SCIENCE & SPACE

The President's 2008 Budget will continue America's commitment to gain a deeper understanding of space and the sciences through:

- The President's Vision for Space Exploration;
- Continued leadership in space, science and aeronautics;
- Accelerating scientific progress with the American Competitiveness Initiative;
- Enhancing the ability to observe, protect, and manage Earth's resources; and
- The Advanced Energy Initiative (AEI).

The President's Vision for Space Exploration:

- $951 million for the National Aeronautics and Space Administration (NASA) to design and develop Orion – a crewed spacecraft that will return humans to the Moon.
    - Orion will replace the Space Shuttle, which will be retired in 2010 after completing construction of the Space Station.
- $1.2 billion for NASA to develop a new rocket that will launch Orion, the Ares I.
    - The Ares I will require less launch preparation than the Space Shuttle, generating savings in operating costs.
- $436 million over three years in award money for developers who build privately operated space vehicles that would re-supply the International Space Station.
- $352 million over five years to maximize scientific gain from robotic exploration of the Moon.
- $345 million to develop the Mars Science Laboratory, scheduled to launch in 2009, to increase our knowledge of the Martian environment and test technologies that may assist human exploration.

Continued leadership in space, science and aeronautics:

- $1.6 billion for NASA to conduct astronomy research, upgrade the Hubble telescope, and build new space telescopes to be named for 17th century astronomer Johannes Kepler and former NASA Administrator James E. Webb.
- $804 million over five years for NASA to develop and launch no later than 2013 the Global Precipitation Measurement satellite system, along with interagency and international partners, to better understand rainfall and improve our ability to track major weather events.
- $396 million over five years to support long-term aeronautics research at university and industry labs.

Accelerating scientific progress through the American Competitiveness Initiative: ACI is designed to support basic research and world-leading facilities in the physical sciences to enable future breakthroughs and provide economic security benefits. The 2008 Budget increases funding for the ACI research agencies by 7.1 percent to $11.4 billion in order to advance knowledge and technological capabilities with broad scientific impact to maximize economic gains. Over 10 years, the ACI proposed an increase of nearly $50 billion in innovation-enabling research in the National Science Foundation, the Department of Energy, and the Department of Commerce's National Institute of Standards and Technology.

- National Science Foundation: $6.4 billion, to address specific priorities in physical sciences, nanotechnology, information technology, and oceans; further the fields of science and engineering

broadly; and support many more researchers and students contributing to the innovation enterprise.

- Department of Energy's Office of Science: $4.4 billion, to strengthen research and cutting edge facilities, such as new bio-energy research centers; increase contributions toward a major international fusion energy program; expand supercomputing facilities and related research; and support design and construction activities for world-leading light sources.
- The Department of Commerce's National Institute of Standards and Technology: $594 million, to enhance nanotechnology manufacturing capabilities; expand a neutron facility to help characterize novel materials; construct new, high-performance laboratories; and improve our understanding of quantum information science that may dramatically improve computer processing speeds and enable more secure communications.

Enhancing the ability to observe, protect, and manage the Earth's resources: Supports key programs in the National Aeronautics and Space Administration (NASA), the National Science Foundation (NSF), the National Oceanic and Atmospheric Administration (NOAA) and the US Geological Survey (USGS) that observe and predict changes in the Earth's environment and manage our ocean and coastal resources including:

- $1.6 billion to develop new sensors and conduct research that will expand scientific understanding of the Earth system.
- Over $800 million to improve weather forecasting capabilities by developing and acquiring geostationary and polar-orbiting weather satellites and unmanned aircraft systems to improve forecasting and our understanding of the climate.
    - *Tsunami Warning and Mitigation System*: An additional $2 million to strengthen tsunami detection and warning capabilities.
- Climate Change Research Initiative: Research on water vapor processes will refine climate models and developing an integrated drought early warning system will provide earlier and more accurate forecasts of drought conditions.
- Ocean Action Plan: Enhancing our understanding of oceans and coasts with $80 million in new funding to advance ocean science and research.
    - *Advancing Ocean Science and Research ($80M):* The Budget provides a total of $40 million to address near-term ocean research priorities established by the Ocean Research Priorities Plan and Implementation Strategy. New funding to address these priorities is provided to NOAA, NSF, and USGS. These interagency efforts will build upon and include on-going activities at multiple agencies. The Budget also proposes $8 million to define the outer limits of the U.S. continental shelf (areas beyond 200 miles from the U.S. coast that meet certain geological criteria). Defining those limits will allow the U.S. to confirm its resource rights, which contain an estimated $1.2 trillion worth of resources. In addition, $32 million is included for NOAA to develop an operational ocean monitoring network, for technology and other infrastructure to support ocean science, for International Polar Year activities, and for research on protected species and commercial fisheries. The Budget also continues funding for NSF's Oceans Observations Initiative, which will provide important infrastructure to support sustained ocean observations and research.
- International Polar Year: $60 million for researching environmental changes in the Arctic and the impact of polar ice sheets on global phenomena.

The Advanced Energy Initiative (AEI): The AEI is accelerating breakthroughs in how we power our homes, cars, and businesses and will help the U.S. to diversify its sources of energy, reduce dependence on foreign sources of oil and increase our energy security.

- Coal Research Initiative: $385 million completes the President's commitment to invest $2 billion over 10 years – three years ahead of schedule – in order to tap into America's huge coal reserve for continued use as a clean and viable energy source.
    - *FutureGen Program:* $108 million will fund tests on deriving power from coal and facilitate demonstrations as to how power could be generated from coal.
    - *EPAct 2005:* Authorizes the allocation of $1.65 billion in tax credits to foster more than $9 billion in private investments to construct highly efficient and low emission coal power facilities.
- Solar America Initiative: $148 million toward the goal of making solar technology cost competitive with conventional electricity by 2025.
- Biofuels Initiative: $179 million to research production of cellulose ethanol from corn, and to make other organic materials available as a practical energy alternative by 2012.
- Hydrogen Fuel Initiative: $309 million will complete the President's five-year, $1.2 billion commitment to support the development of commercially viable hydrogen technologies and fuel cell vehicles by 2020.
    - *Developing more efficient vehicles:* $81 million to accelerate research that would lead to advanced battery technologies that would power "plug-in" vehicles that are simply recharged at night.