

The National Aeronautics and Space Administration's FY 2008 Budget

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HIGHLIGHTS

- The National Aeronautics and Space Administration's (NASA) budget request for FY 2008 is for \$17.3 billion, an increase of approximately \$600 million above the FY 2007 request but \$1.1 billion over NASA's final 2007 appropriation (see Table II-12).
- On January 14, 2004, NASA issued a directive by President George W. Bush that ushered in a new era for the nation's space exploration program—*The Vision for Space Exploration*.¹ Known within 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.
- This year's budget requests 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 astronauts to the Moon by the end of the next decade, and to explore Mars and beyond.
- The FY 2008 request reflects the agency's new directive and focuses substantial 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.

¹ The Vision for Space Exploration can be found at http://www.nasa.gov/mission_pages/exploration/main/index.html

Morgan P. Muchnick

- Congressional review of NASA's priorities has been ongoing as the new Congress acts to leave its mark upon the budget process. This is illustrated by the joint funding resolution that governs the 2007 budget cycle.

- It is an open question as to whether a shift in party leadership on Capitol Hill will 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 of the United States. Nearly 50 years later, NASA continues to uphold its mission to "pioneer the future in space exploration, scientific discovery, and aeronautics research."²

In May 2005, Dr. Mike Griffin was installed as the 11th 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, retiring the Space Shuttle by 2010, introducing and utilizing a new Crew Exploration Vehicle (CEV) no later than 2014, and returning astronauts 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 centered on 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 in emphasis for the Agency. Congress heeded the concerns and has directed the Bush Administration to develop a complementary National Vision for Aeronautics Research Policy. This plan was released in January 2007 and serves as a roadmap for NASA's prioritization plans. A supplemental document specifically outlining NASA's plans will be released later in 2007. The National Science and Technology Council is chairing this process under the auspices of the White House Office of Science and Technology Policy (OSTP).

² See www.nasa.gov.

NASA'S FY 2008 BUDGET

To this end, NASA has restructured its Aeronautics Mission Directorate to focus on cutting-edge fundamental research in the following 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 transition to the Next Generational Air Transportation System (NGATS) through NASA's support of the Joint Planning and Development Office (JPDO).

NASA has generally enjoyed congressional support in the last few appropriations bills; however, it seems likely that budgetary pressures will force 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. NASA is operating under a joint funding resolution for all of FY 2007 and hopes to increase its budget allocation for FY 2008. It is an open question as to how the new Democratic Congress will view the President's budget priorities, including NASA.

BUDGET HIGHLIGHTS

The FY 2008 NASA budget request is for \$17.3 billion, an increase of approximately \$600 million above the FY 2007 request, but \$1.1 billion more than the final 2007 appropriation in the joint funding resolution. The following is a breakout of the appropriations accounts by each mission directorate (see Table II-12 for funding details).

Science Mission Directorate: The total budget request for the Science Mission Directorate (SMD) is \$5.5 billion, a modest increase from FY 2007. Within the SMD are four themes, which represent the key areas of research this directorate is most concerned with: Earth Science, Heliophysics, Planetary Science and Astrophysics. The SMD seeks to explore issues relating to these themes by engaging the science community, sponsoring scientific research, and through the use of satellites.

Morgan P. Muchnick

The Earth Science theme has requested \$1.5 billion. The Earth Science Research program funds basic research and modeling efforts, the Suborbital Science Project (which conducts research using airplanes and Uninhabited Air Systems), and supercomputing efforts that support a variety of agencies. Spacecraft previously included in Earth Science Research have been moved under the Earth Systematic Missions Program in the FY 2008 budget.

The Heliophysics theme would provide \$1.1 billion for research and analysis, which aims to solicit basic and applied research in support of the Heliophysics Division's objectives. The Heliophysics Operating Missions consist of a fleet of satellites that are taking systematic measurements of the solar structure and phenomena, the solar wind and solar energetic particles, and the Sun's extensive electromagnetic fields. Sounding Rockets provide low-cost platforms that enable direct access to the Earth's mesosphere and lower thermosphere, so that researchers can observe the Sun's impact on those regions.

The Planetary Science theme proposes a budget of \$1.4 billion. The purpose of this theme is to advance scientific knowledge of the origin and history of the solar system, including the history of life and whether it evolved beyond Earth. Equally important is finding resources, evaluating, and mitigating the risks to humans that will be encountered as NASA conducts an overall balanced program of science, exploration, and aeronautics consistent with the redirection of the human spaceflight program to focus on exploration. Included in this theme is the Mars Exploration Program at \$625.7 million, the Discovery Program of robotic exploration, and the Juno Project aimed at studying the origins of Jupiter, among others.

Finally, the Astrophysics theme proposes a budget of \$1.6 billion. This theme includes the following programs: Astrophysics research, Gamma-ray Large Space Telescope (GLAST), Discovery, James Webb Space Telescope, Hubble Space Telescope, Navigator, Stratospheric Observatory for Infrared Astronomy (SOFIA), Astrophysics Explorer, International Space Science Collaboration and Beyond Einstein.

Exploration Systems Mission Directorate: The FY 2008 budget request for NASA includes nearly \$4 billion for Exploration Systems. Again, this directorate is broken into themes, in this case comprising Constellation Systems and Advanced Technology.

NASA's FY 2008 BUDGET

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

The lion's share of the NASA request is seen in the Crew Exploration Vehicle and the Crew Launch Vehicle, representing more than two-thirds of the Constellation Systems total budget request.

Within the CLV program, NASA is requesting a \$347 million increase from the 2007 request (NASA did not get the entire request in the joint funding resolution). The CLV Program changed architecture from a 4-segment Reusable Solid Rocket Booster (RSRB) system to a 5-segment system. In addition, NASA selected the J-2X for the Upper Stage Engine over the Space Shuttle Main Engine. The Constellation Program Office also increased the Ares I budget using program reserves for an Ascent Development Flight Test (ADFT) scheduled for April 2009.

The Commercial Crew Cargo Capability program would be transferred to the Exploration Systems Mission Directorate in 2008 and would thus have a substantial increase in the 2008 request to \$236 million. Funding for this program previously occurred in other areas of the NASA budget.

The Advanced Capabilities theme of the exploration systems mission directorate provides for a budget request of \$855.8 million. The Robotic Lunar Exploration Program (RLEP) budgeted for in FY 2007 is replaced by the Lunar Precursor Robotic Program (LPRP) for the FY 2008 request. Also included in this theme are Exploration Technology Development, Lunar Reconnaissance Orbiter Program, and Human Research Program, which explore the risks to human health and mitigation options during space travel.

Aeronautics Research Mission Directorate: The Aeronautics Research Mission Directorate has only one theme, whose total budget request for FY 2008 is \$554 million, which represents a \$25 million increase from the FY 2007 request after adjustments by NASA using its full-cost 2007 budget simplification. (Congress added to the request in the 2007 joint funding resolution.) Many changes have been made to the aeronautics portfolio, which has led to the restructuring of the budget. The

Morgan P. Muchnick

Aeronautics theme is broken down into four integrated research areas: 1) fundamental aeronautics research; 2) airspace systems program (ASP); 3) aviation safety program that will address the needs of the Next Generation Air Transportation System (NGATS); and 4) Aeronautics Test Program (ATP), which is dedicated to the mastery and intellectual stewardship of the core competencies of aeronautics testing, both on the ground and in the air. This program's purpose is to ensure the strategic availability of a minimum, critical suite of aeronautical test facilities, which are necessary to meet the long-term needs and requirements of the nation.

Finally, under the Airspace Systems Program, the new aeronautics theme will maintain existing wind tunnel infrastructure at a level necessary to meet national needs. However, within the fundamental aeronautics projects such as subsonic, supersonic and hypersonic, there is a significant cut proposed in the 2008 budget request, at just under \$156 million less than FY 2007.

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 \$489.2 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 certain NASA programs. The overall request for Education is \$153.7 million, which is broken down into elementary and secondary education, higher education, e-education, informal education, and minority university research and education.

The Advanced Business Systems theme is new this year and 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 2008 for these is \$103.1 million.

NASA'S FY 2008 BUDGET

The FY 2008 request for the Innovative Partnerships Program (IPP) theme is \$198.1 million—an 8 percent decrease from the previous budget request and a larger decrease from the 2007 appropriation. This program was established to leverage technology alternatives for all of the mission directorates. These technology alternatives are incubated in industry, academia and our national laboratories. This theme is intended to facilitate 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 current budget request for this project is \$34.3 million.

Space Operations Mission Directorate: As mentioned above, 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. The ISS Cargo and Crew Services account would be transferred to the Exploration Systems Mission Directorate in 2008. Further, totals are potentially misleading because they include emergency supplemental funds in both 2005 and 2006 due to damage from hurricanes. The FY 2008 budget request for the SOMD is \$6.8 billion, representing just under a 10 percent increase from the FY 2007 request and a larger increase from the 2007 appropriation.

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 the United States' obligation to international partners 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 2008 request for ISS is \$2.2 billion, up significantly from recent requests.

The Space Shuttle theme continues operation of the United States' only manned launch capability. NASA is targeting 2010 for complete retirement of the shuttle fleet. The FY 2008 request is just over \$4 billion, enabling the safe flight of the shuttle with the minimum number of flights necessary to complete the ISS.

Morgan P. Muchnick

The final theme in the SOMD is that of Space and Flight Support. This theme's FY 2008 budget request is for \$545.7 million, a 66 percent increase from NASA's FY 2007 full-cost simplification budget request. 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

NASA is dedicated to maintaining adequate levels and the proper mix of skills and capabilities within its federal workforce. NASA currently has approximately 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 beyond. NASA, therefore, has taken action to ensure that each of its ten field centers is healthy and maintain the proper mix of skills and experience. In addition, NASA will develop an enhanced performance planning and appraisal system (the Employee Performance and Communication System) to ensure that employees understand how their efforts contribute to the Agency's performance goals, and to ensure that supervisors are evaluating individual employee performance against those contributions.