

## **The National Aeronautics and Space Administration's FY 2007 Budget**

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### **HIGHLIGHTS**

- NASA's budget request for FY 2007 is \$16.8 billion, an increase of 3.2 percent over the FY 2006 appropriated budget (excluding emergency appropriations; see Table II-12).
- NASA enjoyed congressional support in last year's final appropriated budget and in the NASA Authorization Act of 2005 (the first authorization since 2000).
- This year's budget request reflects the President's commitment to the Vision for Space Exploration, a bold and aggressive initiative unveiled in January 2004 that aims to complete the assembly of the International Space Station by 2010, retire the Space Shuttle by 2010, return to the Moon by the end of the next decade, and to explore Mars and beyond.
- The FY 2007 request reflects the agency's new directive and focuses a lot of resources on developing the Crew Exploration Vehicle (CEV) and other exploration-related projects.
- This renewed concentration on exploration has raised considerable concerns from NASA's other constituent groups, such as those serving the Aeronautics and Science mission directorates. Look for congressional review of NASA's priorities that could lead to a shift in the funding allocations as requested by the President.

### **INTRODUCTION**

Congress established the National Aeronautics and Space Administration (NASA) in 1958 to provide for all civil aeronautical and space activities for the United States. Nearly 50 years later, NASA continues to uphold

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its mission to “pioneer the future in space exploration, scientific discovery, and aeronautics research.”

On January 14, 2004, NASA was issued a directive by President George W. Bush that ushered in a new era for the nation’s space exploration program—the President’s Vision for U.S. Space Exploration. Known in industry simply as “the Vision,” the new directive received considerable Congressional support through the NASA Authorization Act of 2005. This authorization bill was the first NASA had seen since 2000.

In May 2005, Dr. Mike Griffin was installed as the 11<sup>th</sup> administrator of NASA. Quickly thereafter, Dr. Griffin began an aggressive program to fulfill the key elements of the vision, which include: completing assembly of the International Space Station by the end of the decade, retiring the Space Shuttle by 2010, introducing and utilizing a new Crew Exploration Vehicle (CEV) no later than 2014, and returning to the Moon by the end of the next decade.

To fulfill the vision, NASA is now divided into five mission directorates: Science, Exploration Systems, Aeronautics Research, Cross-Agency Support Programs, and Space Operations. Since the announcement of the vision, considerable attention has been directed at the space agency and its entire portfolio of missions. Proponents of a robust aeronautics program and scientific research capability at NASA have expressed concern at the recent shift of emphasis for the agency. Congress heeded the concerns and has directed the Bush Administration to similarly develop a National Vision for Aeronautics Research Policy. This project is currently underway and is being chaired by the National Science and Technology Council under the auspices of the White House Office of Science and Technology Policy (OSTP).

To this end, NASA has restructured its Aeronautics Mission Directorate to focus on cutting-edge fundamental research in four key areas: subsonic, supersonic and hypersonic flight; improving aircraft safety; stewardship of NASA’s aeronautics research and test facilities; and developing technologies that will enable the transformation to the Next Generational Air Transportation System (NGATS) through NASA’s support of the Joint Planning and Development Office (JPDO).

NASA has enjoyed congressional support in the last few appropriations bills; however, it seems likely that budgetary pressures will force

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Congress to make decisions regarding the make-up of NASA's appropriations accounts. Pressure from stakeholders outside of the exploration portfolio is mounting and Congress must decide how each of NASA's mission directorates will be funded and at what level. What is fundamentally at stake is the future of NASA's agency vision and resultant mission imperative. Within that context, NASA has repeatedly asserted that it is implementing the priorities of the President and Congress within the resources provided.

### **BUDGET HIGHLIGHTS**

The FY 2007 budget request for NASA is for \$16.8 billion and represents a 3.2 percent increase above NASA's FY 2006 appropriation (see Table II-12). This does not include \$350 million for an FY 2006 emergency supplemental to repair facilities damaged by Hurricane Katrina (Table II-12 includes these supplementals). The following is a breakout of the appropriations accounts by each mission directorate.

**Science Mission Directorate:** The total budget request for the Science Mission Directorate (SMD) is \$5.3 billion, a 1.5 percent increase. Within the SMD are three themes, which represent the key areas of research this directorate is most concerned with: Solar System Exploration, The Universe, and the Earth-Sun System. The SMD seeks to answer questions to these themes by engaging the science community, sponsoring scientific research, and through the use of satellites.

\$1.6 billion is requested for the Solar System Exploration Theme. Included as part of this budget would be missions to Mars every 26 months starting with the Mars Scout (Phoenix) scheduled to launch in August 2006 and a Mars Science Laboratory launching in 2009. The exploration of other planetary bodies, such as Jupiter and Pluto, are included in this budget as well, including the Juno mission to Jupiter slated for design review in 2007 and final launch in 2011.

The Universe theme budget would provide \$1.5 billion for operation of the Hubble Space Telescope, Chandra X-Ray Observatory, and the Spitzer Space Telescope, among other astronomical observatories. Notably, this budget provides for a fifth servicing mission to the Hubble Space Telescope in the late 2007/early 2008 timeframe. This servicing mission would utilize the Space Shuttle, but the final decision for this mission depends on a successful and safe return to flight for the Space

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Shuttle. The budget also includes \$443 million for the James Webb Space Telescope and assumes a launch in 2013.

Finally, the Earth-Sun System theme proposes a budget of \$2.2 billion. This theme conducts research and development programs that aim to improve the scientific understanding of the Earth and its relationship with the Sun. Included in this theme is the LandSat Data Continuity Mission and other earth-monitoring systems, such as those that measure tropical rainfall, aid in hurricane data collection, and provide other climate related data. Many of these projects are in conjunction with other U.S. federal agencies, such as the National Oceanic and Atmospheric Administration (NOAA).

**Exploration Systems Mission Directorate:** The FY 2007 budget request for NASA includes nearly \$4 billion for Exploration Systems. Again, this directorate is broken into themes, which are: Constellation Systems, Exploration Systems Research and Technology, and Human Systems Research and Technology.

The Constellation Systems theme requests just over \$3 billion. Funds in this theme aim to provide for the Crew Exploration Vehicle (CEV), Crew Launch Vehicle (CLV), mission control and launch site infrastructure, communication and navigation systems, and the International Space Station (ISS) cargo and crew services.

NASA is currently seeking industry proposals to bring the CEV online no later than 2014 and is working on a transition plan between CEV and the Space Shuttle. Significant funds have been requested to ensure this transition occurs in a timely fashion, which includes a 117.8 percent increase for the CLV and a 272.5 percent increase for ISS cargo and crew services. However, these large increases are partially deceiving and reflect a reallocation of funds across mission directorates. ISS Cargo Crew Services, for instance, was previously funded under the Space Operations Mission Directorate. NASA is also seeking industry proposals for a commercially available cargo and crew delivery system that would support the ISS.

Overall, the Constellation Systems theme would enjoy an increased budget request of 76.4 percent. This lies in direct contrast to some of the other mission directorate themes, including the Science mission directorate, which would see a significant reorganization of funds

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resulting in a net gain of only 1.5 percent. Even more significant would be the reduction in the aeronautics portfolio of over 18 percent, which will be discussed later.

The Exploration and Human Systems Research & Technology theme of the Exploration Systems mission directorate provides for a budget of \$646 million, a 6.7 percent reduction from this year. Many of the projects in this theme, including the Prometheus Nuclear Propulsion project, has nearly been altogether cancelled—from \$76 million in the FY 2006 appropriation to a mere \$9 million in the FY 2007 request. However, other projects would see increased emphasis, such as the Robotic Lunar Exploration program, which would increase from \$134 million in FY 2006 to \$273 million in the FY 2007 request (an increase of 103.1 percent).

Many of these previously planned projects have been delayed because of the decision to escalate production of the CEV and related launch systems. Only those technologies that support the Exploration Systems Architecture Study (ESAS), such as the Robotic Lunar Exploration program, are being supported in this year's budget request. The Robotic Lunar Exploration program will send robotic missions to the Moon starting in 2008.

The FY 2007 request for the Human Systems Research & Technology theme is \$274.7 million, a \$349.3 million (or 56 percent) decrease from the FY 2006 budget. The huge drop of funding would result from the ESAS that prioritized technologies necessary for meeting the goals of the Vision. Major activities slated for FY 2007 in this theme include researching bone and cardiovascular countermeasures in space, enabling the exchange of medical data from the ISS, and demonstration of advanced spacecraft air monitoring systems.

**Aeronautics Research Mission Directorate:** The Aeronautics Research Mission Directorate has only one theme, whose total budget request for FY 2007 is \$724.4 million, an 18 percent decrease from the FY 2006 budget. Many changes have been made to the aeronautics portfolio, which has led to the restructuring of the budget. The Aeronautics theme is broken down into three integrated research areas: 1) fundamental aeronautics research, 2) aviation safety, and 3) airspace systems program that will address the needs of the Next Generation Air Transportation System (NGATS). Finally, the new aeronautics theme will maintain the

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wind tunnel infrastructure at a level necessary to meet national needs. Specific requests in the budget include \$447 million for the fundamental aeronautics projects such as subsonics, supersonics and hypersonics; \$102 million for aviation safety; and \$120 million for airspace systems.

**Cross-Agency Support Programs:** This category is new to NASA budgeting and is intended to provide focus along four themes: Education, Advanced Business Systems, Innovative Partnerships Program (IPP), and Shared Capabilities. The overall budget request for this account is \$491.7 million (see Table II-12).

The Education Theme focuses on achieving NASA's vision through the development of a qualified workforce of the future. Therefore, NASA will continue to encourage students to pursue the STEM (science, technology, engineering, and mathematics) disciplines. These programs will provide opportunities for students to be involved in NASA research efforts and focus on motivating students through the exciting programs that NASA conducts. The overall request for Education is \$153.3 million, which is broken down into Elementary & Secondary Education, Higher Education, E-Education, Informal Education, and Minority University Research and Education.

The Advanced Business Systems theme is new this year and represents programs that had previously been buried in other accounts. This theme provides visibility to NASA's support of the President's Management Agenda and will utilize allocated funds to improve NASA's financial management and general administrative programs. The budget request in FY 2007 for these is \$108.2 million, representing a 31 percent decrease from FY 2006.

The FY 2007 request for the Innovative Partnerships Program (IPP) theme is \$197.9 million—an 8 percent decrease from this year. This program was established to leverage technology alternatives for all of the mission directorates. These technology alternatives are incubated in industry, academia and in our national laboratories. This theme facilitates the technology transfer between NASA and its external partners.

Finally, the Shared Capabilities theme was specifically created in the FY 2006 operating plan to assess key capabilities and assets and to provide prioritization and decision-making tools for NASA. The budget request for this project is \$32.2 million.

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**Space Operations Mission Directorate:** As earlier described, many of the programs in the Space Operations Mission Directorate (SOMD) have been redirected to the Explorations Systems Mission Directorate. Programs in the SOMD include the International Space Station (ISS), Space Shuttle, and Space and Flight Support. However, the ISS Cargo and Crew Services account was transferred to the Exploration Systems Mission Directorate. Further, totals are misleading because they include emergency supplemental funds in both 2005 and 2006 due to damage from hurricanes. Therefore, the final FY 2007 budget request for the SOMD is \$6.2 billion, representing a 9.2 percent decrease (see “Exploration Capabilities” in Table II-12; these totals include all supplementals).

The ISS theme supports the construction and operation of the ISS as a means of achieving the first step of the Vision—that of completing our international obligation to complete the ISS. The NASA Authorization Act of 2005 establishes the U.S. portion of the space station as a national laboratory, thus ensuring its continued use as a national research facility. The FY 2007 request for ISS is \$1.8 billion.

The Space Shuttle theme continues operation of our nation's only launch capability. NASA is targeting 2010 for complete retirement of the shuttle fleet. The FY 2007 request is just over \$4 billion, enabling the safe flight of the shuttle with the minimum number of flights necessary to complete the ISS.

The final theme in the SOMD is for Space and Flight Support. This theme's FY 2007 budget request is for \$366.5 million, an 8 percent decrease from FY 2006. The budget supports four areas: communications in support of human and science missions, launch services and support, rocket propulsion testing, and crew health and safety.

### **NASA WORKFORCE STRATEGY**

Of highlighted importance in this year's budget submission is NASA's dedication to maintaining the right capacity of its federal workforce. NASA currently has 18,000 full-time civil servant employees and it is imperative that the proper utilization be made of this unique workforce. The projects NASA undertakes requires specialized skills sets that cannot be lost during the transition from the Space Shuttle to the CEV and

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beyond. NASA, therefore, has taken action to ensure that each of its ten field centers is healthy and maintains the proper mix of skills and experience. Look for NASA to make more changes in the coming year with regards to its workforce and strategic alignment of critical skills.