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UPDATE:
**Summary and Analysis of the
President's FY 2009 Budget Request
for Federal Research and Education Programs**

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Please note: This document provides updated and supplemental information to the Lewis-Burke *Summary and Analysis* document of February 4, 2008.

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Introduction

Today President Bush sent his final budget proposal to the Congress. The President's proposed \$3.1 trillion federal budget request has few departures from the major themes and initiatives of his previous budget proposals. The President calls on Congress to address immediate economic challenges with a stimulus package; to provide increased funding for the Department of Defense and the troops serving in Iraq and Afghanistan; to hold overall domestic discretionary spending levels below the rate of inflation; to address the long-term challenge of increasing growth of entitlement programs; and to enact various budgeting reforms to meet the Administration's goal of eliminating the budget deficit by 2012.

The President's "déjà vu" budget proposal and the Democratically-controlled Congressional audience receiving the budget portend another difficult year on the budget and appropriations front. Add to this the high stakes race for the White House and a historic level of retirements from Congress, and it could be an entirely new "team" that completes the FY 2009 appropriations process after the November elections.

Given the showdown between Congress and the White House over the final FY 2008 omnibus appropriations bill, the President's proposed budget needs careful scrutiny to assess the outlook for some of the President's major initiatives of interest to the research and education community.

The President once again proposes to double funding for federal research in the physical sciences over ten years through the American Competitiveness Initiative (ACI). The FY 2009 budget request would provide funding to "catch up" on the ACI for the Department of Energy's (DOE) Office of Science, for the National Science Foundation (NSF), and for the National Institute of Standards and Technology (NIST). In FY 2009, the Administration budget proposes a total of \$12.2 billion for the three agencies, which is \$1.6 billion (15 percent) above the level enacted in FY 2008.

The budget proposal presents a challenge to the Congress to deliver on the proposed ACI investments. Given that the overall domestic budget is essentially a freeze, these increases are proposed at the expense of funding reductions across the federal government. The President proposes to eliminate or reduce funding for 151 federal programs to save \$18.2 billion in the budget. These proposed savings on paper help make room for the President to propose new spending initiatives, such as the ACI, within a flat domestic budget. These savings are likely to be rejected by Congress again this year, leaving it no choice but to increase domestic spending (as it did last year) or come up short on funding to implement the ACI.

Following Defense Secretary Gates' review of the Department of Defense science and technology programs, the FY 2009 budget proposes a promising increase of \$65 million (4 percent) for DOD basic research.

Not all federal research programs, however, would do as well under the FY 2009 Administration request as would the ACI agencies. The budget for the National Institutes of Health (NIH) would remain flat yet again with a request of \$29.2 billion for FY 2009. The NASA science program would be essentially flat as well, and research at the National Oceanic and Atmospheric Administration (NOAA) would decline by \$20 million or 5 percent.

The President's FY 2009 budget request and the strong bipartisan commitment of Congress to the ACI gives renewed hope to the research and university community that important investments in the scientific enterprise will be secured by the end of the budget and appropriations process for the next fiscal year. However, it is likely to be a protracted process to complete the FY 2009 appropriations bills and address this important issue.

Finally, on the education front, the President proposes a \$2.6 billion annual increase in appropriations for Pell Grants to assist students in paying for college. The proposed investment, together with mandatory funding provided by the College Cost Reduction and Access Act passed last year, would support a maximum Pell Grant of \$4,800 in 2009, and allow the maximum grant to rise to \$5,400 by 2012 were the President's proposal to be implemented.

Please note that, unless otherwise specified, comparisons in the budget analyses below use the FY 2008 enacted funding levels in the Consolidated Appropriations Act for FY 2008.

National Science Foundation

The National Science Foundation (NSF) would receive \$6.9 billion in the FY 2009 budget request, an increase of \$822 million or 13.6 percent above the FY 2008 appropriated level. The large proposed increase reflects the fact that actual funding for NSF was basically maintained at the FY 2007 level in the final FY 2008 omnibus bill, but the request level is based on keeping the doubling of the NSF budget that the President has proposed as part of the American Competitiveness Initiative (ACI) on the track the President laid out in 2006. (If the FY 2008 request had been appropriated, the FY 2009 proposed level would only have been a 6.6 percent increase.)

Research and Related Activities (RRA)

The NSF Research and Related Activities (RRA) account would receive \$5.6 billion in the FY 2009 budget request, an increase of \$773 million or 16 percent above the FY 2008 appropriated level. The RRA account includes funding for research in Biological Sciences, Computer and Information Sciences and Engineering, Engineering, Geosciences, Mathematical and Physical Sciences, and Social, Behavioral and Economic Sciences. It also contains funding for cyberinfrastructure, polar research, international activities, and some agency-wide programs, such as the Major Research Instrumentation program and the Experimental Program to Stimulate Competitive Research (EPSCoR).

As in previous years under the ACI, the largest percentage increases were proposed for the directorates for Mathematical and Physical Sciences, Engineering, and Computer and Information Sciences and Engineering, each of which would receive an increase of approximately 20 percent above the FY 2008 estimated level.

While Congress and the National Science Board placed a good deal of emphasis over the past year on NSF increasing support for “transformative research,” there is no set aside or targeted program in the FY 2009 budget request specifically for transformative research. However, NSF uses the word “transformative” twice as many times in its FY 2009 budget request documents as it did in FY 2008 (69 vs. 34).

NSF-Wide Initiatives

Last year, NSF announced a major new NSF-wide initiative, Cyber-Enabled Discovery and Innovation (CDI). It was to start at \$52 million and ramp up by approximately \$50 million each of the next five years. Despite relatively flat appropriations in FY 2008, NSF appears to be maintaining its commitment to this initiative. CDI would receive \$100 million in FY 2009, an increase of \$52 million or 109 percent above the estimated FY 2008 level.

There are no new large-scale NSF-wide initiatives announced in this budget request. There are three smaller new initiatives that build on prior and ongoing NSF activities but are identified as NSF-wide efforts for the first time. These are: (1) Science and Engineering Beyond Moore’s Law (\$20 million proposed in FY 2009, led by \$10 million in Mathematical and Physical Sciences); (2) Adaptive Systems Technology (\$15 million proposed in FY 2009, split across five directorates); and (3) Dynamics of Water Processes in the Environment (\$10 million proposed in FY 2009, mainly in Biological Sciences and Geosciences).

In addition, NSF investment in interagency research programs, such as nanotechnology, networking and information technology, and climate change science, would continue, with a significant increase for networking and information technology (up 17 percent over FY 2008), a real increase for climate change science (up 7.5 percent over FY 2008), and essentially flat growth for nanotechnology (up 2.1 percent over FY 2008).

Last year, NSF requested \$17 million for FY 2008 to support the interagency Ocean Research Priorities Plan released in January 2007, but given the final NSF appropriations levels, the agency is expected to spend only \$5 million in FY 2008. In FY 2009, NSF again asks for \$17 million for this area.

Other Research Programs of Interest

NSF provides large-scale multidisciplinary awards through a variety of center programs which, in most cases, do not run competitions every year. The plans for some of these center programs are:

- Science and Technology Centers (STCs): An increase of \$11.1 million for the STC program in FY 2009 would allow NSF to run a competition in FY 2009 to

name five to seven new STCs (while five existing STCs phase out after 10 years of support).

- Engineering Research Centers (ERCs): No new awards would be made in FY 2009. (Five new ERCs are expected to be awarded in FY 2008 [replacing graduating centers], keeping the total number of ERCs at 15.)
- Materials Research Science and Engineering Centers (MRSECs): No new awards would be made in FY 2009. (Three new MRSECs are expected to be awarded in FY 2008 [replacing graduating centers], keeping the total number of MRSECs at 26.)
- Centers for Chemical Innovation (CCI): An increase of \$12.5 million for the CCI program in FY 2009 would allow NSF to run a competition for three new center development (Phase II) grants and three new full-scale center (Phase I) grants.
- Other Centers: The award to a new Center for Research at the Interface of the Mathematical and Biological Sciences was deferred in FY 2008, but would be supported in FY 2009. The award to a new Center for Environmental Implications of Nanotechnology will be competed in FY 2008 as planned.

The NSF-wide Major Research Instrumentation program would receive \$115 million in the FY 2009 budget request, an increase of \$21.1 million or 22.5 percent above the FY 2008 appropriated level. Consistent with the America COMPETES Act, signed into law in August 2008, the program will continue to require cost sharing for Ph.D.-granting educational institutions in FY 2009 and the cap per award will remain at \$4 million.

The NSF-wide EPSCoR program would receive \$113.5 million in the FY 2009 budget request, an increase of \$2.4 million or 2.2 percent above the FY 2008 appropriated level. Additional funding for this program is often added by Congress during the appropriations process.

Education and Human Resources (EHR)

The NSF Education and Human Resources (EHR) account would receive \$695.7 million in the FY 2009 budget request, an increase of \$64.8 million or 8.9 percent above the FY 2008 appropriated level.

The primary beneficiary for the proposed EHR increase would be the Graduate Research Fellowship (GRF) program, which would receive \$116.7 million, an increase of \$28.6 million or 32.5 percent above the FY 2008 appropriated level. This increase would allow NSF to support an additional 700 fellows. Another program slated for a significant increase is the Centers of Research Excellence in Science and Technology (CREST), which would receive \$30.5 million in FY 2009, an increase of \$5.5 million over FY 2008. Finally, the Project and Program Evaluation area within the Division of Research on Learning in Formal and Informal Settings would receive \$10 million, an increase of \$3 million over FY 2008. While this last program is small, the increase is a sign of the emphasis being placed within NSF and the Administration on rigorous evaluation of science, technology, engineering, and mathematics (STEM) education programs to determine the impacts of federal investments and identify approaches that should be implemented more broadly.

A number of programs that historically are Congressional favorites would receive small increases (e.g. the Robert Noyce Teacher Scholarship Program would grow by \$800,000 to \$11.6 million, the Math and Science Partnerships would grow by \$2.5 million to \$51 million, and the Louis Stokes Alliances for Minority Participation would grow by \$2 million to \$42.5 million). Additional funding for these programs may be added by Congress during the appropriations process, and that funding could come out of other EHR programs or elsewhere in NSF.

Most other programs of interest would be flat-funded or receive small increases:

- Integrative Graduate Education and Research Traineeships (IGERT) program: The IGERT program would receive \$25 million in FY 2009, the same level as in FY 2008.
- National Science Distributed Learning (NSDL) program (formerly the National STEM Education Digital Library program): The NSDL program would receive \$16.5 million in FY 2009, an increase of \$250,000 over FY 2008.
- Course, Curriculum and Laboratory Improvement (CCLI): The CCLI program would receive \$39.2 million in FY 2009, an increase of \$1.7 million over FY 2008.
- Graduate Teaching Fellows in K-12 Education (GK-12): The GK-12 program would receive \$49 million in FY 2009, an increase of \$2 million over FY 2008.

Major Research Equipment and Facilities Construction (MREFC)

The NSF Major Research Equipment and Facilities Construction (MREFC) account would receive \$147.5 million in the FY 2009 budget request, a decrease of \$73.2 million or 33.2 percent below the FY 2008 appropriated level.

This year, the focus is on implementing cost and schedule reviews for MREFC projects so that NSF has high confidence in risk-adjusted costs and schedules. Funds will be held up on projects for which such reviews are not complete. Therefore, in FY 2009, NSF would provide funds for ongoing projects whose reviews are complete: \$51.4 million for Advanced LIGO (AdvLIGO), \$82.3 million for the Atacama Large Millimeter Array (ALMA), and \$11.33 million for the IceCube Neutrino Observatory (IceCube). In addition, NSF would provide \$2.5 million for one new MREFC project, the Advanced Technology Solar Telescope (ATST).

The MREFC projects for which funds have been provided in the past but are not requested for FY 2009 because cost and schedule reviews have not been completed to NSF's satisfaction are the Alaska Region Research Vessel (ARRV), the National Ecological Observatory Network (NEON), and the Ocean Observatories Initiative (OOI). However, while funds are not requested for these projects in the MREFC account, support for NEON and OOI would be provided from the Research and Related Activities account (\$26 million for NEON in Biological Sciences and \$10.5 million for OOI in Geosciences).

The FY 2009 NSF budget request is available online at:
<http://nsf.gov/about/budget/fy2009/toc.jsp>.

Department of Health and Human Services & National Institutes of Health

The President requests a \$68.5 billion discretionary budget for the Department of Health and Human Services (HHS) for FY 2009. This funding level would represent a \$2.2 billion (3 percent) decrease from its final FY 2008 omnibus appropriation. The stated priorities in the President's FY 2009 budget for HHS and its offices and agencies include:

- Preventing and preparing the nation for major health emergencies, including pandemic influenza and bioterrorism;
- Prioritizing the health care of low-income children by reauthorizing the State Children's Health Insurance Program (CHIP);
- Improving the fiscal sustainability of Medicare and Medicaid programs;
- Promoting market-based reforms so that health care is more affordable;
- Expanding the use of health information technology;
- Improving public health through science research and protection of the food supply; and
- Continuing assistance to "vulnerable populations."

While "supporting public health through science" is overshadowed by other HHS priorities in the context of the President's narrative justification of the FY 2009 budget, funding for research at NIH remains about 43 percent of the total HHS discretionary budget.

Preventing and Preparing the Nation for Major Health Emergencies

For FY 2009, the President requests \$4.9 billion for HHS to support the government's efforts to prepare the nation's public health infrastructure for major health emergencies. \$507 million would be directed specifically towards improving America's readiness for an influenza pandemic with a goal of acquiring 20 million courses of pre-pandemic vaccines for the national stockpile. In addition to the \$507 million, a total of \$313 million is requested in the budgets of the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA), the National Institutes of Health (NIH), and Office of the Secretary (OS) to finance preparedness activities that include accelerating the research and development of diagnostics tests, developing a vaccine registry, and expanding international and domestic surveillance and detection capabilities.

Other additional funds from the various agencies' budgets would be directed for certain prevention and protection activities, including training emergency medical teams, establishing medical countermeasures, and developing the necessary technology to combat health emergencies.

National Institutes of Health

For NIH in FY 2009, the President requests \$29.2 billion in discretionary budget authority through the Labor/HHS/Education Appropriations bill, which is identical to NIH's final FY 2008 funding level. This marks the sixth consecutive year in which the

Administration's budget request has failed to match the pace of biomedical inflation. If enacted, NIH's purchasing power will have declined by 13.4 percent since 2003 (when taking into account the expected 3.5 percent inflation rate for FY 2007). In addition to the above funding level for NIH, the agency would also receive \$77.5 million for the Superfund Basic Research Program (consistent with FY 2008) in the National Institute of Environmental Health Sciences (NIEHS) budget line. When factoring in all of the other mandatory funding allocations, the total program level for NIH in the FY 2009 request is \$29.5 billion, which is again identical to the final FY 2008 funding level.

For FY 2009, NIH would award 83 percent of its discretionary spending for extramural research. The agency intends to support 38,257 total competing and non-competing research project grants (RPG), which are only 18 more RPGs than in FY 2008 (38,239). The anticipated success rate for competing RPGs in FY 2009 is 18 percent (down 1 percent from FY 2008), which would be one of the lowest rates in NIH history. The average cost of a new and competing RPG in FY 2009 is expected to be \$361,000.

The FY 2009 NIH budget request includes a \$300 million pass through for the Global HIV/AIDS, Tuberculosis, and Malaria Fund (an increase of about \$5 million over FY 2008).

Additionally, the President's budget request proposes to reduce the Office of the Director's account by \$52 million in order to provide extremely small increases for every NIH Institute and Center.

Young Investigators

Supporting the efforts of young researchers continues to be a major priority for NIH in FY 2009. One core objective is to maintain the historical annual average of 1,500 total new researchers funded by NIH. To accomplish this goal, the FY 2009 budget request includes \$71 million from across the NIH Institutes and Centers (ICs) for the "Pathway to Independence" program to assist new scientists in obtaining NIH grants. NIH would use these funds to support a total of 500 awardees, including \$15 million for 170 new awards in FY 2009.

If the President's budget request is enacted, NIH would expect to maintain the number of Director's Bridge and New Innovator Awards at FY 2008 levels. For FY 2009, NIH estimates that it would fund 240 Bridge and 25 New Innovator Awards.

Training

The President's FY2009 budget request also contains a small increase for the Ruth L. Kirschstein National Research Service Award (NRSA) programs, which comprise institutional training grants (T32, T34, and T35), individual fellowships (F30, F31, F32, and F33), and career development funding opportunities (K01, K22, K24). The Administration proposes to increase the number of institutional awards (T grants) by 10 to 14,582 and plans to fund 3,004 individual awards (F grants), which is an increase of seven awards from FY 2008. The institutional training grants are awarded to institutions

with faculty-led programs that select trainees, while individual fellowships are awarded to individuals at a specific stage of professional development.

Common Fund

The FY 2009 budget request would allocate \$532 million for the Common Fund, an increase of \$38 million (8 percent) over FY 2008. The funds would be used to support the “second cohort” of projects established in FY 2008 under the Common Fund, such as portions of the NIH Roadmap initiatives. These projects include studies of the Human Microbiome – analyzing and characterizing the microbial contents of sites in the human body; and Epigenomics – studying genetic modifications and their relationships to disease. Up to \$40 million would be allocated to additional new projects emerging under the next phase of the Roadmap.

Clinical and Translational Science Awards

NIH has been in the process of phasing out its long standing General Clinical Research Centers Program and building a new, more advanced clinical and translational research framework through the Clinical and Translational Science Awards (CTSAs) administered by NIH’s National Center for Research Resources (NCRR). The President’s FY 2009 request for CTSAs is \$475 million (an increase of \$11 million from FY 2008) – \$20 million of which would be transferred from other existing programs within NCRR to the CTSA account.

Biodefense

For FY 2009, the President’s budget request proposes \$1.7 billion for NIH biodefense efforts, an increase of \$20 million (1.2 percent) over FY 2008. As in previous years, research efforts would focus on improved stability and delivery of vaccines for Category A and B agents, developing candidate therapeutics for high priority viral pathogens, building technologies for the next generation of biodefense therapeutics, and conducting antimicrobial clinical studies.

Within these funds, NIH would be expected to expand its research efforts on developing countermeasures against nuclear, chemical, and radiological threats (weapons of mass destruction). For FY 2009, the budget request would allocate \$113 million for these purposes, which is an increase of \$19 million (20 percent) over FY 2008.

The National Children’s Study

The President’s FY 2009 budget request proposes to eliminate the National Children’s Study, the largest and longest study of environmental effects on children’s health ever conducted in the United States. While the President had also proposed to end the study in his FY 2008 budget request, Congress not only reinstated funding for the program but increased the initiative’s commitment level from \$69 million in FY 2007 to \$110.9 million in FY 2008.

The National Children’s Study is broadly supported on Capitol Hill. In fact, during last year’s House Appropriations Committee hearing on NIH, Chairman David Obey (D-WI), informed NIH Director Dr. Zerhouni that Congress would put money back into NIH’s

budget to continue the program. The study's proposal calls for a budget of \$196 million in FY 2009. Therefore, if Congress does indeed reinstate the program at the level that has been requested, it would mean the NIH ICs would remain flat even if Congress finds an additional \$196 million for NIH.

Intramural Buildings and Facilities

The President has also included \$133 million for NIH Intramural Buildings and Facilities (B&F) in his request for FY 2009, an increase of \$7 million over the FY 2008 enacted level. If these funds are appropriated, NIH would prioritize upgrading facilities to ensure safety and regulatory compliance while also addressing "critical utility systems...in order to stabilize the research environment." Within these funds, a total of \$8 million is requested for National Cancer Institute's facilities in Maryland. The President's request would not provide any funding for extramural buildings and facilities projects.

Institutes and Centers

Please see the chart on page 13 for individual IC funding levels in the FY 2009 budget request.

Health Resources and Services Administration (HRSA)

The FY 2009 President's budget for the Health Resources and Services Administration (HRSA) is \$5.9 billion, a decrease of \$992 million from FY 2008. Included in these funds is an increase of \$27 million (from FY 2008) to expand the agency's Health Center initiative, which is targeted to increase access to primary health care in predominantly high poverty counties – a high priority for the President. If enacted, the total budget for this initiative would stand at \$2.1 billion.

Two of the biggest hits in the FY 2009 President's request are the Children's Hospital Graduate Medical Education (GME) Program and health professions-related activities. The budget request states that the Children's Hospital GME Program has "not demonstrated effectiveness in increasing the number of children's health care providers" while a Program Assessment Rating Tool (PART) review of Title VII of Health Professions Training Programs charges that most of these programs "have not demonstrated an impact on placing health professionals in underserved areas." As a result, the Children's Hospital GME Program and the majority of health professions programs would be targeted for a total reduction of \$557 million in FY 2009 (\$302 million for Children's Hospital GME and \$255 million for health professions training – which include Health Professions Training for Diversity programs, the Training in Primary Care Medicine and Dentistry program, the Interdisciplinary, Community-based Linkages and Public Health programs, the Preventative Medicine and Dental Public Health programs, Advanced Education Nursing Program, and the Faculty Loan Repayment/Minority Faculty Fellowship programs).

HHS Office of the National Coordinator for Health Information Technology

The President's FY 2009 budget requests a total of \$114 million for health information technology. Key emphases are fostering policies that encourage health care providers to adopt electronic health records and advancing technologies for safe and secure

information exchange. Of this amount, \$66 million is designated for the Office of the National Coordinator for Health Information Technology. \$45 million is allocated to the Agency for Healthcare Research and Quality for enhancing information technology for patient safety, with emphasis on ambulatory patient care. \$7 million of that would be targeted for new grants in health information technology.

Centers for Disease Control and Prevention

The President's FY 2009 budget request of \$5.7 billion for CDC's programs is a decrease of approximately \$376 million from FY 2008. As in previous years, CDC's predominant focus is on state and local public health organizations and providers. Increased funding is proposed for quarantine stations (\$33.5 million above FY 2008), pandemic influenza (\$3.1 million above FY 2008), and HIV/AIDS domestic testing in community-based settings (\$10.6 million above FY 2008). Approximately \$50 million is proposed to expand the BioSense network for rapid disease detection and surveillance through state and local health departments and participating hospitals. The administration proposes to eliminate over \$570 million in block grants to state and local organizations for capacity building, preventive health services, environmental health, and a number of demonstration projects. Many ongoing programs will remain directed toward enhancing the public health infrastructure.

Food and Drug Administration

The FY 2009 President's budget request for FDA includes \$661.8 million (an increase of \$42.2 million over FY 2008) for enhanced efforts to protect the nation's food supply in accord with the FDA Food Protection Plan. The agency would work with other federal departments and state, local, and foreign governments to implement better methods of detecting foodborne illness outbreaks and in monitoring food production and food handling. An increase of \$17.4 million is requested to implement the medical product safety and development initiative in partnership with product manufacturers. Other priorities for FY 2009 funding include implementing new user fees for generic drug reviews and for facility inspections along with enhancements of capacity and staffing across all programs of the agency.

Administration for Aging (AOA)

The President requests \$1.4 billion in FY 2009 for the AOA, a decrease of \$32 million from the enacted FY 2008 levels. Eliminated are targeted health and preventive health services programs (minus \$21 million) and Alzheimer's Disease Demonstration Projects (minus \$11 million) because states can "use other core AOA programs" to meet key objectives rather than this "unfocused seed money". The Choices for Independence program would receive an \$11.8 million increase to "evaluate whether savings in Medicaid and Medicare can be achieved through the use of low-cost home and community-based alternatives."

Administration for Children and Families (ACF)

All funding for community services block grants (\$653.8 million) is eliminated in the FY 2009 President's request of \$13.3 billion for ACF because the program "lacks national performance goals and measures, does not award funds on a competitive basis, and does

not hold grantees accountable for program results.” Social services research and demonstrations would also be eliminated in FY 2009 (FY 2008 level of \$15.2 million) although \$6 million is requested to support research and evaluation projects in areas of critical national interest such as “sound research to help low-income families become economically self-sufficient.”

For more information on the HHS FY 2009 budget request, see:
www.hhs.gov/budget/09/2009BudgetinBrief.pdf.

FY 2009 President's Budget Request for Individual Funding Levels for National Institutes of Health (NIH) Institutes and Centers (Amounts in Millions)

Institutes/Centers	FY 2009 President's Request	Final FY 2008 Enacted	Comparison to FY 2008 Actual
National Cancer Institute (NCI)	\$4,810	\$4,805	\$5
National Heart, Lung, and Blood Institute (NHLBI)	\$2,925	\$2,922	\$3
National Institute of Dental & Craniofacial Research (NIDCR)	\$391	\$390	\$0.4
National Institute of Diabetes & Digestive & Kidney Diseases (NIDDK)*	\$1,858	\$1,857	\$2
National Institute of Neurological Disorders and Stroke (NINDS)	\$1,545	\$1,544	\$1
National Institute of Allergy & Infectious Diseases (NIAID)*	\$4,569	\$4,561	\$8
National Institute of General Medical Sciences (NIGMS)	\$1,938	\$1,936	\$2
National Institute of Child Health and Human Development (NICHD)	\$1,256	\$1,255	\$1
National Eye Institute (NEI)	\$668	\$667	\$1
National Institute of Environmental Health Sciences (NIEHS)*	\$721	\$720	\$1
National Institute on Aging (NIA)	\$1,048	\$1,047	\$1
National Institute on Arthritis & Musculoskeletal & Skin Diseases (NIAMS)	\$509	\$509	\$0.5
National Institute on Deafness & Other Communication Disorders (NIDCD)	\$395	\$394	\$1
National Institute of Mental Health (NIMH)	\$1,407	\$1,405	\$1
National Institute on Drug Abuse (NIDA)	\$1,002	\$1,001	\$1
National Institute on Alcohol Abuse and Alcoholism (NIAAA)	\$437	\$436	\$0.4
National Institute of Nursing Research (NINR)	\$138	\$137	\$0.1
National Human Genome Research Institute (NHGRI)	\$488	\$487	\$1
National Institute of Biomedical Imaging and Bioengineering (NIBIB)	\$300	\$299	\$2
National Center for Research Resources (NCRR)	\$1,160	\$1,149	\$11
National Center for Complementary and Alternative Medicine (NCCAM)	\$122	\$122	\$0.1
National Center on Minority Health and Health Disparities (NCMHHD)	\$200	\$200	\$0.2
John E. Fogarty International Center (FIC)	\$67	\$67	\$0.1
National Library of Medicine (NLM)*	\$331	\$329	\$3
Office of the Director (OD)	\$1,057	\$1,109	-\$52
Buildings and Facilities	\$126	\$119	\$7
Total	\$29,465	\$29,465	Even
Total (minus diabetes research, Global HIV/AIDS Transfer and Evaluation Funds)	\$29,307	\$29,307	
*NIDDK total includes mandatory diabetes research funds	*NLM includes Evaluation Funds		It is important to note that comparison may not be exact due to unit size (millions)
*NIAID total includes transfer to Global HIV/AIDS Fund	*NIEHS includes both Labor/HHS and Interior Appropriation		

National Aeronautics and Space Administration

Under the FY 2009 budget request, NASA would receive \$17.6 billion, or 2.9 percent (an increase of \$500 million) above the final FY 2008 funding level after rescissions. This increase is consistent with several prior year proposals.

As directed by the Congress, NASA has once again reorganized its budget proposal, making comparisons from prior fiscal years to the current budget request difficult. Like last year, when compared to the overall tightening of non-defense discretionary programs within the federal budget, NASA fared better than several other agencies but not as well as some.

The NASA budget is organized into seven (formerly three) funding accounts –Science, Aeronautics, Exploration, Education, Space Operations, Cross-Agency Support, and Inspector General account. As a result of this change, NASA is unable to use full cost accounting (which was used in FY 2008) throughout its budget request. The funding levels below for Mission Directorates, themes, programs and projects compare the FY 2009 President's Budget Request in direct dollars to the FY 2008 enacted level in direct dollars.

Science Mission Directorate (SMD)

The Administration has requested \$4.4 billion for the Science account, a reduction of \$265 million, or 5.6 percent, from the FY 2008 enacted level. However, this year's perceived reduction is due primarily to rescissions in the FY 2008 level and the accounting changes previously mentioned. The request would provide Science essentially with flat funding from the FY 2008 enacted level. Within Science, Earth Science and Planetary Science would receive increases and are the big winners, while Heliophysics would be roughly flat and Astrophysics would be cut.

Earth Science

Overall this theme would receive \$1.4 billion or \$87.2 million more than the FY 2008 enacted level, including increases in the Research and Analysis awards, accelerated development of two new Decadal Survey missions (SMAP and ICESat II), and continued funding for Landsat Data Continuity Mission (LDCM), Glory mission, NPOESS Preparatory Project (NPP), Global Precipitation Measurement (GPM) mission, Aquarius, and other ongoing precursor missions to maintain current schedule. Revitalizing NASA's earth sciences funding is a high priority politically because of the growing public concern about climate change.

Planetary Sciences

Overall this theme would receive \$1.3 billion or \$86.7 million more than the FY 2008 enacted level, with large new directions including a new start for an outer planets flagship mission and a new lunar robotic flight mission line with three launches beginning in 2010. Additional priorities that would be funded in this theme include ongoing funding for the Mars program while eliminating the originally planned 2011 launch of a Scout,

new opportunities and funding for the Discovery and New Frontiers programs, and increases for the Research and Analysis awards.

Heliophysics

Overall this theme would receive \$577.3 million or \$263.6 million less than the FY 2008 enacted level, due to a \$256 million transfer for Deep Space and Near Earth Networks to the Space Operations account. In general, the theme remains relatively flat with increases for Research and Analysis Awards, funding for more missions in a suborbital and rocket program, and a smaller new start for a Solar Probe Plus mission.

Astrophysics

Overall this theme would receive \$1.2 billion or \$175 million less than the FY 2008 enacted level, making it the big loser among the four Science themes. The funding would restore some of the past year Research and Analysis program cuts and continue funding for the James Webb Space Telescope and Hubble servicing mission as well as other ongoing missions such as Kepler, the Wide-field Infrared Survey Explorer (WISE) and SOFIA, but it would delay increases for the Navigator program.

Aeronautics Research Mission Directorate (ARMD)

The Administration has requested \$446.5 million for the Aeronautics account, a reduction of \$65.2 million, or 12.7 percent, from the FY 2008 enacted level. Aeronautics was proposed for a large decrease last year but Congress restored some of it (for the third year in a row). However, Aeronautics continues to trend downward in funding and this request would represent further erosion of the program.

The request would include:

- \$235.4 million for the Fundamental Aeronautics Program, focusing on physics-based methods and technologies to improve low-cost, reliable entry and re-entry from space;
- \$74.6 million for the Airspace Systems Program to further enable development of NextGen;
- \$62.6 million for the Aviations Safety Program; and
- \$73.9 million for the Aeronautics Test Program to bolster aeronautics test facilities.

Exploration Systems Mission Directorate (ESMD)

The Administration has requested \$3.5 billion for the Exploration account, which includes the majority of the President's programs supported within the Moon-Mars Vision announced in January 2004. This would be an increase of \$357.4 million, or 11.4 percent, from the FY 2008 enacted level.

Constellation Systems

The request would provide \$3 billion, an increase of \$576.3 million, above the FY 2008 enacted level. A majority of this funding would be for further developments in the Space Shuttle's replacement as well as the Lunar Reconnaissance Orbiter which is expected to launch later this year.

Advanced Capabilities

The request proposes \$452.3 million, a cut of \$218.8 million below the FY 2008 enacted level. This reflects continued trends in reductions for exploration systems technology, as well as cuts in funding for some of the robotic exploration plans outlined in President Bush's initial Vision for Space Exploration.

Education Account

The Administration has requested \$115.6 million for the Education account, a reduction of \$31.2 million, or 21.4 percent, from the FY 2008 enacted level. This reduction is primarily the result of the President eliminating funds for Congressional earmarks included in the final FY 2008 appropriations bill and would return the account to its FY 2007 level after an increase last year.

Space Operations Missions Directorate (SOMD)

The Administration has requested \$5.8 billion for the Space Operations account, an increase of \$248.5 million, or 4.3 percent, from the FY 2008 enacted level. Overall, this account is essentially flat with the FY 2008 enacted level given the \$256 million transfer from the Heliophysics budget in the Science Mission Directorate.

This amount would include:

- \$285 million decrease for the Space Shuttle program;
- \$247 million increase for the International Space Station – primarily for assembly and support; and
- \$286 million increase for Space and Flight Support.

Cross-Agency Support

The Administration has requested \$3.3 billion for the Cross-Agency Support account, an increase of \$57 million, or 1.7 percent, from the FY 2008 enacted level. This would include flat funding for the Innovative Partnerships program.

Details of the NASA budget are available at: <http://www.nasa.gov/about/budget/>.

Department of Defense

In the eight-page press release that describes the entire FY 2009 budget request for the Department of Defense (DOD), the Department chose to include that basic research would receive \$1.7 billion, an increase of \$270.5 million, or 19 percent, over the FY 2008 budget request. (Since the research accounts at DOD include Congressionally-directed projects, the Administration often uses the previous year's request rather than the appropriation as a baseline. Compared to the actual appropriated level, including earmarks, DOD basic research would grow by \$65 million, or 4 percent, over FY 2008.)

This increase for basic research likely reflects current Secretary of Defense Robert Gates' personal interest in strengthening DOD's investment in priority science and technology areas. A memo to Secretary Gates from John Young, Director, Defense Research and Engineering, sent last August, explicitly calls for an additional \$300 million for

“foundational science” (basic research) so that DOD will be ready to meet the challenges of the new threat environment.

Overall, funding for DOD Science and Technology (Basic Research, Applied Research, and Advanced Technology Development) would decrease by 10.6 percent in FY 2009 to a total of \$11.5 billion. (However, compared to the FY 2008 request, DOD Science and Technology would grow by 6.5 percent.)

Defense-Wide Programs

Defense-wide programs cover all DOD research and development activities outside of the services branches; this includes the Defense Advanced Research Projects Agency (DARPA), the Chemical and Biological Defense Program, the Defense Threat Reduction Agency, the Office of the Secretary of Defense, etc. Defense-wide basic (6.1) research programs would be funded at \$338.7 million for FY 2009, an increase of 0.8 percent from the final FY 2008 level, and the Defense-wide applied (6.2) research programs would be funded at \$1.8 billion, a decrease of 3.6 percent.

Within the Defense-wide programs, DARPA would receive \$3.3 billion for FY 2009, an increase of 11 percent from FY 2008. In particular, DARPA basic research would grow by 11.8 percent, to \$195.7 million.

The National Defense Education Program (NDEP), which provides scholarships and fellowships to undergraduate and graduate students entering critical fields of science, mathematics, engineering, and languages in return for a commitment of national service, would receive \$69 million in FY 2009, an increase of 56.8 percent over FY 2008. This request is in addition to the sizable increase provided for NDEP (from 18.4 million to \$44 million) in FY 2008.

As in the FY 2008 budget request, DOD does not request any funding for the Government/Industry Cosponsorship of University Research account, through which the Focus Center Research Program for semiconductor research is funded. (In FY 2008, Congress added \$6.2 million for this program.)

Army

The Army’s basic (6.1) research programs would be funded at \$379.4 million for FY 2009, an increase of 0.1 percent from the final FY 2008 level, and its applied (6.2) research programs would be funded at \$723.5 million, a decrease of 38.4 percent.

Navy

The Navy’s basic (6.1) research programs would be funded at \$528.3 million for FY 2009, an increase of 6.1 percent from the final FY 2008 level, and its applied (6.2) research programs would be funded at \$633.3 million, a decrease of 20.9 percent.

Air Force

The Air Force's basic (6.1) research programs would be funded at \$452.3 million for FY 2009, an increase of 7.4 percent from the final FY 2008 level, and its applied (6.2) research programs would be funded at \$1 billion, a decrease of 10.7 percent.

The tables summarizing the FY 2009 DOD budget request for Research, Development, Testing, and Evaluation accounts are available online at:

http://www.defenselink.mil/comptroller/defbudget/fy2009/fy2009_r1.pdf.

Department of Education

The President's FY 2009 budget request for the Department of Education (ED) will look familiar to anyone who has followed student aid and higher education budgets in the past. As he has for most of his tenure, the President proposes some increases within discreet priority areas, but these increases would be accompanied by a flood of reductions to and eliminations of other programs.

The President's budget request would provide \$59.2 billion overall for ED, the same as the FY 2008 appropriation, but would eliminate 47 programs totaling \$3.3 billion across the agency. The President has proposed the elimination of most of these programs before, but found little traction on Capitol Hill where education programs generally enjoy broad support. As in past years, the restoration of these proposed program eliminations will likely be the first priority for Congressional appropriators, meaning that the chances of funding increases for other programs will be slim.

The budget request also appears to take last year's College Cost Reduction and Access Act (CCRAA) into account. That bill provided mandatory (a.k.a. "entitlement") funding for a wide variety of student aid and higher education programs. While the higher education community welcomed the boost in funding that the bill provided, some pointed out that its passage could make it easier for policymakers to cut or otherwise shortchange discretionary funding for the programs. This held true in the final FY 2008 omnibus appropriations bill, which actually cut the discretionary maximum Pell Grant below the FY 2007 level, a move made politically possible by the infusion of mandatory funds into the program. It appears that some of the President's FY 2009 discretionary budget proposals take the same tack.

Student Financial Assistance

Pell Grant

The request would restore the discretionary Pell Grant maximum back to its FY 2007 level of \$4,310, a modest boost of \$69 above the FY 2008 enacted level. The Administration clearly takes the CCRAA into account here. The legislation provided a mandatory \$490 boost to the Pell maximum, meaning that the real maximum for FY 2009 would be \$4800 under the President's request. (It should also be noted that ED has decided to interpret the CCRA as providing \$490 extra for every Pell recipient, not just those receiving the maximum grant.) The President's request would provide a total

increase of \$2.6 billion in discretionary funds for the Pell Grant to cover the \$69 increase and reflect updated cost estimates for the program.

Campus-Based Aid

As in past years, the budget request would eliminate funding for the Supplemental Education Opportunity Grant (SEOG) (\$757.5 million) and Perkins Loan cancellations (\$64.3 million). The Administration also continues to propose that the Perkins Loan revolving fund be recalled to the federal treasury over five years, calling the program “ineffective, redundant, and poorly targeted” as compared with the larger Federally Financed Education Loan and Direct Loan programs. The Administration is similarly critical of SEOG, which it sees as duplicative of the Pell Grant. Congress has rejected all past attempts by the Administration to eliminate SEOG and Perkins.

The request would level-fund the Work Study program at \$980 million.

Mandatory programs

While they are not part of the discretionary budget process, the FY 2009 budget request document for ED still comments on mandatory programs. The document indicates that administrative problems still abound in the Academic Competitiveness and SMART Grant programs which were created by Congress several years ago. Congress ended up rescinding \$525 million in unspent funds from the program in FY 2008, and the President’s budget anticipates canceling another \$652 million in FY 2009. This is indicative of the difficulty that the Federal Government, states, and institutions have had in implementing the programs, which provide need-based tuition assistance to academically competitive students and those pursuing degrees in certain fields (physical, life, or computer sciences, mathematics, technology, engineering, or a critical foreign language).

If the ED budget document is to be believed, similar troubles may be ahead for the TEACH Grant program. Newly created by CCRAA, the TEACH Grant will provide up-front mandatory tuition assistance (\$4,000 annually) to eligible students who intend to serve as teachers in certain high-need academic areas and schools. Recipients must fulfill a four-year service requirement as a teacher within eight years of graduation. If they fail to complete their service requirement, their TEACH Grant will revert to an unsubsidized loan. To say that the Administration is skeptical of the program’s design would be an understatement. The budget document estimates that fully 80 percent of TEACH Grant recipients will fail to fulfill their service requirements and have their grants revert to loans.

Leveraging Educational Assistance Partnerships (LEAP)

As in past years, the budget request would eliminate the \$63.9 million LEAP program. The Administration has long held that the program has succeeded in its purpose of stimulating more need-based aid spending by state governments, and can therefore be terminated.

Higher Education

College access & outreach programs

The budget request would fund TRIO programs (\$885.2 million) and GEAR UP (\$303.4 million) at their FY 2008 levels. The President had sought unsuccessfully to eliminate these programs in the past, but requested level funding in FY 2008. Both House and Senate appropriators attempted to capitalize on this by providing actual funding increases in both House and Senate appropriations bills, but the increases did not survive the budget endgame. It remains to be seen whether Congress will attempt to boost funding for these programs in FY 2009.

Aid for Minority Serving Institutions (MSIs)

As with the Pell Grant, the Administration has clearly taken the CCRAA into account when dealing with MSI programs. For Title III programs, which provide funding for institutions serving a wide array of minorities (African Americans, Native Americans, Asian Americans, and Pacific Islanders), the Administration would actually cut funding by \$120 million (21 percent) to \$451.7 million. The Administration's budget document refers to this as an "offset" of an infusion of mandatory funds into the program by the CCRAA. Similarly, aid for Hispanic-Serving Institutions (HSIs) would be funded at \$74.4 million, a cut of \$18.9 million (20.3 percent) below the FY 2008 level, with the same justification.

International Education and Foreign Language Studies

The budget request would provide \$110 million for the so-called "Title VI" programs, an increase of \$1 million (0.9 percent). The increase would go towards Domestic Programs.

Graduate programs

The budget request would provide significant increases for graduate programs. The Graduate Assistance in Areas of National Need (GAANN) program would receive \$32.5 million, an increase of \$3 million (10.2 percent), while the Javits Fellowship would receive \$9.8 million, an increase of \$300,000 (3.2 percent). The Administration intends for the proposed increases to "arrest the long-term decline in the number of fellowships awarded" in these programs.

Teacher training programs

The budget request proposes the elimination of Teacher Quality Enhancement grants to states and partnerships (\$33.7 million), which have already seen steep cuts in recent years. The Administration maintains that the purposes of the funding, also known as "Title II" grants, are already carried out by existing federal programs. Similarly, the budget request would eliminate the fledgling Teachers for a Competitive Tomorrow program created by last year's America COMPETES Act and funded at \$2 million in FY 2008. Again, the Administration believes that other federal programs can fulfill the new program's purpose of supporting partnerships to offer teacher certification programs jointly with degrees in science, technology, engineering or critical foreign languages.

Institute of Education Sciences

The FY 2009 budget request appears to be very generous to IES, providing a total of \$658.2 million. Informal calculations indicate that this would be an increase of \$112.1 million (20.5 percent) above the FY 2008 level. The lion's share of the increase would go to Statewide Data Systems (\$100 million, a \$51.7 million or 107 percent increase) and Assessment (\$138.8 million, a \$34.7 million or 33.3 percent increase), but the Research, Development and Dissemination account, which provides the most direct grant opportunities for university researchers, would also grow to \$167.2 million, an increase of \$7.5 million (4.7 percent).

More information regarding the Department of Education's budget request for FY 2009 is available at: <http://www.ed.gov/about/overview/budget/budget09/summary/index.html>.

Department of Energy

President Bush continues several high-profile initiatives in his final budget request for the Department of Energy (DOE). As outlined in his State of the Union address, the President would invest in research to keep America competitive in the 21st century, increase energy security by developing renewable energy sources and improving energy efficiency, and address climate change.

For the Department of Energy overall, President Bush requests \$25 billion for FY 2009, an increase of \$1.1 billion or 4.7 percent above the FY 2008 enacted funding level. This is good news as the overall budget for the Department remained relatively unchanged between FY 2007 and FY 2008. (Note: the information that follows focuses only on the civilian programs of the Department.)

A top priority for the President in his FY 2009 budget is the American Competitiveness Initiative (ACI) to double funding for research in the physical sciences over ten years. In spite of the setback in the FY 2008 omnibus appropriations bill, the President fully funds the next installment of his American Competitiveness Initiative (ACI) for DOE's Office of Science. The President highlights the need to strengthen U.S. scientific discovery, economic competitiveness, and improve the quality of life through innovations in science and technology. The President requests a total of \$4.7 billion for the Office of Science, an increase of \$748.8 million (18.8 percent) above the FY 2008 enacted funding level.

The President accelerates his Advanced Energy Initiative (AEI) to develop clean, renewable sources of energy to reduce the nation's dependence on foreign oil and to address the challenge of global climate change. The President reduces funding for certain Energy Efficiency and Renewable Energy (EERE) programs that have strong support in Congress. The President emphasizes nuclear energy programs in this year's budget as a significant part of the AEI. Additional funding would also be provided to develop carbon capture and storage technologies to mitigate carbon emissions. A total of \$3.2 billion, an increase of \$623 million (24 percent) above the FY 2008 enacted level, is requested for an expanded AEI program across the Department.

Office of Science

The President would provide \$4.7 billion for DOE's Office of Science, an overall increase of \$748.8 million or 18.8 percent above the FY 2008 enacted level. The budget proposal would "catch up" on the ACI goal of doubling research in the physical sciences over ten years. Every major program within the Office of Science would receive an increase under the President's proposal. The President eliminates \$123.6 million in Congressionally-earmarked projects from the FY 2009 budget request.

The FY 2009 budget request highlights the contributions that the Office of Science makes to significant Administration initiatives, including the President's Advanced Energy Initiative (\$788.1 million); the Hydrogen Fuel Initiative (\$60.4 million); the Climate Change Science Program (\$145.9 million); the Climate Change Technology Program (\$833.3 million); Networking and Information Technology R&D (\$401.4 million); and the National Nanotechnology Initiative (\$300.3 million).

High Energy Physics

For High Energy Physics (HEP), a total of \$805 million is requested, an increase of \$115.6 million or 16.8 percent above the FY 2008 enacted appropriation. The FY 2009 budget gives priority to operating the Tevatron and Neutrinos at the Main Injector (NuMI) programs at the Fermi National Accelerator Laboratory in Illinois. The budget supports operation and maintenance (O&M) for U.S. experiments and research at the Large Hadron Collider (LHC) in Europe. DOE continues research on Super Conducting Radio Frequency (SCRF) technology and R&D for a potential International Linear Collider (ILC). Reflecting the shutdown of the B-factory at Stanford Linear Accelerator Center (SLAC), operation for SLAC is transitioned from HEP to the Basic Energy Sciences Program.

Proton Accelerator-based Physics would increase by a net of \$50.8 million. Within this activity, \$221.9 million, an increase of \$42.8 million above FY 2008, would go to facility operations and improvements at Fermilab, including support for NOvA Detector R&D. For the LHC, \$72.5 million, an increase of \$8.8 million, is requested.

Non-Accelerator Physics would increase by a net of \$81.7 million above FY 2008. A total of \$86.5 million is requested, an increase of \$12.3 million, to support several projects associated with dark energy missions and experiments. Advanced Technology R&D would receive \$187.1 million, an increase of \$66.1 million above FY 2008, including SCRF technology R&D and ILC R&D.

Nuclear Physics

The FY 2009 budget would provide \$510.1 million for nuclear physics research, an increase of \$77.3 million (17.9 percent) above the FY 2008 enacted level. Major research facilities -- the Relativistic Heavy Ion Collider (RHIC) and the Continuous Electron Beam Accelerator Facility (CEBAF) -- would receive increases for operations and research in the request. Funding is requested to begin an upgrade at CEBAF (\$28.6 million) and to initiate a design for a new rare isotope beam facility (\$7 million). The

Isotope Production and Applications program is now funded under nuclear physics at \$19.9 million for FY 2009.

Biological and Environmental Research

The President would provide \$568.5 million for Biological and Environmental Research (BER) activities, an increase of \$24.1 million (4.4 percent) above the current funding level. For Biological Research, \$413.6 million would be provided, an increase of \$6.1 million above the current level. The proposed budget supports the Genomics: Genomes-to-Life foundation and bioethanol research at \$162.7 million, an increase of \$10 million above FY 2008. The three existing bioenergy research centers are supported at \$75 million. For Climate Change Research the \$154.9 million requested represents an increase of \$18 million above the FY 2008 level. The major funding increase of \$14.4 million would be focused on climate change modeling.

Basic Energy Sciences

The President's budget would provide \$1.6 billion for Basic Energy Sciences (BES), an increase of \$298.3 million (23.5 percent) above the FY 2008 enacted level. For research, proposed funding increases are included for hydrogen (\$24 million); solar energy utilization (\$33.4 million); advanced nuclear energy systems (\$17 million); electrical energy storage (\$33.9 million); and carbon sequestration (\$5 million).

The FY 2009 budget would operate all five nanocenters with a proposed budget of \$101.2 million, an increase of \$10.1 million above FY 2008. The Spallation Neutron Source would receive \$177.6 million, an increase of \$13 million above FY 2008. SLAC linac operations would be funded in this program at \$96.7 million, an increase of \$35.2 million above FY 2008. Construction would be initiated for the National Synchrotron Light Source-II at Brookhaven National Laboratory.

The Administration would fund a new Energy Frontier Research Centers program at \$100 million per year which is designed to support innovative basic research to accelerate the scientific breakthroughs needed to create advanced energy technologies in the 21st century. The Office of Science will target specific areas of research for groups of investigators from universities, DOE laboratories and other institutions to propose research projects. Program awards would be from \$2 to \$5 million per year for an initial five-year period under the proposed initiative.

Advanced Scientific Computing Research

The FY 2009 budget request would provide \$368.8 million for Advanced Scientific Computing Research, which is \$17.6 million (5 percent) above the FY 2008 level. Within the request, \$11.9 million is proposed for a new joint Applied Mathematics-Computer Science Institute. The new Institute will focus on computing at extreme scales and next-generation networking. Funding continues for the National Energy Research Scientific Computer Center (NERSC) which supports over 2,500 users. A funding increase of \$1.8 million is proposed for SciDAC activities, and a new effort in cyber security for open science is proposed for \$3.5 million. The Energy Sciences Network

(ESnet) is supported, and the Leadership Computing Facilities (LCF) at Oak Ridge and Argonne National Laboratories would be increased by \$4.8 million in the budget request.

Fusion Energy Sciences

The FY 2009 budget request for Fusion Energy Sciences (FES) totals \$493 million, an increase of \$206.5 million (72.1 percent) as the Administration restores funding for U.S. participation in the International Thermonuclear Experimental Reactor (ITER) program. The budget would provide \$214.5 million for ITER, an increase of \$203.9 million above the FY 2008 level. The FY 2009 budget would also increase funding for a new cross-cutting DOE program in High Energy Density Laboratory Plasmas, requesting \$24.6 million, an increase of \$8.7 million above the FY 2008 level.

Workforce Development for Teachers and Scientists

Also within the Office of Science, \$13.6 million is requested to support educators participating in the Academies Creating Teacher Scientists program, an increase of \$4.2 million above the FY 2008 level.

Energy

A total of \$3.9 billion is requested for DOE programs to promote energy security through the development of reliable clean sources of energy and improvements in energy efficiency, an increase of \$136.7 million (3.6 percent) above the FY 2008 enacted funding level.

Energy Efficiency and Renewable Energy

A total of \$1.3 billion would be provided in the President's FY 2009 budget for Energy Efficiency and Renewable Energy (EERE) programs, a reduction of \$467 million (27.1 percent) below the FY 2008 enacted funding level. The downward trend in funding for these programs is associated with reductions in some of the ongoing research programs which Congress has increased in each of the last two years and with proposed termination of the Weatherization Assistance program (savings of \$227.2 million), elimination of Congressionally-earmarked projects (savings of \$186.7 million), and facilities construction (savings of \$62.2 million) for projects already funded.

Hydrogen Technology - The \$146.2 million proposed for hydrogen technology development is \$64.8 million (30.7 percent) below the FY 2008 enacted level. For FY 2009, the Administration proposes to realign the program to focus on the technology barriers to hydrogen storage and low-cost durable fuel cells and away from production and delivery activities.

Biomass and Biorefinery Systems R&D - The President proposes an increase of \$26.8 million (13.5 percent) for biomass and biorefinery systems for a total of \$225 million in FY 2009. These increases promote the President's Biofuels Initiative and his "Twenty in Ten" plan to make cellulosic ethanol cost competitive and reduce our dependence of foreign oil. The FY 2009 program would focus on fundamental research, development and demonstration through the biofuels supply chain. The budget will also support the three Bioenergy Research Centers and continue to invest in ten percent commercial-scale biorefinery demonstration programs.

Solar Energy - The budget would provide \$156.1 million for solar energy research, a proposed reduction of \$12.3 million (7.3 percent) below the current level. The emphasis of the solar program continues to be on accelerating the market competitiveness of solar electricity with a focus on photovoltaic manufacturing and systems integration challenges. The program will also focus on concentrating solar power technologies to serve intermediate power markets by 2015.

Wind Energy - The FY 2009 budget would provide \$52.5 million for wind energy R&D, an increase of \$3 million (6 percent) above the FY 2008 level. DOE continues to focus the program on accelerating the market use of wind energy by improving the technology and on removing barriers to wind energy in partnerships with the private sector. An increase of \$7.4 million is identified within the program to enhance collaboration with partners on the design of large wind turbine blade test facilities.

Geothermal Technology - The Administration proposes a \$10.2 million increase for the geothermal technology program requesting \$30 million for FY 2009. DOE has given the program a new mission to conduct R&D on Enhanced Geothermal Systems (EGS) to advance the technology to become economically competitive in the marketplace.

Water Power - Water Power is a relatively new addition to the renewable energy technology portfolio with the first funding being provided in FY 2007. The FY 2009 budget would provide \$3 million for this program, a reduction of \$6.9 million (nearly 70 percent) below the FY 2008 level. The Administration is developing a program roadmap and anticipates entering into Cooperative Research and Development Agreements (CRADAs) to advance technologies for water-based electric generation.

Vehicle Technologies - The proposed FY 2009 budget for Vehicle Technologies is \$221.1 million, an increase of \$8 million (3.8 percent) above the current level. The Administration continues its two government-industry partnerships – the FreedomCAR and Fuel Partnership (\$157.7 million of a \$238.9 million total program) and the 21st Century Truck Partnership (\$25.2 million). The FY 2009 budget also focuses on developing technologies for cost-effective plug-in hybrid vehicles.

Building Technologies - The \$123.8 million requested in FY 2009 for this program represents an increase of \$14.8 million (13.5 percent) above the FY 2008 level. The focus of Building Technologies will continue to be to develop and promote deployment of energy efficient homes and buildings. R&D will focus on improving efficiency in lighting (solid state lighting), appliances, heating and cooling systems, windows and other building materials.

Industrial Technologies - The proposed \$62.1 million for the Industrial Technologies program represents a reduction of \$2.3 million (3.6 percent) below the current level. The Administration highlights the successful completion of 450 energy savings assessments for industry to identify potential cost savings through energy efficient technologies.

Electricity Delivery and Energy Reliability

The Administration would enhance energy storage and renewable energy grid integration activities to help deploy renewable and other clean energy sources to generate electricity. The request of \$134 million represents a reduction of \$4.6 million (3.3 percent) below the current level, which is associated with the elimination of Congressionally-earmarked projects. Within the R&D program, DOE requests \$13.4 million for energy storage and power electronics, a doubling of the current effort. The budget would provide \$33.3 million, an increase of \$7.8 million, to renewable and distributed systems integration activities, including implementation of smart grid concepts.

Fossil Energy

The President's budget would provide \$1.1 billion for Fossil Energy programs, an overall increase of \$222.7 million (24.6 percent). The request for R&D of \$754 million represents a modest increase of \$11.2 million (1.5 percent).

As in previous budgets, the Administration proposes to terminate funding for natural gas technologies (savings of \$19.8 million) and for petroleum and oil technologies (savings of \$5 million) stating that these technologies are mature and can be further developed by private industry.

FutureGen - A significant focus of the coal research budget in FY 2009 is related to carbon capture and storage activities. A total of \$156 million is proposed for the FutureGen project which was designed to be the first zero emissions coal-fired power plant with capture and sequestration of carbon dioxide emissions. The request would more than double the program with a requested increase of \$81.7 million for FY 2009. The Administration notes that it is restructuring FutureGen to accelerate the commercial use of near-zero clean coal technologies by proposing multiple commercial demonstrations rather than construction of one plant.

Coal Research and Carbon Sequestration -The President's budget would also provide a significant increase of \$130.3 million for coal research for a total proposed program of \$623.7 million in FY 2009. The Clean Coal Power Initiative (CCPI) would receive \$85 million, an increase of \$15.7 million above the FY 2008 level. Also within the coal budget, a \$30.2 million increase is proposed for carbon sequestration activities for a requested program of \$149.1 million in FY 2009.

Clean Coal Technology - As in previous budgets, the Administration proposes to transfer prior-year balances for clean coal technology projects that have not been spent to the FutureGen and CCPI programs. The proposed transfer for FY 2009 is \$149 million in prior-year balances.

Other - As it proposed last year, the Administration intends to submit legislation to repeal the Ultra-Deepwater and Unconventional Natural Gas and Other Petroleum Research Fund under which mandatory federal revenues from oil and gas leases are provided for research.

Nuclear Energy

For civilian nuclear energy programs, the President's budget would provide \$853.6 million, a reduction of \$183.3 million (17.7 percent). The reduction is largely associated with the Administration's proposal to move the Mixed Oxide Fuel Fabrication Facility program to the DOE defense budget. For nuclear energy across the DOE complex, a total of \$1.4 billion is requested, an increase of \$385.5 million (37.3 percent).

The President's budget would put a significant emphasis on the development of nuclear energy to reduce the nation's dependence on foreign oil and address climate change. The Administration would provide \$629.7 million for nuclear energy R&D, an increase of \$371.1 million (143.5 percent) above the FY 2008 level. The Administration provides funding increases to maintain the schedule for the Nuclear Power 2010 program to design new nuclear power plants (\$107.8 million increase) and for the Advanced Fuel Cycle Initiative to develop technologies for less toxic and proliferation-resistant nuclear fuels (\$122.1 million increase).

More information regarding the DOE budget request for FY 2009 is available at: <http://www.mbe.doe.gov/budget/09budget/Content/Highlights/Highlight2009.pdf>.

Department of Homeland Security

The President's budget request would provide \$37.6 billion in appropriated funds for the Department of Homeland Security (DHS) in FY 2009, up \$2.4 billion or 6.9 percent over FY 2008 appropriations. As in the past several budget requests, the President request assumes additional new funding would be made available through a proposed increase in airline passenger security fees. This fee is unlikely to be enacted by Congress, and therefore the DHS appropriations process begins with a \$426 million discrepancy between proposed aviation security programs and available funding, which will squeeze support for other programs throughout the department.

Science and Technology Directorate

The DHS Science and Technology (S&T) Directorate would receive \$868.8 million in FY 2009, up \$38.7 million or 6.9 percent over the FY 2008 appropriated level. Increases are requested for the Explosives portfolio to support efforts to develop technologies to detect car bombs and suicide bombers and for the Borders and Maritime portfolio to meet customer needs in maritime security.

According to the DHS budget request, about 20 percent of the S&T Directorate's budget goes toward basic research in academia, industry and national laboratories that will eventually provide the technical solutions to meet DHS customers' need. DHS support for fundamental research includes work on areas unique to DHS (e.g. psychology of terrorism) and areas where DHS can leverage basic research investment of other government agencies (e.g. NSF).

University Programs

The University Programs account within the S&T Directorate would receive \$43.8 million in FY 2009, down \$5.5 million or 11.2 percent from the FY 2008 appropriated level. This account provides funding for the university-based DHS Centers of Excellence (COEs), a minority-serving institutions program, and educational programs that provide tuition and stipends to undergraduates, graduate students, and post-doctoral researchers.

The Centers of Excellence program would receive \$32.7 million in FY 2009, up \$0.5 million or 1.6 percent from the FY 2008 appropriated level. In FY 2009, DHS plans to continue support for existing centers, support the five Centers of Excellence to be awarded in FY 2008 (Explosives, Borders, Maritime, Natural Disasters, and Transportation), and award a new center in Command, Control and Interoperability, which will replace the existing Discrete Sciences Centers and the Regional Visualization and Analytics Centers.

The Educational Programs would receive \$6.5 million in FY 2009, down \$3.6 million or 35.9 percent from the FY 2008 appropriated level.

Research and Development Programs in the Domestic Nuclear Detection Office

The DHS Domestic Nuclear Detection Office (DNDO) has a variety of operational responsibilities related to designing a global strategy for preventing radiological or nuclear attacks and testing and supporting the deployment of equipment to detect radiological or nuclear material. In addition, DNDO supports research to improve relevant technological capabilities for radiological and nuclear detection.

The Transformational Research and Development account within DNDO would receive \$113.3 million in FY 2009, up \$17.3 million or 18 percent from the FY 2008 appropriated level. This account includes Advanced Technology Demonstrations, Exploratory Research, and an Academic Research Initiative (ARI). The ARI is executed in partnership with NSF; the FY 2008 solicitation was posted in January (http://nsf.gov/funding/pgm_summ.jsp?pims_id=503223).

The full DHS FY 2009 budget request is not available on line, but the Budget-in-Brief is posted at: http://www.dhs.gov/xlibrary/assets/budget_bib-fy2009.pdf.

National Oceanic and Atmospheric Administration

For FY 2009, the President proposes a budget of \$4.1 billion for the National Oceanic and Atmospheric Administration (NOAA). This amount is approximately \$200 million or 5.2 percent over the FY 2008 enacted level. However, it appears that the bulk of the proposed increase would be reserved for the Procurement, Acquisition and Construction (PAC) account. While the budget request includes \$1.2 billion (a 26.6 percent increase over the FY 2008 enacted level) for the PAC account, Operations, Research and Facilities (ORF) would take a 0.5 percent cut, with a request of \$2.9 billion for FY 2009.

The budget request states that its total requested program changes fall into two main categories—sustaining critical operations (including \$42 million in workforce salary increases and an additional \$242 million for the GOES-R program, among other things) and priority program changes. Requested program changes fall into four key areas:

- Supporting the President’s Ocean Initiative;
- Improving Weather Warnings and Forecasts;
- Climate Monitoring and Prediction; and
- Critical Facility Investment.

Below is a breakdown of the President’s funding request according to NOAA line office:

National Ocean Services (NOS)

The President’s budget requests \$488 million for the National Ocean Service (NOS), a 10 percent decrease from the FY 2008 enacted level. Within NOS, Navigation Services would receive \$149 million and Ocean Resources Conservation and Assessment would receive \$157 million. This includes \$10 million in new money for implementation of the interagency Ocean Research Priorities Plan, \$14.5 million for IOOS regional observations, \$5 million for the Gulf of Mexico Regional Collaboration (a small increase), \$20.2 million for the Coastal Services Center (a decrease of about \$3 million), \$48.5 million for the National Centers for Coastal Ocean Science (a decrease of about \$3 million), and \$98.7 million for coastal zone management (a \$5.8 million increase).

National Marine Fisheries Service (NMFS)

The President proposes a total of \$782 million (a decrease of about 6 percent from the FY 2008 enacted level) for the National Marine Fisheries Service (NMFS). Included in this total is \$167 million for Protected Species Research and Management (\$3.3 million increase), \$344 million for Fisheries Research and Management (\$17.6 million increase), \$89 million for Enforcement and Observers/Training (\$4 million increase), and \$43 million for Habitat Conservation and Restoration (\$6.8 million decrease).

NOAA Research – Office of Oceanic & Atmospheric Research (OAR)

Under the President’s request, OAR would receive \$382 million, a decrease of about 4 percent from the FY 2008 enacted level. Within OAR, Climate Research would receive \$195 million. This includes \$51.5 million for Laboratories and Cooperative Institutes (a \$2 million decrease) and \$134.7 million for the Competitive Research Program (an increase of \$4.6 million). In addition, the request would provide Weather and Air Quality Research with \$57.5 million (a \$5.5 million increase), including \$49 million for Laboratories and Cooperative Institutes, a \$3 million increase, and a small increase of \$70,000 for the Phased-Array Radar for a total budget of \$2.9 million.

Ocean, Coastal and Great Lakes Research would receive \$106.2 million in the President’s budget, a 22.6 percent cut from the FY 2008 level. Once again this year, the request seeks to merge the National Undersea Research Program (NURP) with Ocean Exploration into the Ocean Exploration and Research Program. The requested funding for the combined program is \$27.7 million for FY 2009, even with the President’s request for FY 2008.

This represents a 23 percent cut when taking into account the combined funds appropriated in FY 2008 for the separate NURP and Ocean Exploration programs. The President seeks to cut the National Sea Grant College Program by requesting a budget of \$55 million for the fourth consecutive year. This represents a cut of about 4 percent.

National Weather Service (NWS)

Once again, the President is seeking a budget increase for the National Weather Service (NWS) for FY 2009, with a request of \$930 million or 2 percent over FY 2008. Local Warnings and Forecasts base funding would receive \$601.8 million, an increase of about \$22.8 million over FY 2008. Within NWS, the budget proposes to zero-out USWRP/THORPEX and provide an 11 percent cut to the Cooperative Observer Network PAC account for a total proposed budget of \$3.7 million. In addition, the following programs would receive increases: Advanced Hydrological Prediction Services, \$6 million (1 percent); Aviation Weather, \$5.2 million (15.5 percent); Central Forecast Guidance, \$57.2 million (10 percent); AWIPS PAC account, \$19 million (53 percent); NEXRAD PAC account, \$8.3 million (2 percent); and the Radiosonde Replacement PAC account, \$4 million (2.5 percent).

National Environmental Satellite, Data and Information Service (NESDIS)

The budget request would provide \$1.1 billion for NESDIS, \$992 million of which is slated for the PAC account (an increase of 28 percent over FY 2008). In addition, the request would provide \$111 million, a 9.5 percent increase, for Environmental Satellite Observing Systems within the ORF account. However, NOAA's Data Centers and Information Services would receive a cut of 45 percent for a total budget of \$53.5 million, while the National Polar-orbiting Operational Environmental Satellite System (NPOESS) budget would be cut to \$287.9 million, or about 43 percent. The budget summary states that the adjustment to the NPOESS budget will bring it "into alignment with the DoD's certified Nunn-McCurdy program estimate" and will be used to "continue the development and production of the NPOESS spacecraft and instruments."

NOAA Education Program

The budget request includes \$16.5 million for the NOAA Education Program, which is \$17.5 million less than the FY 2008 appropriated amount. This significant cut appears to be due to the proposed elimination of a number of education programs and projects within the account. However, the budget states that the amount requested represents an actual net increase of \$336,000 above base funding for the Education Program. In particular, the budget proposal would provide \$1 million for Competitive Education Grants and for the continuation of the NOAA Educational Plan. The Education Partnership Program (EPP) would receive \$14.2 million, a 2 percent increase.

The NOAA FY 2009 Budget Blue Book can be accessed here:

http://www.corporateservices.noaa.gov/~nbo/09bluebook_highlights.html

National Institute of Standards and Technology

The National Institutes of Standards and Technology (NIST), housed within the Department of Commerce, would receive \$638 million in the FY 2009 budget request, a decrease of \$117.9 million or 15.6 percent below the FY 2008 appropriated level. This decrease reflects the fact that the President is not requesting funding for \$52.2 million of earmarks and \$180.9 million for competitive programs Congress added to the FY 2008 NIST appropriations. The President's request focuses on the "NIST Core," which includes NIST's internal laboratories and construction projects at those laboratories. The NIST Core would receive \$634 million in the FY 2009 budget request, an increase of \$115.2 million or 22.2 percent above the FY 2008 appropriated level.

NIST's Scientific and Technical Research Services (STRS) would receive \$535 million, an increase of \$94.5 million above the FY 2008 appropriated level. The Construction of Research Facilities (CRF) account would receive \$99 million, a decrease of \$61.5 million below the FY 2008 appropriated level, but \$19.9 million above FY 2008 spending when the Congressionally-added earmarks and university facilities grant program are removed.

The NIST budget request includes fourteen initiatives; four new initiatives and 10 from its FY 2008 budget request, most of which went unfunded in the final appropriations. Among the new initiatives is work on standards and measurements for cybersecurity, biosciences, and nanotechnology environment, health and safety. Initiatives from FY 2008 include work on standards and measurements for climate change science, nanomanufacturing, and earthquake reduction.

The Administration is not supportive of the idea of NIST providing funding to external groups (businesses or universities), and, as in past budget requests, the President in his FY 2009 request would not provide funding for NIST's Industrial Technological Services account, which contains the Technology Innovation Program (TIP) and the Hollings Manufacturing Extension Partnership (MEP). Specifically, the request would completely eliminate TIP, funded at \$65.2 million in FY 2008, and would reduce MEP to \$4 million, \$85.6 million or 95.5 percent below the FY 2008 level. This funding would only be provided to assist in phasing out federal support for MEP in FY 2009.

In previous years, despite small or zero requests for MEP and for the Advanced Technology Program, the predecessor to TIP, Congress has included funding for these programs in the final appropriations bills, and support for these programs continues to be strong on Capitol Hill. TIP is a new program created in the America COMPETES Act in August 2007. Under TIP, universities will be allowed to lead joint ventures with small and medium-sized businesses to perform research on potentially revolutionary technologies that address critical national and societal needs.

Information about the NIST budget request is available at:

http://www.nist.gov/public_affairs/releases/budget_2009.htm

http://www.nist.gov/public_affairs/releases/approps-summary2009.htm

U.S. Geological Survey

The U.S. Geological Survey (USGS) would receive \$968.5 million in the President's FY 2009 budget request for the Department of Interior. The request is \$37.9 million (3.7 percent) below the FY 2008 enacted level.

As in past years, the President's budget would eliminate funding for the USGS Water Resources Research Institutes program and a large portion of the Mineral Resources Program. New in the FY 2009 budget would be proposed decreases to the Geologic Hazards, Resources, and Processes account, including a decrease of \$3 million for earthquake grants, "...to offset other higher-priority USGS programs".

Initiatives

Healthy Lands Initiative

The Healthy Lands Initiative would receive \$5 million, a \$3.5 million (237 percent) increase above the FY 2008 enacted level. Now in its second year, this multi-bureau initiative based in southwest Wyoming would help the USGS develop scientific information, knowledge, and tools to ensure that future decisions regarding land and resource use, management practices, and energy development are based on understanding of the relationships of biological resources to physical changes.

Ocean and Coastal Frontiers Initiative

The Ocean and Coastal Frontiers Initiative would receive \$16.1 million, an increase of \$7 million (76.9 percent) above the FY 2008 enacted level. This proposed increase is to complete work USGS began in 2008 on the U.S. Ocean Action Plan.

Birds Forever Initiative

As part of a larger effort proposed by the U.S. Fish and Wildlife Service, the FY 2009 USGS budget would provide \$1.25 million, a \$1 million (400 percent) increase for the Birds Forever Initiative, to increase monitoring and surveillance of migratory birds.

Water for America Initiative

USGS would receive \$29.9 million, an \$8.2 million (37.8 percent) increase for the USGS to conduct a nationwide assessment of water availability, water quality, and human and environmental use. The funding would also be used to upgrade streamgages. The Water for America Initiative is part of a larger effort with the Bureau of Reclamation.

Geography

The President's budget would provide a total of \$73.1 million to support land remote sensing and geographic research, an overall decrease of \$4.6 million (5.9 percent) below the FY 2008 enacted level.

Geologic Hazards, Resources, and Processes

Geologic Hazards, Resources, and Processes would receive \$208 million, \$35.5 million (14.6 percent) below the FY 2008 enacted level.

The reductions come in Geologic Resource Assessment activities where the Administration again proposes a huge decrease of \$24.6 million from the Minerals Resources Program. The budget would also eliminate the Earth Surface Dynamics program for a savings of \$13.3 million.

Earthquake hazards would be funded at \$49.1 million, \$4.6 million (8.6 percent) below the FY 2008 enacted level. The Advanced National Seismic System (ANSS) would be flat-funded again for the fourth year in a row at \$8.06 million. As stated above, funding for earthquake grants would be cut in half, leaving only \$3 million for grants in FY 2009.

Water Resources Investigations

The FY 2009 budget request would provide a total of \$203 million for USGS water resources investigations, a decrease of \$17.5 million (7.9 percent) below the FY 2008 enacted level.

The budget request would provide an increase of \$3.7 million for the National Streamflow Information Program and \$2.7 million for the Ground-Water Resources Program, both as part of the Water for America Initiative.

As in previous years (and in previous Administrations), the FY 2009 budget request would eliminate funding for the 54 Water Resources Research Institutes for a savings of \$6.3 million.

Biological Research

The overall request for Biological Research activities is \$180.3 million, an increase of \$458,000 (0.3 percent) above the FY 2008 enacted level. The Biological Research and Monitoring program would gain an increase of \$4.1 million.

A \$2.9 million reduction is proposed for the National Biological Information Infrastructure (NBII) program, leaving \$19.6 million for Biological Information Management and Delivery. Cooperative Research Units would be supported at \$15.4 million, a decrease of \$764,000.

Enterprise Information

This program would be funded at \$112.1 million, an increase of \$1.8 million (1.6 percent) above the FY 2008 enacted level.

Global Change

For FY 2009 the USGS would consolidate climate change science work distributed among four USGS disciplines into the Global Change activity account. The FY 2009 budget request would support Global Change activities at \$26.6 million, an increase of \$19.2 million (260 percent) above the FY 2008 enacted level for climate change related activities.

Science Support

The President's request would provide \$67.2 million for Science Support, an increase of \$33,000 (.05 percent) above the FY 2008 enacted level.

Facilities

Facilities would be supported at \$98.1 million, a decrease of \$1.8 million (1.8 percent) below the FY 2008 enacted level.

More information regarding the USGS budget request for FY 2009 is available at:

<http://www.usgs.gov/budget/2009/2009index.asp>

Environmental Protection Agency

For FY 2009, the President's budget requests a total of \$7.1 billion for the Environmental Protection Agency. This is a decrease of \$330 million or about 5 percent below the FY 2008 enacted level. The EPA budget is divided into five goal areas and would be funded as follows:

- Clean Air and Global Climate Change – \$938 million, a 3.5 percent decrease;
- Clean and Safe Water – \$2.5 billion, a 10.6 percent decrease;
- Land Preservation and Restoration – \$1.7 billion, less than one percent increase;
- Healthy Communities and Ecosystems – \$1.2 billion, a 3 percent decrease; and
- Compliance and Environmental Stewardship – \$751 million, a 2.3 percent increase.

For the science and technology account, which is the account that funds grants and cooperative agreements with the extramural research community, the budget request would provide \$763 million, which is an estimated decrease of about \$9 million or 1 percent below the FY 2008 enacted level.

The budget states that within the Clean and Safe Water goal it would support the “continuing efforts of all 28 National Estuary Program estuaries to implement their Comprehensive Conservation and Management Plans.” As well, the budget would continue support for ecosystem management and partnership collaboration through the three Great Waterbody programs – Great Lakes, Chesapeake Bay, and Gulf of Mexico. No specific mention is made of funding for extramural research grant programs, such as the Science to Achieve Results (STAR) program, or specific funding recommendations for the Office of Research and Development or the Office of Water.

The EPA FY 2009 Budget-in-Brief document can be access here:

<http://www.epa.gov/ocfo/budget/2009/2009bib.pdf>.

Interagency Programs

National Nanotechnology Initiative

Between FY 2001 and FY 2006, spending on federal nanotechnology R&D nearly tripled, rising from \$464 million in FY 2001 to \$1.3 billion in FY 2006, but program funding has flattened out over the past three years. The FY 2009 budget request would provide an estimated \$1.5 billion for the program across 11 agencies, an increase of \$35 million, or 2.3 percent, from the estimated FY 2008 level.

Among individual agencies, the Environmental Protection Agency (EPA) would receive a significant increase (up \$4.5 million above FY 2008 to a total of \$14.9 million) for nanotechnology research to better understand the processes that govern the environmental fate of nanomaterials and to capture the data needed for accurate nanomaterial assessments. As part of the American Competitiveness Initiative, increases would be provided for nanotechnology at DOE and NIST, but funding for nanotechnology at NSF would be relatively flat. Funding at DOD would drop, but that reflects in part the Administration's removal of earmarks from the budget request.

Networking and Information Technology Research and Development Program

The Networking and Information Technology Research and Development (NITRD) Program is an interagency program coordinating information technology (IT) R&D across 12 agencies. Areas of emphasis include high-end computing systems and software, cybersecurity and information assurance, networking, software design, and human-computer interaction. Information technology research has played a critical role in U.S. economic strength over the past several decades, and consistent with the President's prioritization of areas that impact U.S. competitiveness, the budget request would provide \$3.6 billion for NITRD programs in FY 2009, a 5.8 percent increase over the estimated FY 2008 level. A significant part of that increase would be designated for increased work in NSF and the DOE Office of Science. Particular areas of focus in FY 2009 would be high-performance computing, particularly software to take advantage of powerful new supercomputer architectures, and cybersecurity and networking research in support of making the Internet more secure and reliable. In particular, NSF, DOE Office of Science, and NIST would all participate in a new interagency Comprehensive National Cybersecurity Initiative, which includes operational and research cybersecurity activities.

Climate Change Science Program

The FY 2009 budget would provide \$2 billion for the interagency Climate Change Science Program (CCSP), an increase of \$177 million, or 9.6 percent, from the estimated FY 2008 level. The majority of the increase (\$126 million) would be at NASA, reflecting the 6.8 percent increase that is proposed for NASA Earth Sciences in FY 2009.