



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Highlights:

- The National Aeronautics and Space Administration (NASA) is responsible for leading an innovative and sustainable program of exploration with commercial and international partners to enable human expansion across the solar system and bring new knowledge and opportunities back to Earth. As it pioneers the space frontier, NASA supports growth of the Nation's economy in space, increases understanding of the universe and our place in it, works with industry to improve America's aerospace technologies, and advances American leadership.
- The Budget supports the Administration's new space exploration policy by refocusing existing NASA activities towards exploration, by redirecting funding to innovative new programs that support the new policy, and by providing additional funding to support new public-private initiatives.
- The Budget requests a total of \$19.6 billion for NASA, a \$500 million (2.6 percent) increase from the 2018 Budget (\$61 million below NASA's 2017 funding level).
- The Budget proposes to end direct U.S. Government funding for the space station by 2025 and provides \$150 million to begin a program that would encourage commercial development of capabilities that NASA can use in its place.
- The Budget refocuses and consolidates NASA's space technology development programs to support space exploration activities.
- The Budget continues strong programs in science and aeronautics, including a supersonic "X-plane," planetary defense from hazardous asteroids, and potentially a bold mission to retrieve pieces of Mars for scientific study on Earth.

The President's 2019 Budget:

The Budget supports an innovative and sustainable program of exploration with commercial and international partners to enable the return of humans to the Moon for long-term exploration and utilization, followed by human missions to Mars and other destinations. As it pioneers the space frontier, NASA supports growth of the Nation's space economy, increases understanding of the universe and America's place in it, and advances America's aerospace technology.

"The directive I am signing today will refocus America's space program on human exploration and discovery. It marks a first step in returning American astronauts to the Moon for the first time since 1972, for long-term exploration and use. This time, we will not only plant our flag and leave our footprints—we will establish a foundation for an eventual mission to Mars, and perhaps someday, worlds beyond."

President Donald J. Trump
November 11, 2017

The Budget takes concrete actions to once again launch Americans into space from American soil. The Budget partners with industry to land robotic missions on the surface of the Moon in the next few years, paving the way for a return of U.S. astronauts—this time not just to visit, but to lay the foundation for further journeys of exploration and the expansion of the U.S. economy into space. The Budget supports a sustainable space exploration program to be proud of—one that reflects American ingenuity, ambition, and leadership. Specifically, the Budget:

Renews Focus on Human Exploration and Discovery and Expands Commercial Partnerships to Strengthen U.S. Leadership in Space. The Budget provides \$10 billion for Human Exploration and Operations to pursue a campaign that would establish U.S. preeminence to, around, and on the Moon. This

would be achieved through a renewed focus on new approaches and industrial partners, and by pursuing near-term milestones for lunar exploration, such as the commercial launch of a key power and propulsion space tug in 2022. A new lunar robotic exploration program would support innovative approaches to achieve human and science exploration goals. This new program would fund contracts for transportation services and the development of small rovers and instruments to meet lunar science and exploration needs. The Budget also supports the creation of a new Exploration Research and Technology program to enable lower-cost technology and systems needed to sustainably return humans to the Moon and beyond. In addition, the Budget fully funds the Space Launch System (SLS) rocket and Orion crew capsule as key elements of the human space exploration program. The Budget provides \$3.7 billion for SLS and Orion, which would keep the programs on track for a test launch by 2020 and a first crewed launch around the Moon by 2023.

Provides Cost Savings by Phasing out Government Programs and Replacing them with Commercial or Public-Private Operations. The Budget proposes to end direct U.S. financial support for the International Space Station in 2025, after which NASA would rely on commercial partners for its low Earth orbit research and technology demonstration requirements. A new \$150 million program would begin support for commercial partners to encourage development of capabilities that the private sector and NASA can use. The Budget also proposes a transition away from NASA's current Government-owned and operated fleet of communications satellites and associated ground stations. Instead, the Budget proposes a greater reliance on commercial communications satellite capabilities. The Budget also proposes canceling an over-budget project to upgrade the current NASA-owned system in order to make resources available for these new partnerships.

Continues Robotic Exploration of the Solar System. The Budget provides \$2.2 billion to Planetary Science and maintains support for competed science missions and the next Mars rover, which would launch in 2020. The Budget also provides \$50 million to explore possibilities for retrieving geologic samples from Mars, which has long been a high-priority science goal and a keystone of future Mars exploration. A \$150 million planetary defense program would help protect the Earth from potentially hazardous asteroids.

Fully Funds an Experimental Supersonic Airplane and Increases Hypersonics Research Funding. The Budget fully funds the Low-Boom Flight Demonstrator, an experimental supersonic (faster than the speed of sound) airplane that would make its first flight in 2021. This "X-plane" would

open a new market for U.S. companies to build faster commercial airliners, creating jobs and cutting cross-country flight times in half. The Budget also increases funding for research on flight at speeds more than five times the speed of sound, commonly referred to as hypersonics. Hypersonics research is critical to understanding how crewed and robotic spacecraft can safely enter and exit the atmospheres of planets. Hypersonics also has applications for national defense.

Supports a Focused Earth Science Program.

The Budget provides \$1.8 billion for a focused, balanced Earth Science portfolio that supports the priorities of the science and applications communities. The Budget maintains the Nation's 45-year record of space-based land imagery by funding Landsat 9 and a Sustainable Land Imaging program. The Budget maintains the Administration's previous termination of five Earth Science missions—PACE, OCO-3, RBI, DSCOVR Earth-viewing instruments, and CLARREO Pathfinder—to achieve savings.

Terminates a New Space Telescope while Increasing Support for other Astrophysics Priorities.

The Budget terminates development of the WFIRST space telescope, which was not executable within its previous budget and would have required a significant funding increase in 2019 and future years. The Budget redirects funding from this mission to competed research including smaller, principal-investigator-led astrophysics missions. These missions have a history of providing high scientific impact while training the next generation of scientists and engineers. The Budget continues to fund the \$8.8 billion James Webb Space Telescope, which is expected to launch in 2019 and operate for many years to come.

Redirects Education Funding to Higher Priorities. The Budget continues to support the termination of the \$100 million Office of Education, redirecting those funds to NASA's core mission of exploration. The Science Activation program within the Science Mission Directorate—a focused, science-driven program with clear objectives, evaluation strategies, and strong partnerships—is retained.

Supports the Technology Demonstration of In-Space Robotic Manufacturing and Assembly. The Budget provides \$54.2 million for public-private partnerships to demonstrate new technologies used to build large structures in a space environment. Such structures could be key to supporting future exploration and commercial space activities.

"American companies are on the cutting edge of space technology, and they're developing new rockets, spaceships, and satellites that will take us further into space, faster than ever before. Like the railroads that brought American explorers, entrepreneurs, and settlers to tame the Wild West, these groundbreaking new technologies will open untold opportunities to extend the range of American action and values into the new worlds of outer space. And by fostering much stronger partnerships between the Federal Government and the realm of industry, and bringing the full force of our national interest to bear, American leadership in space will be assured."

Vice President Michael R. Pence
October 5, 2017