(A) IN GENERAL.—In implementing paragraph (1), the Administrator shall take all necessary steps to develop and complete a second mobile launch platform, to be in place by 2026, to support the first launch of the Block 1B variant of the Space Launch System.

“(B) REQUIREMENT.—Such second mobile launch platform shall be sized and constructed to accommodate the Block 2 variant of the Space Launch System.

“(d) REPORTS.—The Administrator shall submit to Congress—

“(1) not later than 45 days after the date of the enactment of this Act [Aug. 9, 2022], a report on the steps the Administrator and industry partners are taking—

“(A) to address the cost, schedule, and performance challenges in the development of the Mobile Launch-2 platform; and

“(B) to ensure that such platform is ready for operational use on a schedule that aligns with the current plans for an Artemis IV launch, which is currently anticipated in 2027; and

“(2) not later than 90 days after such date of enactment, a report that contains a list of the key milestones required for completing each of the Space Launch System variants, and an estimated date on which such milestones will be completed.

“(e) EXPLORATION UPPER STAGE.—

“(1) IN GENERAL.—To meet the capability requirements under section 302(c)(2) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18322(c)(2)), the Administrator shall continue development of the Exploration Upper Stage for the Space Launch System on a schedule consistent with the Artemis IV lunar mission.

“(2) BRIEFING.—Not later than 90 days after the date of the enactment of this Act, the Administrator shall brief the appropriate committees of Congress on the development and scheduled availability of the Exploration Upper Stage for the Artemis IV lunar mission.

“(f) MAIN PROPULSION TEST ARTICLE.—To meet the requirements under section 302(c)(3) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18322(c)(3)), the Administrator may initiate development of a main propulsion test article for the integrated Exploration Upper Stage element of the Space Launch System, consistent with cost and schedule constraints, particularly for long-lead propulsion hardware needed for flight.”

[For definitions of terms used in section 10812 of Pub. L. 116–167, set out above, see section 10802 of Pub. L. 117–167, set out as a Definitions note under section 10101 of this title.]

ROCKET ENGINE TEST INFRASTRUCTURE

Pub. L. 117–167, div. B, title VII, §10813, Aug. 9, 2022, 136 Stat. 1736, provided that:

“(a) IN GENERAL.—The Administrator shall, to the extent practicable, continue to carry out a program to modernize rocket propulsion test infrastructure at NASA facilities—

“(1) to increase capabilities;

“(2) to enhance safety;

“(3) to support propulsion development and testing; and

“(4) to foster the improvement of Government and commercial space transportation and exploration.

“(b) PROJECTS.—Projects funded under the program described in subsection (a) may include—

“(1) infrastructure and other facilities and systems relating to rocket propulsion test stands and rocket propulsion testing;

“(2) enhancements to test facility capacity and flexibility; and

“(3) such other projects as the Administrator considers appropriate to meet the goals described in that subsection.

“(c) REQUIREMENTS.—In carrying out the program under subsection (a), the Administrator shall—

“(1) to the extent practicable and appropriate, prioritize investments in projects that enhance test and flight certification capabilities, including for large thrust-level atmospheric and altitude engines and engine systems, and multi-engine integrated test capabilities;

“(2) continue to make underutilized test facilities available for commercial use on a reimbursable basis; and

“(3) ensure that no project carried out under this program adversely impacts, delays, or defers testing or other activities associated with facilities used for Government programs, including—

“(A) the Space Launch System and the Exploration Upper Stage of the Space Launch System;

“(B) in-space propulsion to support exploration missions; or

“(C) nuclear propulsion testing.

“(d) RULE OF CONSTRUCTION.—Nothing in this section shall preclude a NASA program, including the Space Launch System and the Exploration Upper Stage of the Space Launch System, from using the modernized test infrastructure developed under this section.

“(e) WORKING CAPITAL FUND STUDY.—

“(1) IN GENERAL.—Not later than 1 year after the date of the enactment of this division [Aug. 9, 2022], the Administrator shall submit to the appropriate committees of Congress a report on the use of the authority under section 30102 of title 51, United States Code, to promote increased use of NASA rocket propulsion test infrastructure for research, development, testing, and evaluation activities by other Federal agencies, firms, associations, corporations, and educational institutions.

“(2) MATTERS TO BE INCLUDED.—The report required by paragraph (1) shall include the following:

“(A) An assessment of prior use, if any, of the authority under section 30102 of title 51, United States Code, to improve testing infrastructure.

“(B) An analysis of any barrier to implementation of such authority for the purpose of promoting increased use of NASA rocket propulsion test infrastructure.”

[For definitions of terms used in section 10813 of Pub. L. 116–167, set out above, see section 10802 of Pub. L. 117–167, set out as a Definitions note under section 10101 of this title.]

SEARCH FOR LIFE

Pub. L. 117–167, div. B, title VII, §10822, Aug. 9, 2022, 136 Stat. 1740, provided that:

“(a) SENSE OF CONGRESS.—It is the sense of Congress that—

“(1) the report entitled ‘An Astrobiology Strategy for the Search for Life in the Universe’ published by the National Academies of Sciences, Engineering, and Medicine outlines key scientific questions and methods on the search for the origin, evolution, distribution, and future of life in the universe; and

“(2) the interaction of lifeforms with their environment, a central focus of astrobiology research, is a topic of broad significance to life sciences research in space and on Earth.

“(b) PROGRAM CONTINUATION.—

“(1) IN GENERAL.—The Administrator [of the National Aeronautics and Space Administration] shall continue to implement a collaborative, multidisciplinary science and technology development program to search for evidence of the existence or historical existence of life beyond Earth in support of—

“(A) the scientific priorities of the most recent decadal surveys on planetary science and astrobiology and astronomy and astrophysics of the National Academies of Sciences, Engineering, and Medicine; and

“(B) the objective described in section 20102(d)(10) of title 51, United States Code.

“(2) ELEMENT.—The program under paragraph (1) shall include activities relating to astronomy, biology, geology, and planetary science.

“(3) COORDINATION WITH LIFE SCIENCES PROGRAM.—In carrying out the program under paragraph (1), the Administrator shall coordinate efforts with the life sciences program of the [National Aeronautics and Space] Administration.

“(4) INSTRUMENTATION AND SENSOR TECHNOLOGY.—In carrying out the program under paragraph (1), the Administrator may invest in the development of new instrumentation and sensor technology.

“(5) TECHNOSIGNATURES.—In carrying out the program under paragraph (1), the Administrator may support, as appropriate, merit-reviewed, competitively selected research on technosignatures.”

SPACE NUCLEAR CAPABILITIES

Pub. L. 117–167, div. B, title VII, §10841, Aug. 9, 2022, 136 Stat. 1751, provided that:

“(a) NUCLEAR PROPULSION.—

“(1) USE IN ROBOTIC AND HUMAN EXPLORATION ACTIVITIES.—The Administrator, in collaboration with other relevant Federal agencies and with industry, shall take all necessary steps to carry out research and development, ground-based testing and in-space testing, and other associated activities to enable the use of space nuclear propulsion in Administration robotic and human exploration activities, including in cargo missions to Mars in the late 2020’s and crewed missions to Mars in the 2030’s.

“(2) SPACE NUCLEAR PROPULSION PROGRAM.—

“(A) IN GENERAL.—The Administrator shall establish a space nuclear propulsion program to carry out the activities described in paragraph (1).

“(B) ELEMENTS.—The program established under subparagraph (A) shall include the following:

“(i) Research and development in both nuclear electric and nuclear thermal propulsion technology maturation efforts, to the extent practicable, and the development of consistent figures of merit across both nuclear electric and nuclear thermal systems, as recommended by the National Academies of Sciences, Engineering, and Medicine in the report entitled ‘Space Nuclear Propulsion for Human Mars Exploration’, so as to inform a down-selection of a nuclear electric or nuclear thermal propulsion system by 2026, or as early as practicable.

“(ii) Ground-based testing, to the extent practicable, including not less than 1 ground-based test of a full-scale, integrated nuclear propulsion system before any in-space test or demonstration of such system.

“(iii) In-space demonstration of a nuclear propulsion system in the late 2020’s, which may be carried out as a cargo mission to Mars.

“(3) PLAN.—

“(A) IN GENERAL.—Not later than 180 days after the date of the enactment of this Act [Aug. 9, 2022], the Administrator shall submit to the appropriate committees of Congress a plan to achieve an in-space flight test of a nuclear propulsion system that could support the first crewed mission to Mars in the 2030’s.

“(B) ELEMENTS.—The plan required by subparagraph (A) shall include the following:

“(i) A timeline to mature enabling technologies and an outline of major milestones for integration of such technologies into the larger nuclear propulsion system.

“(ii) A cost estimate for maturing such technologies.

“(iii) A description of facility requirements for the program under paragraph (2) associated with such technologies.

“(iv) A description of the manner in which the Administrator will use the efforts described in paragraph (2)(B) to determine whether the in-space flight test should demonstrate a nuclear electric propulsion system or a nuclear thermal propulsion system.

“(C) An identification of any policy or regulatory challenges or barriers to conducting such in-space test or any precursor ground-based testing, and a description of options for addressing such challenges or barriers.

“(b) NUCLEAR SURFACE POWER PROGRAM.—

“(1) ESTABLISHMENT.—The Administrator shall establish a program for research, testing, and development of a space nuclear surface power reactor design.

“(2) PLAN.—

“(A) IN GENERAL.—The Administrator shall—

“(i) develop a plan and timeline for the program established under paragraph (1), taking into consideration mission needs; and

“(ii) include in such plan opportunities for participation by United States commercial entities.

“(B) SUBMISSION.—Not later than 1 year after the date of the enactment of this Act, the Adminis-

trator shall submit to the appropriate committees of Congress the plan developed under subparagraph (A).

“(c) ASSESSMENT OF IN-SPACE PROPULSION TESTING FACILITIES.—

“(1) IN GENERAL.—The Administrator shall carry out a needs assessment for facilities and technical capabilities required to support ground-based testing of a full-scale, full-power integrated nuclear propulsion system.

“(2) ELEMENT.—The assessment required by paragraph (1) shall consider the potential development of facilities that will support long-term research and development of space nuclear propulsion systems.

“(3) REPORT.—Not later than 270 days after the date of the enactment of this Act, the Administrator shall submit to the appropriate committees of Congress a report on the results of the assessment carried out under paragraph (1).”

[For definitions of terms used in section 10841 of Pub. L. 116-167, set out above, see section 10802 of Pub. L. 117-167, set out as a Definitions note under section 10101 of this title.]

PRIORITIZATION OF LOW-ENRICHED URANIUM TECHNOLOGY

Pub. L. 117-167, div. B, title VII, § 10842, Aug. 9, 2022, 136 Stat. 1753, provided that:

“(a) IN GENERAL.—The Administrator shall prioritize the use of low-enriched uranium, including high-assay low-enriched uranium, for space nuclear research and development, including ground and in-space testing and other related demonstration activities carried out under this title [see Short Title of 2022 Amendment note set out under section 10101 of this title].

“(b) INTERAGENCY COLLABORATION.—The Administrator shall, to the extent practicable, collaborate and coordinate with the Secretary of Defense, the Secretary of Energy, and the heads of other relevant Federal agencies on technology development, knowledge exchange, lessons learned regarding nuclear power and propulsion technologies, common fuels, flight demonstrations, and operational systems production for space applications.

“(c) REPORT ON NUCLEAR TECHNOLOGY PRIORITIZATION.—Not later than 120 days after the date of the enactment of this Act [Aug. 9, 2022], the Administrator shall submit to the appropriate committees of Congress a report that details the actions taken and planned, including a timeline for such actions, to implement subsection (a).”

[For definitions of terms used in section 10842 of Pub. L. 116-167, set out above, see section 10802 of Pub. L. 117-167, set out as a Definitions note under section 10101 of this title.]

FUNDING FOR CERTAIN LUNAR TRANSPORTATION AND HABITATION CAPABILITIES, LUNAR TERRAIN MOBILITY CAPABILITIES, EXPLORATION MISSION RATED SUITS, LUNAR COMMUNICATIONS AND NAVIGATION CAPABILITIES

Pub. L. 117-103, div. B, title III, Mar. 15, 2022, 136 Stat. 136, provided in part: “That acquisition of human-rated deep space exploration lunar and cislunar transportation and habitation capabilities, human-rated lunar terrain mobility capabilities, exploration mission rated suits, lunar communications and navigation capabilities, and their associated components, may be funded incrementally in fiscal year 2022 and thereafter.”

FUNDING FOR ORION, SPACE LAUNCH SYSTEM, EXPLORATION GROUND SYSTEMS, AND MOBILE LAUNCH PLATFORMS

Pub. L. 115-141, div. B, title III, Mar. 23, 2018, 132 Stat. 430, provided in part: “That acquisition of Orion crew vehicles, SLS launch vehicles, Exploration Ground Systems, mobile launch platforms, and their associated components may be funded incrementally in fiscal year 2018 and thereafter”.

SPACE LAUNCH SYSTEM, ORION, AND EXPLORATION
GROUND SYSTEMS

Pub. L. 115–10, title IV, § 421, Mar. 21, 2017, 131 Stat. 35, as amended by Pub. L. 117–167, div. B, title VII, § 10817(a), Aug. 9, 2022, 136 Stat. 1740, provided that:

“(a) FINDINGS.—Congress makes the following findings:

“(1) NASA has made steady progress in developing and testing the Space Launch System and Orion exploration systems with the successful Exploration Flight Test of Orion in December of 2014, the final qualification test firing of the 5-segment Space Launch System boosters in June 2016, and a full thrust, full duration test firing of the RS–25 Space Launch System core stage engine in August 2016.

“(2) Through the 21st Century Launch Complex program and Exploration Ground Systems programs, NASA has made significant progress in transforming exploration ground systems infrastructure to meet NASA’s mission requirements for the Space Launch System and Orion and to modernize NASA’s launch complexes to the benefit of the civil, defense, and commercial space sectors.

“(b) SPACE LAUNCH SYSTEM.—

“(1) SENSE OF CONGRESS.—It is the sense of Congress that use of the Space Launch System and Orion, with contributions from partnerships with the private sector, academia, and the international community, is the most practical approach to reaching the Moon, Mars, and beyond.

“(2) REAFFIRMATION.—Congress reaffirms the policy and minimum capability requirements for the Space Launch System under section 302 of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18322).

“(c) SENSE OF CONGRESS ON SPACE LAUNCH SYSTEM, ORION, AND EXPLORATION GROUND SYSTEMS.—It is the sense of Congress that—

“(1) as the United States works to send humans on a series of missions to Mars in the 2030s, the United States national space program should continue to make progress on its commitment by fully developing the Space Launch System, Orion, and related Exploration Ground Systems;

“(2) using the Space Launch System and Orion for a wide range of contemplated missions will facilitate the national defense, science, and exploration objectives of the United States;

“(3) the United States should have continuity of purpose for the Space Launch System and Orion in deep space exploration missions, using them beginning with the uncrewed mission, Artemis I, planned for 2018, followed by the crewed mission, Artemis II, in cis-lunar space planned for 2021, and for subsequent missions beginning with Artemis III extending into cis-lunar space and eventually to Mars;

“(4) the President’s annual budget requests for the Space Launch System and Orion development, test, and operational phases should strive to accurately reflect the resource requirements of each of those phases;

“(5) the fully integrated Space Launch System, including an upper stage needed to go beyond low-Earth orbit, will safely enable human space exploration of the Moon, Mars, and beyond; and

“(6) the Administrator should budget for and undertake a robust ground test and uncrewed and crewed flight test and demonstration program for the Space Launch System and Orion in order to promote safety and reduce programmatic risk.

“(d) IN GENERAL.—The Administrator shall continue the development of the fully integrated Space Launch System, including an upper stage needed to go beyond low-Earth orbit, in order to safely enable human space exploration of the Moon, Mars, and beyond over the course of the next century as required in section 302(c) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18322(c)).

“(e) REPORT.—

“(1) IN GENERAL.—Not later than 60 days after the date of enactment of this Act [Mar. 21, 2017], the Administrator shall submit to the appropriate committees of Congress a report addressing the ability of Orion to meet the needs and the minimum capability requirements described in section 303(b)(3) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18323(b)(3)).

“(2) CONTENTS.—The report shall detail—

“(A) those components and systems of Orion that ensure it is in compliance with section 303(b)(3) of that Act (42 U.S.C. 18323(b)(3));

“(B) the expected date that Orion, integrated with a vehicle other than the Space Launch System, could be available to transport crew and cargo to the ISS;

“(C) any impacts to the deep space exploration missions under subsection (f) of this section due to enabling Orion to meet the minimum capability requirements described in section 303(b)(3) of that Act (42 U.S.C. 18323(b)(3)) and conducting the mission described in subparagraph (B) of this paragraph; and

“(D) the overall cost and schedule impacts associated with enabling Orion to meet the minimum capability requirements described in section 303(b)(3) of that Act (42 U.S.C. 18323(b)(3)) and conducting the mission described in subparagraph (B) of this paragraph.

“(f) EXPLORATION MISSIONS.—The Administrator shall continue development of—

“(1) an uncrewed exploration mission to demonstrate the capability of both the Space Launch System and Orion as an integrated system by 2018;

“(2) subject to applicable human rating processes and requirements, a crewed exploration mission to demonstrate the Space Launch System, including the Core Stage and Exploration Upper Stages, by 2021;

“(3) subsequent missions beginning with Artemis III at operational flight rate sufficient to maintain safety and operational readiness using the Space Launch System and Orion to extend into cis-lunar space and eventually to Mars; and

“(4) a deep space habitat as a key element in a deep space exploration architecture along with the Space Launch System and Orion.

“(g) OTHER USES.—The Administrator shall assess the utility of the Space Launch System for use by the science community and for other Federal Government launch needs, including consideration of overall cost and schedule savings from reduced transit times and increased science returns enabled by the unique capabilities of the Space Launch System.

“(h) UTILIZATION REPORT.—

“(1) IN GENERAL.—The Administrator, in consultation with the Secretary of Defense and the Director of National Intelligence, shall prepare a report that addresses the effort and budget required to enable and utilize a cargo variant of the 130-ton Space Launch System configuration described in section 302(c) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18322(c)).

“(2) CONTENTS.—In preparing the report, the Administrator shall—

“(A) consider the technical requirements of the scientific and national security communities related to a cargo variant of the Space Launch System; and

“(B) directly assess the utility and estimated cost savings obtained by using a cargo variant of the Space Launch System for national security and space science missions.

“(3) SUBMISSION TO CONGRESS.—Not later than 180 days after the date of enactment of this Act [Mar. 21, 2017], the Administrator shall submit the report to the appropriate committees of Congress.”

[Pub. L. 117–167, div. B, title VII, § 10817(a), Aug. 9, 2022, 136 Stat. 1740, which directed amendment of section 421 of the National Aeronautics and Space Admin-

istration Authorization Act of 2017, was executed by amending section 421 of Pub. L. 115–10, set out above, which is section 421 of the National Aeronautics and Space Administration Transition Authorization Act of 2017, to reflect the probable intent of Congress.]

[For definitions of terms used in section 421 of Pub. L. 115–10, set out above, see section 2 of Pub. L. 115–10, set out as a note under section 10101 of this title.]

MAINTAINING A BALANCED SPACE SCIENCE PORTFOLIO

Pub. L. 115–10, title V, § 501, Mar. 21, 2017, 131 Stat. 48, provided that:

“(a) SENSE OF CONGRESS ON SCIENCE PORTFOLIO.—Congress reaffirms the sense of Congress that—

“(1) a balanced and adequately funded set of activities, consisting of research and analysis grant programs, technology development, suborbital research activities, and small, medium, and large space missions, contributes to a robust and productive science program and serves as a catalyst for innovation and discovery; and

“(2) the Administrator [of the National Aeronautics and Space Administration] should set science priorities by following the guidance provided by the scientific community through the National Academies of Sciences, Engineering, and Medicine’s decadal surveys.

“(b) POLICY.—It is the policy of the United States to ensure, to the extent practicable, a steady cadence of large, medium, and small science missions.”

PLANETARY SCIENCE

Pub. L. 115–10, title V, § 502, Mar. 21, 2017, 131 Stat. 48, provided that:

“(a) FINDINGS.—Congress finds that—

“(1) Administration [National Aeronautics and Space Administration] support for planetary science is critical to enabling greater understanding of the solar system and the origin of the Earth;

“(2) the United States leads the world in planetary science and can augment its success in that area with appropriate international, academic, and industry partnerships;

“(3) a mix of small, medium, and large planetary science missions is required to sustain a steady cadence of planetary exploration; and

“(4) robotic planetary exploration is a key component of preparing for future human exploration.

“(b) MISSION PRIORITIES.—

“(1) IN GENERAL.—In accordance with the priorities established in the most recent Planetary Science Decadal Survey, the Administrator [of the National Aeronautics and Space Administration] shall ensure, to the greatest extent practicable, the completion of a balanced set of Discovery, New Frontiers, and Flagship missions at the cadence recommended by the most recent Planetary Science Decadal Survey.

“(2) MISSION PRIORITY ADJUSTMENTS.—Consistent with the set of missions described in paragraph (1), and while maintaining the continuity of scientific data and steady development of capabilities and technologies, the Administrator may seek, if necessary, adjustments to mission priorities, schedule, and scope in light of changing budget projections.”

EXTRASOLAR PLANET EXPLORATION STRATEGY

Pub. L. 115–10, title V, § 508, Mar. 21, 2017, 131 Stat. 50, provided that:

“(a) STRATEGY.—

“(1) IN GENERAL.—The Administrator [of the National Aeronautics and Space Administration] shall enter into an arrangement with the National Academies to develop a science strategy for the study and exploration of extrasolar planets, including the use of the Transiting Exoplanet Survey Satellite, the James Webb Space Telescope, a potential Wide-Field Infrared Survey Telescope mission, or any other telescope, spacecraft, or instrument, as appropriate.

“(2) REQUIREMENTS.—The strategy shall—

“(A) outline key scientific questions;

“(B) identify the most promising research in the field;

“(C) indicate the extent to which the mission priorities in existing decadal surveys address the key extrasolar planet research and exploration goals;

“(D) identify opportunities for coordination with international partners, commercial partners, and not-for-profit partners; and

“(E) make recommendations regarding the activities under subparagraphs (A) through (D), as appropriate.

“(b) USE OF STRATEGY.—The Administrator shall use the strategy—

“(1) to inform roadmaps, strategic plans, and other activities of the Administration [National Aeronautics and Space Administration] as they relate to extrasolar planet research and exploration; and

“(2) to provide a foundation for future activities and initiatives related to extrasolar planet research and exploration.

“(c) REPORT TO CONGRESS.—Not later than 18 months after the date of enactment of this Act [Mar. 21, 2017], the National Academies shall submit to the Administrator and to the appropriate committees of Congress [Committee on Science, Space, and Technology of the House of Representatives and Committee on Commerce, Science, and Transportation of the Senate] a report containing the strategy developed under subsection (a).”

ASTROBIOLOGY STRATEGY

Pub. L. 115–10, title V, § 509, Mar. 21, 2017, 131 Stat. 50, provided that:

“(a) STRATEGY.—

“(1) IN GENERAL.—The Administrator [of the National Aeronautics and Space Administration] shall enter into an arrangement with the National Academies to develop a science strategy for astrobiology that would outline key scientific questions, identify the most promising research in the field, and indicate the extent to which the mission priorities in existing decadal surveys address the search for life’s origin, evolution, distribution, and future in the Universe.

“(2) RECOMMENDATIONS.—The strategy shall include recommendations for coordination with international partners.

“(b) USE OF STRATEGY.—The Administrator shall use the strategy developed under subsection (a) in planning and funding research and other activities and initiatives in the field of astrobiology.

“(c) REPORT TO CONGRESS.—Not later than 18 months after the date of enactment of this Act [Mar. 21, 2017], the National Academies shall submit to the Administrator and to the appropriate committees of Congress [Committee on Science, Space, and Technology of the House of Representatives and Committee on Commerce, Science, and Transportation of the Senate] a report containing the strategy developed under subsection (a).”

SPACE TECHNOLOGY RESEARCH AND DEVELOPMENT

Pub. L. 115–10, title VII, §§ 701, 702, Mar. 21, 2017, 131 Stat. 56, 57 provided that:

“SEC. 701. SPACE TECHNOLOGY INFUSION.

“(a) SENSE OF CONGRESS ON SPACE TECHNOLOGY.—It is the sense of Congress that space technology is critical—

“(1) to developing technologies and capabilities that will make the Administration [National Aeronautics and Space Administration]’s core missions more affordable and more reliable;

“(2) to enabling a new class of Administration missions beyond low-Earth orbit; and

“(3) to improving technological capabilities and promote innovation for the Administration and the Nation.

“(b) SENSE OF CONGRESS ON PROPULSION TECHNOLOGY.—It is the sense of Congress that advancing

propulsion technology would improve the efficiency of trips to Mars and could shorten travel time to Mars, reduce astronaut health risks, and reduce radiation exposure, consumables, and mass of materials required for the journey.

“(c) **POLICY.**—It is the policy of the United States that the Administrator [of the National Aeronautics and Space Administration] shall develop technologies to support the Administration’s core missions, as described in section 2(3) of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18301(3)), and support sustained investments in early stage innovation, fundamental research, and technologies to expand the boundaries of the national aerospace enterprise.

“(d) **PROPULSION TECHNOLOGIES.**—A goal of propulsion technologies developed under subsection (c) shall be to significantly reduce human travel time to Mars.

“**SEC. 702. SPACE TECHNOLOGY PROGRAM.**

“(a) **SPACE TECHNOLOGY PROGRAM AUTHORIZED.**—The Administrator [of the National Aeronautics and Space Administration] shall conduct a space technology program (referred to in this section as the ‘Program’) to research and develop advanced space technologies that could deliver innovative solutions across the Administration [National Aeronautics and Space Administration]’s space exploration and science missions.

“(b) **CONSIDERATIONS.**—In conducting the Program, the Administrator shall consider—

“(1) the recommendations of the National Academies’ review of the Administration’s Space Technology roadmaps and priorities; and

“(2) the applicable enabling aspects of the stepping stone approach to exploration under section 70504 of title 51, United States Code.

“(c) **REQUIREMENTS.**—In conducting the Program, the Administrator shall—

“(1) to the extent practicable, use a competitive process to select research and development projects;

“(2) to the extent practicable and appropriate, use small satellites and the Administration’s suborbital and ground-based platforms to demonstrate space technology concepts and developments; and

“(3) as appropriate, partner with other Federal agencies, universities, private industry, and foreign countries.

“(d) **SMALL BUSINESS PROGRAMS.**—The Administrator shall organize and manage the Administration’s Small Business Innovation Research Program and Small Business Technology Transfer Program within the Program.

“(e) **NONDUPLICATION CERTIFICATION.**—The Administrator shall submit a budget for each fiscal year, as transmitted to Congress under section 1105(a) of title 31, United States Code, that avoids duplication of projects, programs, or missions conducted by [the] Program with other projects, programs, or missions conducted by another office or directorate of the Administration.

“(f) **COLLABORATION, COORDINATION, AND ALIGNMENT.**—

“(1) **IN GENERAL.**—The Administrator shall—

“(A) ensure that the Administration’s projects, programs, and activities in support of technology research and development of advanced space technologies are fully coordinated and aligned;

“(B) ensure that the results [of] the projects, programs, and activities under subparagraph (A) are shared and leveraged within the Administration; and

“(C) ensure that the organizational responsibility for research and development activities in support of human space exploration not initiated as of the date of enactment of this Act [Mar. 21, 2017] is established on the basis of a sound rationale.

“(2) **SENSE OF CONGRESS.**—It is the sense of Congress that projects, programs, and missions being conducted by the Human Exploration and Operations Mission Directorate in support of research and development of advanced space technologies and systems

focusing on human space exploration should continue in that Directorate.

“(g) **REPORT.**—Not later than 180 days after the date of enactment of this Act, the Administrator shall provide to the appropriate committees of Congress a report—

“(1) comparing the Administration’s space technology investments with the high-priority technology areas identified by the National Academies in the National Research Council’s report on the Administration’s Space Technology Roadmaps; and

“(2) including—

“(A) identification of how the Administration will address any gaps between the agency’s investments and the recommended technology areas, including a projection of funding requirements; and

“(B) identification of the rationale described in subsection (f)(1)(C).

“(h) **ANNUAL REPORT.**—The Administrator shall include in the Administration’s annual budget request for each fiscal year the rationale for assigning organizational responsibility for, in the year prior to the budget fiscal year, each initiated project, program, and mission focused on research and development of advanced technologies for human space exploration.”

Executive Documents

SPACE POLICY DIRECTIVE-6. NATIONAL STRATEGY FOR SPACE NUCLEAR POWER AND PROPULSION

Space Policy Directive-6, Dec. 16, 2020, 85 F.R. 82873, provided:

Memorandum for the Vice President[,] the Secretary of State[,] the Secretary of Defense[,] the Secretary of Commerce[,] the Secretary of Transportation[,] the Secretary of Energy[,] the Director of the Office of Management and Budget[,] the Assistant to the President for National Security Affairs[,] the Administrator of the National Aeronautics and Space Administration[,] the Chairman of the Nuclear Regulatory Commission[, and] the Director of the Office of Science and Technology Policy

SECTION 1. Policy. The ability to use space nuclear power and propulsion (SNPP) systems safely, securely, and sustainably is vital to maintaining and advancing United States dominance and strategic leadership in space. SNPP systems include radioisotope power systems (RPSs) and fission reactors used for power or propulsion in spacecraft, rovers, and other surface elements. SNPP systems can allow operation of such elements in environments in which solar and chemical power are inadequate. They can produce more power at lower mass and volume compared to other energy sources, thereby enabling persistent presence and operations. SNPP systems also can shorten transit times for crewed and robotic spacecraft, thereby reducing radiation exposure in harsh space environments.

National Security Presidential Memorandum-20 (NSPM-20) of August 20, 2019 (Launch of Spacecraft Containing Space Nuclear Systems), updated the process for launches of spacecraft containing space nuclear systems. It established it as the policy of the United States to “develop and use space nuclear systems when such systems safely enable or enhance space exploration or operational capabilities.”

Cooperation with commercial and international partners is critical to achieving America’s objectives for space exploration. Presidential Policy Directive 4 of June 28, 2010 (National Space Policy), as amended by the Presidential Memorandum of December 11, 2017 (Reinvigorating America’s Human Space Exploration Program) [82 F.R. 58501], established it as the policy of the United States to “[l]ead an innovative and sustainable program of exploration with commercial and international partners to enable human expansion across the solar system and to bring back to Earth new knowledge and opportunities.”

This memorandum establishes a national strategy to ensure the development and use of SNPP systems when

appropriate to enable and achieve the scientific, exploration, national security, and commercial objectives of the United States. In the context of this strategy only, the term “development” includes the full development process from design through testing and production, and the term “use” includes launch, operation, and disposition. This memorandum outlines high-level policy goals and a supporting roadmap that will advance the ability of the United States to use SNPP systems safely, securely, and sustainably. The execution of this strategy will be subject to relevant budgetary and regulatory processes and to the availability of appropriations.

SEC. 2. Goals. The United States will pursue goals for SNPP development and use that are both mission-enabling and ambitious in their substance and their timeline. These goals will enable a range of existing and future space missions, with the aim of accelerating achievement of key milestones, including in-space demonstration and use of new SNPP capabilities. This memorandum establishes the following such goals for the Nation:

(a) Develop uranium fuel processing capabilities that enable production of fuel that is suitable to lunar and planetary surface and in-space power, nuclear electric propulsion (NEP), and nuclear thermal propulsion (NTP) applications, as needed. These capabilities should support the ability to produce different uranium fuel forms to meet the nearest-term mission needs and, to the extent feasible, should maximize commonality—meaning use of the same or similar materials, processes, designs, or infrastructure—across these fuel forms. To maximize private-sector engagement and cost savings, these capabilities should be developed to enable a range of terrestrial as well as space applications, including future commercial applications;

(b) Demonstrate a fission power system on the surface of the Moon that is scalable to a power range of 40 kilowatt-electric (kWe) and higher to support a sustained lunar presence and exploration of Mars. To the extent feasible, this power system should align with mission needs for, and potential future government and commercial applications of, in-space power, NEP, and terrestrial nuclear power;

(c) Establish the technical foundations and capabilities—including through identification and resolution of the key technical challenges—that will enable options for NTP to meet future Department of Defense (DoD) and National Aeronautics and Space Administration (NASA) mission requirements; and

(d) Develop advanced RPS capabilities that provide higher fuel efficiency, higher specific energy, and longer operational lifetime than existing RPS capabilities, thus enabling survivable surface elements to support robotic and human exploration of the Moon and Mars and extending robotic exploration of the solar system.

SEC. 3. Principles. The United States will adhere to principles of safety, security, and sustainability in its development and use of SNPP systems, in accordance with all applicable Federal laws and consistent with international obligations and commitments.

(a) *Safety.* All executive departments and agencies (agencies) involved in the development and use of SNPP systems shall take appropriate measures to ensure, within their respective roles and responsibilities, the safe development, testing, launch, operation, and disposition of SNPP systems. For United States Government SNPP programs, the sponsoring agency holds primary responsibility for safety. For programs involving multiple agencies, the terms of cooperation shall designate a lead agency with primary responsibility for safety in each stage of development and use.

(i) *Ground development.* Activities associated with ground development, including ground testing, of SNPP systems shall be conducted in accordance with applicable Federal, State, and local laws and existing authorities of regulatory agencies.

(ii) *Launch.* NSPM-20 established safety guidelines and safety analysis and review processes for Federal

Government launches of spacecraft containing space nuclear systems, including SNPP systems, and for launches for which the Department of Transportation has statutory authority to license as commercial space launch activities (commercial launches). These guidelines and processes address launch and any subsequent stages during which accidents may result in radiological effects on the public or the environment—for instance, in an unplanned reentry from Earth orbit or during an Earth flyby. Launch activities shall be conducted in accordance with these guidelines and processes.

(iii) *Operation and disposition.* The operation and disposition of SNPP systems shall be planned and conducted in a manner that protect human and environmental safety and national security assets. Fission reactor SNPP systems may be operated on interplanetary missions, in sufficiently high orbits, and in low-Earth orbits if they are stored in sufficiently high orbits after the operational part of their mission. In this context, a sufficiently high orbit is one in which the orbital lifetime of the spacecraft is long enough for the fission products to decay to a level of radioactivity comparable to that of uranium-235 by the time it reenters the Earth’s atmosphere, and the risks to existing and future space missions and of collision with objects in space are minimized. Spacecraft operating fission reactors in low-Earth orbits shall incorporate a highly reliable operational system to ensure effective and controlled disposition of the reactor.

(b) *Security.* All agencies involved in the development and use of SNPP systems shall take appropriate measures to protect nuclear and radiological materials and sensitive information, consistent with sound nuclear nonproliferation principles. For United States Government SNPP programs, the sponsoring agency holds primary responsibility for security. For programs involving multiple agencies, the terms of cooperation shall designate a lead agency with primary responsibility for security in each stage of development and use. The use of highly enriched uranium (HEU) in SNPP systems should be limited to applications for which the mission would not be viable with other nuclear fuels or non-nuclear power sources. Before selecting HEU or, for fission reactor systems, any nuclear fuel other than low-enriched uranium (LEU), for any given SNPP design or mission, the sponsoring agency shall conduct a thorough technical review to assess the viability of alternative nuclear fuels. The sponsoring agency shall provide to the respective staffs of the National Security Council, the National Space Council, the Office of Science and Technology Policy, and the Office of Management and Budget a briefing that provides justification for why the use of HEU or other non-LEU fuel is required, and any steps the agency has taken to address nuclear safety, security, and proliferation-related risks. The Director of the Office of Science and Technology Policy shall ensure, through the National Science and Technology Council, that other relevant agencies are invited to participate in these briefings.

(c) *Sustainability.* All agencies involved in the development and use of SNPP systems shall take appropriate measures to conduct these activities in a manner that is suitable for the long-term sustenance of United States space capabilities and leadership in SNPP.

(i) *Coordination and Collaboration.* To maximize efficiency and return on taxpayer investment, the heads of relevant agencies shall seek and pursue opportunities to coordinate among existing and future SNPP development and use programs. Connecting current efforts with likely future applications will help ensure that such programs can contribute to long-term United States SNPP capabilities and leadership. Agencies also shall seek opportunities to partner with the private sector, including academic institutions, in order to facilitate contributions to United States SNPP capabilities and leadership. To help identify opportunities for collaboration, the heads of relevant agencies should conduct regular technical exchanges among SNPP pro-

grams, to the extent that such exchanges are consistent with the principle of security and comply with applicable Federal, State, and local laws. Agencies shall coordinate with the Department of State when seeking opportunities for international partnerships.

(ii) Commonality. The heads of relevant agencies shall seek to identify and use opportunities for commonality among SNPP systems, and between SNPP and terrestrial nuclear systems, whenever doing so could advance program and policy objectives without unduly inhibiting innovation or market development, or hampering system suitability to specific mission applications. For example, opportunities for commonality may exist in goals (e.g., demonstration timeline), reactor design, nuclear fuels (e.g., fuel type and form, and enrichment level), supplementary systems (e.g., power conversion, moderator, reflector, shielding, and system vessel), methods (e.g., additive manufacturing of fuel or reactor elements), and infrastructure (e.g., fuel supply, testing facilities, launch facilities, and workforce).

(iii) Cost-effectiveness. The heads of relevant agencies should pursue SNPP development and use solutions that are cost-effective while also consistent with the principles of safety and security. For any program or system, the heads of such agencies should seek to identify the combination of in-space and ground-based testing and certification that will best qualify the system for a given mission while ensuring public safety.

SEC. 4. *Roles and Responsibilities.* (a) The Vice President, on behalf of the President and acting through the National Space Council, shall coordinate United States policy related to use of SNPP systems.

(b) The Secretary of State shall, under the direction of the President, coordinate United States activities related to international obligations and commitments and international cooperation involving SNPP.

(c) The Secretary of Defense shall conduct and support activities associated with development and use of SNPP systems to enable and achieve United States national security objectives. When appropriate, the Secretary of Defense shall facilitate private-sector engagement in DoD SNPP activities.

(d) The Secretary of Commerce shall promote responsible United States commercial SNPP investment, innovation, and use, and shall, when consistent with the authorities of the Secretary, ensure the publication of clear, flexible, performance-based rules that are applicable to use of SNPP and are easily navigated. Under the direction of the Secretary of Commerce, the Department of Commerce (DOC) shall ascertain and communicate the views of private-sector partners and potential private-sector partners to relevant agency partners in order to facilitate public-private collaboration in SNPP development and use.

(e) The Secretary of Transportation's statutory authority includes licensing commercial launches and reentries, including vehicles containing SNPP systems. Within this capacity, the Secretary of Transportation shall, when appropriate, facilitate private-sector engagement in the launch or reentry aspect of SNPP development and use activities, in support of United States science, exploration, national security, and commercial objectives. To help ensure the launch safety of an SNPP payload, and consistent with 51 U.S.C. 50904, a payload review may be conducted as part of a license application review or may be requested by a payload owner or operator in advance of or apart from a license application.

(f) The Secretary of Energy shall, in coordination with sponsoring agencies and other agencies, as appropriate, support development and use of SNPP systems to enable and achieve United States scientific, exploration, and national security objectives. When appropriate, the Secretary of Energy shall work with sponsoring agencies and DOC to facilitate United States private-sector engagement in Department of Energy (DOE) SNPP activities. Under the direction of the Secretary of Energy and consistent with the authorities granted to DOE, including authorities under the Atomic Energy Act of 1954 (AEA), as amended, 42 U.S.C. 2011,

et seq., DOE may authorize ground-based SNPP development activities, including DOE activities conducted in coordination with sponsoring agencies and private-sector entities. As directed in NSPM-20, the Secretary of Energy shall maintain, on a full-cost recovery basis, the capability and infrastructure to develop, furnish, and conduct safety analyses for space nuclear systems for use in United States Government space systems.

(g) The Administrator of NASA shall conduct and support activities associated with development and use of SNPP systems to enable and achieve United States space science and exploration objectives. The Administrator of NASA shall establish the performance requirements for SNPP capabilities necessary to achieve those objectives. When appropriate, the Administrator of NASA shall facilitate private-sector engagement in NASA SNPP activities, and shall coordinate with the Secretary of Commerce and, as appropriate, the Secretary of State and the Secretary of Energy, to help facilitate private-sector SNPP activities.

(h) The Nuclear Regulatory Commission (NRC) has statutory authority under the AEA for licensing and regulatory safety and security oversight of commercial nuclear activities taking place within the United States. The NRC should, as appropriate and particularly in circumstances within NRC authority where DOE regulatory authorities cannot be applied, enable private-sector engagement in SNPP development and use activities in support of United States science, exploration, national security, and commercial objectives.

(i) The Director of the Office of Science and Technology Policy shall coordinate United States policy related to research and development of SNPP systems.

SEC. 5. *Roadmap.* The United States will pursue a coordinated roadmap for federally-supported SNPP activities to achieve the goals and uphold the principles established in this memorandum. This roadmap comprises the following elements, which the relevant agencies should pursue consistent with the following objective timeline, subject to relevant budgetary and regulatory processes and to the availability of appropriations:

(a) By the mid-2020s, develop uranium fuel processing capabilities that enable production of fuel that is suitable for lunar and planetary surface and in-space power, NEP, and NTP applications, as needed.

(i) Identify relevant mission needs. DoD and NASA should provide to DOE any mission needs (e.g., power density, environment, and timelines) relevant to the identification of fuels suitable for planetary surface and in-space power, NEP, and NTP applications.

(ii) Identify candidate fuel or fuels. DoD and NASA, in cooperation with DOE and private-sector partners, as appropriate, should identify candidate fuel or fuels to meet the identified mission requirements. This review and assessment should account for current and expected United States capabilities to produce and qualify for use candidate fuels, and for potential commonality of fuels or fuel variants across multiple planetary surface and in-space power, in-space propulsion, and terrestrial applications.

(iii) Qualify at least one candidate fuel. DoD and NASA, in cooperation with DOE and private-sector partners, as appropriate, should qualify a fuel or fuels for demonstrations of a planetary surface power reactor and an in-space propulsion system. While seeking opportunities to use private-sector-partner capabilities, agencies should ensure that the Federal Government retains an ability for screening and qualification of candidate fuels.

(iv) Supply fuel for demonstrations. DOE, in cooperation with NASA and DoD, and with private-sector partners, as appropriate, should identify feedstock and uranium that can be made available for planetary surface power and in-space propulsion demonstrations. DOE shall ensure that any provision of nuclear material for SNPP will not disrupt enriched uranium supplies for the United States nuclear weapons program and the naval propulsion program, and that SNPP needs are in-

cluded among broader considerations of nuclear fuel supply provisioning and management.

(b) By the mid- to late-2020s, demonstrate a fission power system on the surface of the Moon that is scalable to a power range of 40 kWe and higher to support sustained lunar presence and exploration of Mars.

(i) Initiate a surface power project. NASA should initiate a fission surface power project for lunar surface demonstration by 2027, with scalability to Mars exploration. NASA should consult with DoD and other agencies, and with the private sector, as appropriate, when developing project requirements.

(ii) Conduct technology and requirements assessment. NASA, in coordination with DoD and other agencies, and with private-sector partners, as appropriate, should evaluate technology options for a surface power system including reactor designs, power conversion, shielding, and thermal management. NASA should work with other agencies, and private-sector partners, as appropriate, to evaluate opportunities for commonality among other SNPP needs, including in-space power and terrestrial power needs, possible NEP technology needs, and reactor demonstrations planned by NASA, other agencies, or the private sector.

(iii) Engage the private sector. DOE and NASA should determine a mechanism or mechanisms for engaging with the private sector to meet NASA's SNPP surface power needs in an effective manner consistent with the guiding principles set forth in this memorandum. In evaluating mechanisms, DOE and NASA should consider the possibility of NASA issuing a request for proposal for the development and construction of the surface power reactor system or demonstration.

(iv) System development. NASA should work with DOE, and with other agencies and private-sector partners, as appropriate, to develop the lunar surface power demonstration project.

(v) Conduct demonstration mission. NASA, in coordination with other agencies and with private-sector partners, as appropriate, should launch and conduct the lunar surface power demonstration project.

(c) By the late-2020s, establish the technical foundations and capabilities—including through identification and resolution of the key technical challenges—that will enable NTP options to meet future DoD and NASA mission needs.

(i) Conduct requirements assessment. DoD and NASA, in cooperation with DOE, and with other agencies and private-sector partners, as appropriate, should assess the ability of NTP capabilities to enable and advance existing and potential future DoD and NASA mission requirements.

(ii) Conduct technology assessment. DoD and NASA, in cooperation with DOE, and with other agencies and private-sector partners, as appropriate, should evaluate technology options and associated key technical challenges for an NTP system, including reactor designs, power conversion, and thermal management. DoD and NASA should work with their partners to evaluate and use opportunities for commonality with other SNPP needs, terrestrial power needs, and reactor demonstration projects planned by agencies and the private sector.

(iii) Technology development. DoD, in coordination with DOE and other agencies, and with private-sector partners, as appropriate, should develop reactor and propulsion system technologies that will resolve the key technical challenges in areas such as reactor design and production, propulsion system and spacecraft design, and SNPP system integration.

(d) By 2030, develop advanced RPS capabilities that provide higher fuel efficiency, higher specific energy, and longer operational lifetime than existing RPS capabilities, thus enabling survivable surface elements to support robotic and human exploration of the Moon and Mars and extending robotic exploration of the solar system.

(i) Maintain RPS capability. Mission sponsoring agencies should assess their needs for radioisotope heat source material to meet emerging mission require-

ments, and should work with DOE to jointly identify the means to produce or acquire the necessary material on a timeline that meets mission requirements.

(ii) Engage the private sector. NASA, in coordination with DOE and DOC, should conduct an assessment of opportunities for engaging the private sector to meet RPS needs in an effective manner consistent with the guiding principles established in this memorandum.

(iii) Conduct technology and requirements assessment. NASA, in coordination with DOE and DoD, and with other agencies and private-sector partners, as appropriate, should assess requirements for next-generation RPS systems and evaluate technology options for meeting those requirements.

(iv) System development. DOE, in coordination with NASA and DoD, and with other agencies and private-sector partners, as appropriate, should develop one or more next-generation RPS system or systems to meet the goals of higher fuel efficiency, higher specific energy, and longer operational lifetime for the required range of power.

SEC. 6. *Implementation.* The Vice President, through the National Space Council, shall coordinate implementation of this memorandum.

SEC. 7. *General Provisions.* (a) Nothing in this memorandum shall be construed to impair or otherwise affect:

(i) the authority granted by law to an executive department or agency, or the head thereof; or

(ii) the functions of the Director of the Office of Management and Budget relating to budgetary, administrative, or legislative proposals.

(b) This memorandum shall be implemented consistent with applicable law and subject to the availability of appropriations.

(c) This memorandum is not intended to, and does not, create any right or benefit, substantive or procedural, enforceable at law or in equity by any party against the United States, its departments, agencies, or entities, its officers, employees, or agents, or any other person.

(d) The Secretary of Energy is authorized and directed to publish this memorandum in the Federal Register.

DONALD J. TRUMP.

§ 20302. Vision for space exploration

(a) IN GENERAL.—The Administrator shall establish a program to develop a sustained human presence in cis-lunar space or on the Moon, including a robust precursor program, to promote exploration, science, commerce, and United States preeminence in space, and as a stepping-stone to future exploration of Mars and other destinations. The Administrator is further authorized to develop and conduct appropriate international collaborations in pursuit of these goals.

(b) FUTURE EXPLORATION OF MARS.—The Administrator shall manage human space flight programs, including the Space Launch System and Orion, to enable humans to explore Mars and other destinations by defining a series of sustainable steps and conducting mission planning, research, and technology development on a timetable that is technically and fiscally possible, consistent with section 70504.

(c) DEFINITIONS.—In this section:

(1) ORION.—The term “Orion” means the multipurpose crew vehicle described under section 303 of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18323).

(2) SPACE LAUNCH SYSTEM.—The term “Space Launch System” means the meaning¹

¹ So in original.

given the term in section 3 of the National Aeronautics and Space Administration Authorization Act of 2010 (42 U.S.C. 18302).

(Pub. L. 111–314, §3, Dec. 18, 2010, 124 Stat. 3356; Pub. L. 115–10, title IV, §413, Mar. 21, 2017, 131 Stat. 33.)

HISTORICAL AND REVISION NOTES

<i>Revised Section</i>	<i>Source (U.S. Code)</i>	<i>Source (Statutes at Large)</i>
20302	42 U.S.C. 16611(b).	Pub. L. 109–155, title I, §101(b), Dec. 30, 2005, 119 Stat. 2898.

Editorial Notes

AMENDMENTS

2017—Subsec. (a). Pub. L. 115–10, §413(1), inserted “in cis-lunar space or” after “sustained human presence”.

Subsec. (b). Pub. L. 115–10, §413(2), amended subsec. (b) generally. Prior to amendment, text read as follows: “The Administrator shall manage human space flight programs to strive to achieve the following milestones (in conformity with section 70502 of this title):

“(1) Returning Americans to the Moon no later than 2020.

“(2) Launching the Crew Exploration Vehicle as close to 2010 as possible.

“(3) Increasing knowledge of the impacts of long duration stays in space on the human body using the most appropriate facilities available, including the International Space Station.

“(4) Enabling humans to land on and return from Mars and other destinations on a timetable that is technically and fiscally possible.”

Subsec. (c). Pub. L. 115–10, §413(3), added subsec. (c).

Statutory Notes and Related Subsidiaries

MOON TO MARS

Pub. L. 117–167, div. B, title VII, §10811, Aug. 9, 2022, 136 Stat. 1731, provided that:

“(a) SENSE OF CONGRESS.—It is the sense of Congress that—

“(1) advances in space technology and space exploration capabilities—

“(A) ensure the long-term technological preeminence, economic competitiveness, STEM workforce development, and national security of the United States; and

“(B) offer profound inspirational value for future generations;

“(2) the Artemis missions—

“(A) will make further progress on advancing the human exploration roadmap to achieve human presence beyond low-Earth orbit to the surface of Mars, as required under section 432 of the National Aeronautics and Space Administration Transition Authorization Act of 2017 (Public Law 115–10; 51 U.S.C. 20302 note);

“(B) should fulfill the goal of landing United States astronauts, including the first woman and the next man, on the Moon; and

“(C) should seek collaboration with commercial and international partners to establish sustainable lunar exploration, and should fund any sustainable lunar activities not directly required for the advancement of a human mission to Mars separately;

“(3) in carrying out the Artemis missions, the Administrator [of the National Aeronautics and Space Administration] should ensure that the entire Artemis program is inclusive and representative of all people of the United States, including women and minorities;

“(4) safe and successful execution of the roadmap to achieve human presence on Mars, including the Artemis missions, requires—

“(A) a clear strategic vision for achieving lunar and Mars exploration that is shared by NASA [National Aeronautics and Space Administration], international partners, nongovernmental partners, Congress, and the people of the United States;

“(B) a well-developed and executable timeline, budget, and mission architecture, to inform decisions, including decisions relating to workforce and infrastructure needs and the development of technical and nontechnical skills;

“(C) consistent NASA oversight of all relevant exploration activities, enabled by NASA leadership with authority, responsibility, and accountability for decisions and well-developed capabilities for systems engineering and integration;

“(D) clearly defined roles for NASA, international partners, and nongovernmental partners, including criteria for determining whether NASA should make, manage, or buy key capabilities; and

“(E) mechanisms to ensure NASA insight into the activities of its international and nongovernmental partners, as required to identify and mitigate risks to mission safety and success.

“(b) MOON TO MARS OFFICE AND PROGRAM.—

“(1) MOON TO MARS OFFICE.—Not later than 120 days after the date of the enactment of this Act [Aug. 9, 2022], the Administrator shall establish within the Exploration Systems Development Mission Directorate a Moon to Mars Program Office (referred to in this section as the ‘Office’) to lead and manage the Moon to Mars program established under paragraph (2), including Artemis missions and activities.

“(2) MOON TO MARS PROGRAM.—

“(A) ESTABLISHMENT.—Not later than 120 days after the date of the enactment of this Act, the Administrator shall establish a Moon to Mars Program (referred to in this section as the ‘Program’) in accordance with sections 20302(b) and 70504 of title 51, United States Code, which shall include Artemis missions and activities, to achieve the goal of human exploration of Mars.

“(B) ELEMENTS.—The Program shall include the following elements:

“(i) The Space Launch System under section 20302 of title 51, United States Code.

“(ii) The Orion crew vehicle under such section.

“(iii) Exploration Ground Systems.

“(iv) An outpost in orbit around the Moon under section 70504 of such title [probably should be “section 70505 of such title”].

“(v) Human-rated landing systems.

“(vi) Spacesuits.

“(vii) Any other element needed to meet the requirements for the Program.

“(C) DIRECTION.—The Administrator shall ensure that—

“(i) each Artemis mission demonstrates or advances a technology or operational concept that will enable human missions to Mars;

“(ii) the Program incorporates each such mission into the human exploration roadmap under section 432 of the National Aeronautics and Space Administration Transition Authorization Act of 2017 (Public Law 115–10; 51 U.S.C. 20302 note); and

“(iii) the Program includes cis-lunar space exploration activities that—

“(I) use a combination of launches of the Space Launch System and space transportation services from United States commercial providers, as appropriate, for each such mission;

“(II) plan for not fewer than 1 Space Launch System launch annually beginning after the first successful crewed launch of Orion on the Space Launch System, with a goal of 2 Space Launch System launches annually as soon as practicable; and

“(III) establish an outpost in orbit around the Moon that—

“(aa) demonstrates technologies, systems, and operational concepts directly applicable

to the space vehicle that will be used to transport humans to Mars;

“(bb) has the capability for periodic human habitation; and

“(cc) functions as a point of departure, return, or staging for missions to multiple locations on the lunar surface or other destinations.

“(3) DIRECTOR.—

“(A) IN GENERAL.—The Administrator shall appoint a Director for the Program, who shall lead the Office and report to the Associate Administrator of the Exploration Systems Development Mission Directorate.

“(B) ACCOUNTABILITY.—The Director shall have accountability for risk management and shall have authority, as consistent with NASA Space Flight Program and Project Management requirements—

“(i) to implement—

“(I) Program-level requirements; and

“(II) an architecture and program plan developed to meet such requirements;

“(ii) to manage resources, personnel, and contracts necessary to implement the Program, as appropriate;

“(iii) to manage cost, risk, schedule, and performance factors;

“(iv) to direct and oversee a Program-wide systems engineering and integration and integrated risk management function; and

“(v) to carry out other authorities, in accordance with [National Aeronautics and Space] Administration policies and procedures.

“(C) RESPONSIBILITIES.—The Director shall be responsible for—

“(i) developing and managing—

“(I) an integrated master plan, integrated master schedule, and integrated risk management procedures for the Program;

“(II) a Program-wide systems engineering and integration function as described in subsection (c);

“(III) plans for technology and capabilities development;

“(IV) logistics support, science data management, communications, and other plans that are relevant to the functions of the Office; and

“(V) performance measures to assess the progress of the Program;

“(ii) advising the Associate Administrator of the Exploration Systems Development Mission Directorate on the development of—

“(I) Program-level requirements, including for a human Mars orbital mission and a human mission to the surface of Mars; and

“(II) an architecture based on the requirements described in subclause (I); and

“(iii) informing the Associate Administrator of the Administration on coordination among NASA centers, as required to most efficiently achieve the goals of the Program.

“(c) SYSTEMS ENGINEERING AND INTEGRATION.—The Director of the Office shall—

“(1) establish within the Office a Program-wide systems engineering and integration function; and

“(2) appoint a manager for such function to manage systems engineering and integration activities across the Program, including with respect to the Program elements described in subsection (b)(2).

“(d) IMPLEMENTATION.—In the implementation of the Program, the Administrator shall ensure that—

“(1) for the purposes of reducing risk and complexity and making the maximum use of taxpayer investments to date, in conducting Artemis activities, the Administration does not take any action in regard to the design of the Exploration Upper Stage-enhanced Space Launch System that would preclude it from carrying an integrated human-rated lunar landing system for crewed lunar landing missions;

“(2) the Program maintains a robust series of ground-based and in-flight testing activities, includ-

ing, with respect to each crewed system design, not less than 1 uncrewed flight test, followed by a crewed flight test, as appropriate, prior to use of the design on a human-rated lunar landing system or Mars mission; and

“(3) human lunar landing missions under the Program, including surface and in-space activities, are carried out solely by government astronauts.

“(e) STUDY.—Not later than 180 days after the date of the enactment of this Act, the Administrator shall submit to the appropriate committees of Congress [Committee on Commerce, Science, and Transportation of the Senate and Committee on Science, Space, and Technology of the House of Representatives] a report detailing—

“(1) progress towards the establishment of—

“(A) the Office, the Program, and the Program architecture; and

“(B) the integrated master plan, integrated master schedule, and integrated risk management procedures for the Program;

“(2) performance measures and milestones for the Program and any interim assessment with respect to such performance measures, as practicable;

“(3) initial criteria for determining whether NASA should make, manage, or buy key capabilities within the Program or engage with international partners to access such capabilities;

“(4) strategies to ensure consistent insight into the activities of NASA partners, including nongovernmental partners, as required to identify and mitigate mission risks;

“(5) progress towards the establishment of a systems engineering and integration function; and

“(6) an annual budget profile for resources required to implement the Program during the 5-year period beginning on the date of the enactment of this Act.”

[For definition of “STEM” as used in section 10811 of Pub. L. 117-167, set out above, see section 18901 of Title 42, The Public Health and Welfare.]

[For definitions of “Orion”, “cislunar space”, and “government astronauts” as used in section 10811 of Pub. L. 117-167, set out above, see section 10802 of Pub. L. 117-167, set out as a Definitions note under section 10101 of this title.]

HUMAN SPACE EXPLORATION

Pub. L. 115-10, title IV, §§ 431, 432, Mar. 21, 2017, 131 Stat. 38, as amended by Pub. L. 117-167, div. B, title VII, § 10817(b), Aug. 9, 2022, 136 Stat. 1740, provided that:

“SEC. 431. FINDINGS ON HUMAN SPACE EXPLORATION.

“Congress makes the following findings:

“(1) In accordance with section 204 of the National Aeronautics and Space Administration Authorization Act of 2010 (124 Stat. 2813), the National Academies of Sciences, Engineering, and Medicine, through its Committee on Human Spaceflight, conducted a review of the goals, core capabilities, and direction of human space flight, and published the findings and recommendations in a 2014 report entitled, ‘Pathways to Exploration: Rationales and Approaches for a U.S. Program of Human Space Exploration’.

“(2) The Committee on Human Spaceflight included leaders from the aerospace, scientific, security, and policy communities.

“(3) With input from the public, the Committee on Human Spaceflight concluded that many practical and aspirational rationales for human space flight together constitute a compelling case for continued national investment and pursuit of human space exploration toward the horizon goal of Mars.

“(4) According to the Committee on Human Spaceflight, the rationales include economic benefits, national security, national prestige, inspiring students and other citizens, scientific discovery, human survival, and a sense of shared destiny.

“(5) The Committee on Human Spaceflight affirmed that Mars is the appropriate long-term goal for the human space flight program.

“(6) The Committee on Human Spaceflight recommended that NASA define a series of sustainable steps and conduct mission planning and technology development as needed to achieve the long-term goal of placing humans on the surface of Mars.

“(7) Expanding human presence beyond low-Earth orbit and advancing toward human missions to Mars requires early planning and timely decisions to be made in the near-term on the necessary courses of action for commitments to achieve short-term and long-term goals and objectives.

“(8) In addition to the 2014 report described in paragraph (1), there are several independently developed reports or concepts that describe potential Mars architectures or concepts and identify Mars as the long-term goal for human space exploration, including NASA’s ‘The Global Exploration Roadmap’ of 2013, ‘NASA’s Journey to Mars—Pioneering Next Steps in Space Exploration’ of 2015, NASA Jet Propulsion Laboratory’s ‘Minimal Architecture for Human Journeys to Mars’ of 2015, and Explore Mars’ ‘The Humans to Mars Report 2016’.

“SEC. 432. HUMAN EXPLORATION ROADMAP.

“(a) SENSE OF CONGRESS.—It is the sense of Congress that—

“(1) expanding human presence beyond low-Earth orbit and advancing toward human missions to Mars in the 2030s requires early strategic planning and timely decisions to be made in the near-term on the necessary courses of action for commitments to achieve short-term and long-term goals and objectives;

“(2) for strong and sustained United States leadership, a need exists to advance a human exploration roadmap, addressing exploration objectives in collaboration with international, academic, and industry partners;

“(3) an approach that incrementally advances toward a long-term goal is one in which nearer-term developments and implementation would influence future development and implementation; and

“(4) a human exploration roadmap should begin with low-Earth orbit, then address in greater detail progress beyond low-Earth orbit to cis-lunar space, and then address future missions aimed at human arrival and activities near and then on the surface of Mars.

“(b) HUMAN EXPLORATION ROADMAP.—

“(1) IN GENERAL.—The Administrator shall develop a human exploration roadmap, including a critical decision plan, to expand human presence beyond low-Earth orbit to the surface of Mars and beyond, considering potential interim destinations such as cis-lunar space and the moons of Mars.

“(2) SCOPE.—The human exploration roadmap shall include—

“(A) an integrated set of exploration, science, and other goals and objectives of a United States human space exploration program to achieve the long-term goal of human missions near or on the surface of Mars in the 2030s;

“(B) opportunities for international, academic, and industry partnerships for exploration-related systems, services, research, and technology if those opportunities provide cost-savings, accelerate program schedules, or otherwise benefit the goals and objectives developed under subparagraph (A);

“(C) sets and sequences of precursor missions in cis-lunar space and other missions or activities necessary—

“(i) to demonstrate the proficiency of the capabilities and technologies identified under subparagraph (D); and

“(ii) to meet the goals and objectives developed under subparagraph (A), including anticipated timelines and missions for the Space Launch System and Orion;

“(D) an identification of the specific capabilities and technologies, including the Space Launch Sys-

tem, Orion, a deep space habitat, and other capabilities, that facilitate the goals and objectives developed under subparagraph (A);

“(E) a description of how cis-lunar elements, objectives, and activities advance the human exploration of Mars;

“(F) an assessment of potential human health and other risks, including radiation exposure;

“(G) mitigation plans, whenever possible, to address the risks identified in subparagraph (F);

“(H) a description of those technologies already under development across the Federal Government or by other entities that facilitate the goals and objectives developed under subparagraph (A);

“(I) a specific process for the evolution of the capabilities of the fully integrated Orion with the Space Launch System and a description of how these systems facilitate the goals and objectives developed under subparagraph (A) and demonstrate the capabilities and technologies described in subparagraph (D);

“(J) a description of the capabilities and technologies that need to be demonstrated or research data that could be gained through the utilization of the ISS and the status of the development of such capabilities and technologies;

“(K) a framework for international cooperation in the development of all capabilities and technologies identified under this section, including an assessment of the risks posed by relying on international partners for capabilities and technologies on the critical path of development;

“(L) a process for partnering with nongovernmental entities using Space Act Agreements or other acquisition instruments for future human space exploration; and

“(M) include [sic] information on the phasing of planned intermediate destinations, Mars mission risk areas and potential risk mitigation approaches, technology requirements and phasing of required technology development activities, the management strategy to be followed, related ISS activities, planned international collaborative activities, potential commercial contributions, and other activities relevant to the achievement of the goal established in this section.

“(3) CONSIDERATIONS.—In developing the human exploration roadmap, the Administrator shall consider—

“(A) using key exploration capabilities, namely the Space Launch System and Orion;

“(B) using existing commercially available technologies and capabilities or those technologies and capabilities being developed by industry for commercial purposes;

“(C) establishing an organizational approach to ensure collaboration and coordination among NASA’s Mission Directorates under section 821 [set out as a note under section 20111 of this title], when appropriate, including to collect and return to Earth a sample from the Martian surface;

“(D) building upon the initial uncrewed mission, Artemis I, and first crewed mission, Artemis II, of the Space Launch System and Orion to establish a sustainable cadence of missions extending human exploration missions into cis-lunar space, including anticipated timelines and milestones;

“(E) developing the robotic and precursor missions and activities that will demonstrate, test, and develop key technologies and capabilities essential for achieving human missions to Mars, including long-duration human operations beyond low-Earth orbit, space suits, solar electric propulsion, deep space habitats, environmental control life support systems, Mars lander and ascent vehicle, entry, descent, landing, ascent, Mars surface systems, and in-situ resource utilization;

“(F) demonstrating and testing 1 or more habitat modules in cis-lunar space to prepare for Mars missions;

“(G) using public-private, firm fixed-price partnerships, where practicable;

“(H) collaborating with international, academic, and industry partners, when appropriate;

“(I) any risks to human health and sensitive on-board technologies, including radiation exposure;

“(J) any risks identified through research outcomes under the NASA Human Research Program’s Behavioral Health Element; and

“(K) the recommendations and ideas of several independently developed reports or concepts that describe potential Mars architectures or concepts and identify Mars as the long-term goal for human space exploration, including the reports described under section 431.

“(4) CRITICAL DECISION PLAN ON HUMAN SPACE EXPLORATION.—As part of the human exploration roadmap, the Administrator shall include a critical decision plan—

“(A) identifying and defining key decisions guiding human space exploration priorities and plans that need to be made before June 30, 2020, including decisions that may guide human space exploration capability development, precursor missions, long-term missions, and activities;

“(B) defining decisions needed to maximize efficiencies and resources for reaching the near, intermediate, and long-term goals and objectives of human space exploration; and

“(C) identifying and defining timelines and milestones for a sustainable cadence of missions beginning with Artemis III for the Space Launch System and Orion to extend human exploration from cis-lunar space to the surface of Mars.

“(5) REPORTS.—

“(A) INITIAL HUMAN EXPLORATION ROADMAP.—The Administrator shall submit to the appropriate committees of Congress—

“(i) an initial human exploration roadmap, including a critical decision plan, before December 1, 2017; and

“(ii) an updated human exploration roadmap periodically as the Administrator considers necessary but not less than biennially.

“(B) CONTENTS.—Each human exploration roadmap under this paragraph shall include a description of—

“(i) the achievements and goals accomplished in the process of developing such capabilities and technologies during the 2-year period prior to the submission of the human exploration roadmap; and

“(ii) the expected goals and achievements in the following 2-year period.

“(C) SUBMISSION WITH BUDGET.—Each human exploration roadmap under this section shall be included in the budget for that fiscal year transmitted to Congress under section 1105(a) of title 31, United States Code.”

[Pub. L. 117–167, div. B, title VII, §10817(b), Aug. 9, 2022, 136 Stat. 1740, which directed amendment of section 432(b) of the National Aeronautics and Space Administration Authorization Act of 2017, was executed by amending section 432(b) of Pub. L. 115–10, set out above, which is section 432(b) of the National Aeronautics and Space Administration Transition Authorization Act of 2017, to reflect the probable intent of Congress.]

[For definitions of terms used in sections 431 and 432 of Pub. L. 115–10, set out above, see section 2 of Pub. L. 115–10, set out as a note under section 10101 of this title.]

§ 20303. Contribution to innovation

(a) PARTICIPATION IN INTERAGENCY ACTIVITIES.—The Administration shall be a full participant in any interagency effort to promote innovation and economic competitiveness through near-term and long-term basic scientific re-

search and development and the promotion of science, technology, engineering, and mathematics education, consistent with the Administration’s mission, including authorized activities.

(b) HISTORIC FOUNDATION.—In order to carry out the participation described in subsection (a), the Administrator shall build on the historic role of the Administration in stimulating excellence in the advancement of physical science and engineering disciplines and in providing opportunities and incentives for the pursuit of academic studies in science, technology, engineering, and mathematics.

(c) BALANCED SCIENCE PROGRAM AND ROBUST AUTHORIZATION LEVELS.—The balanced science program authorized by section 101(d) of the National Aeronautics and Space Administration Authorization Act of 2005 (42 U.S.C. 16611(d))¹ shall be an element of the contribution by the Administration to the interagency programs.

(d) ANNUAL REPORT.—

(1) REQUIREMENT.—The Administrator shall submit to Congress and the President an annual report describing the activities conducted pursuant to this section, including a description of the goals and the objective metrics upon which funding decisions were made.

(2) CONTENT.—Each report submitted pursuant to paragraph (1) shall include, with regard to science, technology, engineering, and mathematics education programs, at a minimum, the following:

(A) A description of each program.

(B) The amount spent on each program.

(C) The number of students or teachers served by each program.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3356.)

HISTORICAL AND REVISION NOTES

<i>Revised Section</i>	<i>Source (U.S. Code)</i>	<i>Source (Statutes at Large)</i>
20303(a)	42 U.S.C. 16611a(a).	Pub. L. 110–69, title II, § 2001(a), (b), (c), (e), Aug. 9, 2007, 121 Stat. 582.
20303(b)	42 U.S.C. 16611a(b).	
20303(c)	42 U.S.C. 16611a(c).	
20303(d)	42 U.S.C. 16611a(e).	

Editorial Notes

REFERENCES IN TEXT

Section 101(d) of the National Aeronautics and Space Administration Authorization Act of 2005 (42 U.S.C. 16611(d)), referred to in subsec. (c), is section 101(d) of Pub. L. 109–155, title I, Dec. 30, 2005, 119 Stat. 2897, which was omitted from the Code following the enactment of this title by Pub. L. 111–314.

Statutory Notes and Related Subsidiaries

INTERNATIONAL SPACE STATION’S CONTRIBUTION TO NATIONAL COMPETITIVENESS ENHANCEMENT

Pub. L. 111–358, title II, § 204, Jan. 4, 2011, 124 Stat. 3994, provided that:

“(a) SENSE OF CONGRESS.—It is the sense of the Congress that the International Space Station represents a valuable and unique national asset which can be utilized to increase educational opportunities and scientific and technological innovation which will enhance the Nation’s economic security and competitive-

¹ See References in Text note below.

ness in the global technology fields of endeavor. If the period for active utilization of the International Space Station is extended to at least the year 2020, the potential for such opportunities and innovation would be increased. Efforts should be made to fully realize that potential.

“(b) EVALUATION AND ASSESSMENT OF NASA’S INTER-AGENCY CONTRIBUTION.—Pursuant to the authority provided in title II of the America COMPETES Act (Public Law 110–69 [see Tables for classification]), the Administrator [of NASA] shall evaluate and, where possible, expand efforts to maximize NASA’s [National Aeronautics and Space Administration’s] contribution to interagency efforts to enhance science, technology, engineering, and mathematics education capabilities, and to enhance the Nation’s technological excellence and global competitiveness. The Administrator shall identify these enhancements in the annual reports required by section 2001(e) of that Act [(former) 42 U.S.C. 16611a(e)] [now 51 U.S.C. 20303(d)].

“(c) REPORT TO THE CONGRESS.—Within 120 days after the date of enactment of this Act [Jan. 4, 2011], the Administrator shall provide to the House of Representatives Committee on Science and Technology [now Committee on Science, Space, and Technology] and the Senate Committee on Commerce, Science, and Transportation a report on the assessment made pursuant to subsection (a). The report shall include—

“(1) a description of current and potential activities associated with utilization of the International Space Station which are supportive of the goals of educational excellence and innovation and competitive enhancement established or reaffirmed by this Act [see Short Title of 2011 Amendment note set out under section 1861 of Title 42, The Public Health and Welfare], including a summary of the goals supported, the number of individuals or organizations participating in or benefiting from such activities, and a summary of how such activities might be expanded or improved upon;

“(2) a description of government and private partnerships which are, or may be, established to effectively utilize the capabilities represented by the International Space Station to enhance United States competitiveness, innovation and science, technology, engineering, and mathematics education; and

“(3) a summary of proposed actions or activities to be undertaken to ensure the maximum utilization of the International Space Station to contribute to fulfillment of the goals and objectives of this Act, and the identification of any additional authority, assets, or funding that would be required to support such activities.”

§ 20304. Basic research enhancement

(a) DEFINITION OF BASIC RESEARCH.—In this section, the term “basic research” has the meaning given the term in Office of Management and Budget Circular No. A–11.

(b) COORDINATION.—The Administrator, the Director of the National Science Foundation, the Secretary of Energy, the Secretary of Defense, and the Secretary of Commerce shall, to the extent practicable, coordinate basic research activities related to physical sciences, technology, engineering, and mathematics.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3357.)

HISTORICAL AND REVISION NOTES

<i>Revised Section</i>	<i>Source (U.S. Code)</i>	<i>Source (Statutes at Large)</i>
20304	42 U.S.C. 16658.	Pub. L. 110–69, title II, § 2003, Aug. 9, 2007, 121 Stat. 583.

§ 20305. National Academies decadal surveys

(a) IN GENERAL.—The Administrator shall enter into agreements on a periodic basis with

the National Academies for independent assessments, also known as decadal surveys, to take stock of the status and opportunities for Earth and space science discipline fields and Aeronautics research and to recommend priorities for research and programmatic areas over the next decade.

(b) INDEPENDENT COST ESTIMATES.—The agreements described in subsection (a) shall include independent estimates of the life cycle costs and technical readiness of missions assessed in the decadal surveys whenever possible.

(c) REEXAMINATION.—The Administrator shall request that each National Academies decadal survey committee identify any conditions or events, such as significant cost growth or scientific or technological advances, that would warrant the Administration asking the National Academies to reexamine the priorities that the decadal survey had established.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3357.)

HISTORICAL AND REVISION NOTES

<i>Revised Section</i>	<i>Source (U.S. Code)</i>	<i>Source (Statutes at Large)</i>
20305	42 U.S.C. 17823.	Pub. L. 110–422, title XI, § 1104, Oct. 15, 2008, 122 Stat. 4809.

Statutory Notes and Related Subsidiaries

IMPLEMENTATION OF DECADAL SURVEY’S RECOMMENDED DECISION RULES

Pub. L. 112–55, div. B, title III, Nov. 18, 2011, 125 Stat. 622, provided in part: “That NASA shall implement the recommendations of the most recent National Research Council planetary decadal survey and shall follow the decadal survey’s recommended decision rules regarding program implementation, including a strict adherence to the recommendation that NASA include in a balanced program a flagship class mission, which may be executed in cooperation with one or more international partners, if such mission can be appropriately de-scoped and all NASA costs for such mission can be accommodated within the overall funding levels appropriated by Congress”.

Subtitle III—Administrative Provisions

CHAPTER 301—APPROPRIATIONS, BUDGETS, AND ACCOUNTING

Sec.	
30101.	Prior authorization of appropriations required.
30102.	Working capital fund.
30103.	Budgets.
30104.	Baselines and cost controls.

§ 30101. Prior authorization of appropriations required

Notwithstanding the provisions of any other law, no appropriation may be made to the Administration unless previously authorized by legislation enacted by Congress.

(Pub. L. 111–314, § 3, Dec. 18, 2010, 124 Stat. 3357.)

HISTORICAL AND REVISION NOTES

<i>Revised Section</i>	<i>Source (U.S. Code)</i>	<i>Source (Statutes at Large)</i>
30101	42 U.S.C. 2460.	Pub. L. 86–45, § 4, June 15, 1959, 73 Stat. 75.