

**To: DEMOCRATIC MEMBERS, Science Committee**  
**From: Science Committee Democratic Staff**  
**Subject: Background for February 16<sup>th</sup> Hearing on the President's FY2006 Budget Request for R&D**  
**Date: February 15, 2005**

**Summary: Failings of the President's FY 2006 Science and Technology Submission**

You have read reports where Republicans state that this budget is "pretty good" under the circumstances and "it could have been worse." The circumstances forcing bad budgets on America - expensive tax cuts, growing costs of war and ballooning Medicaid drug benefits - are of the Administration's own making. But the consequence is that investments in the nation's economic future would be cut under this budget request. The Administration's proposed budget would cut Federal science and technology funding by 1.4%, down \$877 million, to \$60.8 billion. Thus, the Administration's FY2006 science research message is essentially the same as last year, only worse. It is fair to assume that next year's request will be worse still, and on and on due to the enormous deficits run by the Bush Administration.

Science Committee Democrats are very concerned that this country must take steps to protect our investments in science and technology in order to maintain the level of research necessary to safeguard our nation's economic future. Economic growth requires productivity increases and those, in turn, are driven largely by new technologies and skills. If we are unwilling to make investments to optimize our productivity growth, we are settling for a dimmer economic future. Our global position hinges upon our ability to lead in science and technology.

In the analysis that follows, we have compiled a list of ways the Administration has tried to make this budget look less bad. Then we turn to agency-by-agency details of the budget for those appearing before the Science Committee at the Wednesday, February 16<sup>th</sup> and Thursday, February, 17<sup>th</sup> budget hearings and for most other agencies under science committee jurisdiction. We hope this memo will allow you to see through the budget numbers game played by the Administration to the real numbers for science funding, and underscore that this budget is not the best that our country can manage even under the current fiscal circumstances.

## I. The Administration Budget Shell Game

***The Request Cuts Science Funding*** - The Administration will brag about an increase for R&D spending in 2006, but the increase is merely 0.56% (they will round to 1%) which is less than the 2% expected rate of inflation. So, in real spending power, Federal R&D funding would decline. Moreover, nearly all of the increase is targeted for weapons development. If you look to the “Federal S&T budget,” which eliminates weapons development from the equation, the Federal research investment **decreases** by 1.4% in the request. Government-wide funding for basic research would decrease by 1.2% and funding for applied research would decrease by \$3 million. Note the numbers below do not take into account the 2% expected rate of inflation; so in real terms the cuts are steeper than the numbers indicate.

**TABLE 1: Science Funding**  
Budget Authority in Millions  
Parentheses indicate negative numbers  
These numbers are not additive

	FY2004 Actual	FY2005 Estimate	FY2006 Request	Dollar Change: FY2005 to FY2006 Request	Percent Change: FY2005 to FY2006 Request
<b>Federal R&amp;D Budget</b>	125,338	131,571	132,304	733	0.56%
<b>Federal R&amp;D Basic Research</b>	26,588	26,928	26,608	(320)	(1.19%)
<b>Federal R&amp;D Applied Research</b>	27,838	28,235	28,232	(3)	(0.01%)
<b>Federal S&amp;T Budget</b>	60,565	61,696	60,819	(877)	(1.42%)

***The President’s Analysis Uses Highly Selective or Inaccurate Numbers*** - There is barely a number in the President’s R&D pitch that should not be questioned. For example, they still claim that “not since 1968 and the Apollo program have we seen an investment in science of this magnitude.” While R&D as a percent of discretionary spending (about 14%) is relatively high in historic terms, the elevated levels are due to defense development, not science. More importantly, Federal R&D as a percentage of GDP is near a 50-year low.

***Tricky Accounting Is Used to Inflate Miniscule Increases in Agency Budgets*** - At NIST, although the Administration is touting a 12.5% increase for NIST lab funding, the request does not include a \$71.2 million close-out cost liability for its proposal to eliminate the Advanced Technology Program (ATP). These costs would eradicate the \$65.7 million proposed increase in the lab account and new construction funding and still require further agency cuts. At NSF, the research numbers are fluffed up by an accounting change; thus, a 2.4% increase is really only a 1.5% real increase - significantly below the projected rate of inflation.

**The Budget Does Not Deal Well with the Challenge of Job Creation** - The single best government program to provide immediate help to U.S. manufacturers - the Manufacturing Extension Program - is severely slashed AGAIN. The Advanced Technology Program is eliminated. Both of these programs have widespread Congressional and private sector support for helping in job creation and helping to reduce the loss of jobs overseas.

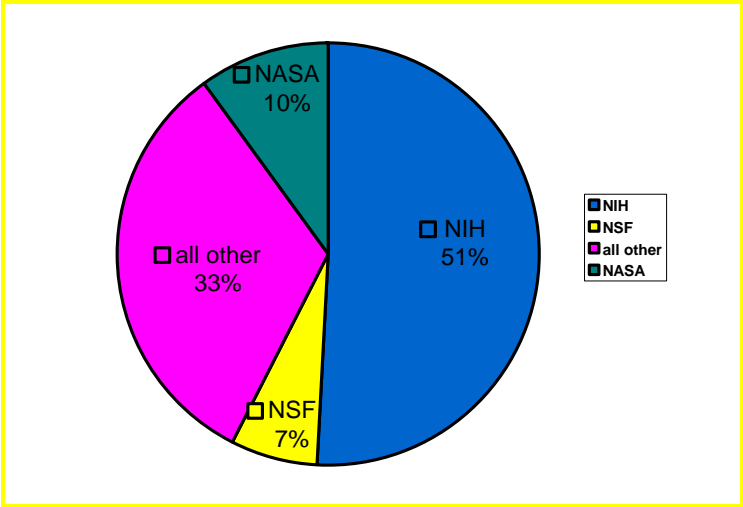
**The Administration Treats Congressional Earmarks Hypocritically** - The Administration decries R&D earmarks but does nothing (e.g., requiring competition) to lessen their impact. Furthermore, when it suits the Administration to count earmarks (e.g., when calculating budget increases from 2001-2005), they do so. When it doesn't suit them to count earmarks (e.g., when claiming that one of their budget cuts isn't a real cut when the earmarks are left off), they don't.

**The Administration Hasn't Followed Through On Its Commitments** - Three years ago, the President signed an authorization bill doubling NSF funding over five years. The requests for NSF since the signing ceremony have been anemic - they would produce a doubling in about 25 years. As a result NSF is \$5.8 billion behind its target funding. The balance between the physical sciences and health sciences remains highly skewed. In 2002, this Administration signed a bill to correct that imbalance but the Administration has failed to follow through on that obligation.

**Table 2:**  
**Balance between NIH and the rest of the sciences:**

(Budget Authority in Millions)  
Negative numbers in parentheses

<u>By Agency</u>	FY2004 Actual	FY2005 Estimate	FY2006 Request	Dollar Change: 2005 to 2006	Percent Change: 2005 to 2006
Basic and Applied Research	54,426	55,163	54,840	(323)	(0.6%)
-minus NIH	27,526	27,660	27,019	(641)	(2.3%)



**Table 3:**  
**Federal Research and Development (R&D) Spending Details**

(Budget Authority in Millions)  
Negative numbers in parentheses

<b>By Agency</b>	<b>FY2003 Actual</b>	<b>FY2004 Actual</b>	<b>FY2005 Request</b>	<b>FY2005 Estimate</b>	<b>FY2006 Request</b>	<b>Dollar Change: 2005 to 2006</b>	<b>Percent Change: 2005 to 2006</b>
<b>Defense</b>	58,838	65,462	69,856	70,422	70,839	417	0.6%
<b>Health and Human Services</b>	27,411	28,047	29,381	28,752	28,807	55	0.2%
<b>NASA</b>	10,681	10,574	11,308	10,990	11,527	537	4.9%
<b>Energy</b>	8,312	8,779	8,893	8,629	8,528	(101)	(1.2%)
<b>National Science Foundation</b>	3,972	4,160	4,252	4,082	4,194	112	2.7%
<b>Agriculture</b>	2,334	2,222	2,105	2,415	2,039	(376)	(15.6%)
<b>Homeland Security</b>	737	1,053	1,216	1,185	1,467	282	23.8%
<b>Commerce</b>	1,200	1,137	1,075	1,134	1,013	(121)	(10.7%)
<b>Transportation</b>	701	661	748	748	808	60	8.0%
<b>Veterans Affairs</b>	819	866	772	784	786	2	0.3%
<b>Interior</b>	643	627	648	615	582	(33)	(5.4%)
<b>Environmental Protection Agency</b>	568	661	577	572	569	(3)	(0.5%)
<b>Other</b>	1,223	1,089	1,034	1,243	1,145	(98)	(7.9%)
<b>Total</b>	<b>117,439</b>	<b>125,338</b>	<b>131,865</b>	<b>131,571</b>	<b>132,304</b>	<b>733</b>	<b>0.6%</b>
<b>Subtotals By Area</b>							
<b>Subtotals By Area</b>	<b>2003 Actual</b>	<b>2004 Actual</b>	<b>2005 Request</b>	<b>2005 Estimate</b>	<b>2006 Request</b>	<b>Dollar Change: 2005 to 2006</b>	<b>Percent Change: 2005 to 2006</b>
<b>Basic Research</b>	<b>25,306</b>	<b>26,588</b>	<b>26,847</b>	<b>26,928</b>	<b>26,608</b>	<b>(320)</b>	<b>(1.2%)</b>
<b>Applied Research</b>	<b>26,624</b>	<b>27,838</b>	<b>28,494</b>	<b>28,235</b>	<b>28,232</b>	<b>(3)</b>	<b>0.0%</b>
<b>Development</b>	<b>59,983</b>	<b>66,535</b>	<b>71,729</b>	<b>71,425</b>	<b>72,666</b>	<b>1,241</b>	<b>1.7%</b>
<b>Facilities and Equipment</b>	<b>5,526</b>	<b>4,377</b>	<b>4,796</b>	<b>4,983</b>	<b>4,798</b>	<b>(185)</b>	<b>(3.7%)</b>
<b>“Federal S&amp;T Budget”</b>	<b>56,974</b>	<b>60,565</b>	<b>60,413</b>	<b>61,696</b>	<b>60,819</b>	<b>(877)</b>	<b>(1.4%)</b>

**II. Budget Details by Agency -**  
**NIST, NOAA, NSF, NASA, DOE, DHS, OSTP, FAA**

Below we give a detailed analysis of the FY2006 Budget as it pertains to most areas of the Science Committee's jurisdiction.

For an additional resource, Kei Koizumi of the American Association for the Advancement of Science (AAAS) has an excellent analysis of the FY2006 R&D budget. The AAAS analysis can be accessed at:

<http://www.aaas.org/spp/rd/prel06p.htm>

**A. NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST)**

**Overview**

The overall FY06 budget request is a 23.9% decrease from FY05 appropriated levels. The major causes of this budget decrease are the elimination of ATP funding (eliminates \$140.4 million) and a 56.5% cut to MEP (reduction of \$60.7 million).

**TABLE 4: NIST Funding**

(Budget Authority in Millions)  
 Negative numbers in parentheses

<b>NIST Programs</b>	<b>FY2003 Actual</b>	<b>FY2004 Actual</b>	<b>FY2005 Request</b>	<b>FY2005 Estimate</b>	<b>FY2006 Request</b>	<b>Dollar Change: 2005 to 2006</b>	<b>Percent Change: 2005 to 2006</b>
<b>Laboratories</b>	357.1	337.2	422.9	378.8	426.3	47.5	12.5%
<b>Construction</b>	65.7	65	59.4	72.5	58.9	(13.6)	(18.8%)
<b>Advanced Technology Program (ATP)</b>	178.8	179.2	0	140.4	0.0	(140.4)	(100.0%)
<b>Manufacturing Extension Partnership Program (MEP)</b>	105.9	39.6	39.2	107.5	46.8	(60.7)	(56.5%)
<b>TOTAL</b>	<b>707.5</b>	<b>621</b>	<b>521.5</b>	<b>699.2</b>	<b>532</b>	<b>(167.2)</b>	<b>(23.9%)</b>

**FY2006 NIST Budget Request Summary**

Laboratories Account

Although the Administration is touting a 12.5% increase for NIST lab funding, the request does not include close-out costs for the Advanced Technology Program (ATP). New Initiatives included in this increase are: 1) Advances in Manufacturing (\$19.6 million), 2) Measurements and Standards for Homeland

Security (\$3.0 million) and 3) New Measurement for the U.S. Economy and Science (\$17.195 million).

#### Construction Account

The construction account is lower than last year's appropriated amount because the appropriation included \$43.5 million for un-related NIST activities. The FY06 request allows for maintenance of existing facilities and provides for \$19.9 million for construction at the Boulder Facility and \$4.0 million for construction at the Gaithersburg Facility.

#### Advanced Technology Program (ATP)

The Administration proposes (again) to eliminate ATP funding. Other than its analysis rating the program as "adequate," the Administration does not provide justification for this termination. The Administration's budget request does not include associated ATP close-out costs, which are significant. These include employment termination (\$12 - \$18 million), transfer of ATP funds to the lab (\$13 million) and funding of existing ATP awards (\$43.2 million). This is a total liability of \$71.2 million (Though the Administration is not legally obligated to fund existing ATP projects, when asked, they have indicated they will not terminate projects' funding.) The ATP close-out costs more than make up for the increase in the lab account and new construction funding - \$65.7 million.

#### Manufacturing Extension Partnership (MEP)

The Administration proposes cutting MEP funding by 56.5% to \$46.8 million. They claim this would allow for maintaining "a national network of centers. The Administration has claimed that States and additional fee-based MEP services will make up the difference. However, the Administration has admitted that they have not consulted with States about this point. This would gut the program, providing less than half of what is required to maintain the existing network of MEP Centers (\$92 million). The FY06 request sets aside \$7.5 million for overhead and oversight of the MEP network which would leave \$39.3 million for actual grants to the MEP Centers - less than half of what is required to maintain a fully operational national network of MEP Centers. At this funding level, it is likely some Centers would have to be closed and the current structure significantly altered.

### **B. NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)**

#### **Overview**

The overall FY2006 NOAA budget is reduced by over 8 percent from the 2005 enacted levels. The Administration's budget includes \$650 million in terminated expenses. A portion of this funding was then used to restore or increase spending on Administration priorities, bringing their budget request to \$3.7 billion. Once again, the Administration's budget proposal puts the burden on Congress to restore funding for Agency programs. The additions to the Weather Service

budget and the satellite budget are too little to compensate for the severe reductions in research, operations, conservation, and management programs in the other line offices of the Agency.

**TABLE 5: NOAA Funding**

(Budget Authority in Millions)  
Negative numbers in parentheses

<b>NOAA Programs</b>	<b>FY2004 Actual</b>	<b>FY2005 Estimate</b>	<b>FY2006 Request</b>	<b>Dollar Change: 2005 to 2006</b>	<b>Percent Change: 2005 to 2006</b>
<b>National Weather Service</b>	824.9	783	839.3	56.3	7.2%
<b>Oceanic &amp; Atmospheric Research</b>	414.6	413.8	372.2	(41.6)	(10%)
<b>National Environmental Satellite, Data, and Information Service</b>	827.1	907.4	963.9	56.4	6.2%
<b>Program Planning &amp; Integration</b>	2	2.5	2	(0.5)	(18.7%)
<b>Program Support</b>	356.5	446.7	396.2	(50.5)	(11.3%)
<b>National Ocean Service*</b>	605.3	669.3	414.7	(254.5)	(38.0%)
<b>National Marine Fisheries Service**</b>	758.1	823.6	727.9	(95.8)	(11.6%)
<b>TOTAL</b>	<b>3,788.50</b>	<b>4,046.30</b>	<b>3,716.20</b>	<b>(330.1)</b>	<b>(8.2%)</b>

\* NOS programs are shared jurisdiction with the Resources Committee or not within the jurisdiction of the Committee on Science.

\*\* NMFS is solely within the jurisdiction of the Resources Committee

### **FY2006 NOAA Budget Request Summary**

#### National Weather Service (NWS):

The request for NWS is one of the bright spots in the budget with an increase of 7 percent. The \$56 million increase includes \$41 million for programs and \$15 million in procurement and construction costs. However, the two biggest items of this increase are accounted for by \$18 million to cover pay raises and inflation and by the transfer of funding from other line offices in NOAA to NWS (\$11 million). This leaves a programmatic increase of \$12 million dollars. A portion of



this increase funds the expansion of the tsunami warning system as proposed by the Administration last month.

However, even with respect to the tsunami warning system, the increases are offset by some decreases to this same program. The Tsunami Hazard Mitigation Fund received \$4.2 million dollars in FY05. The President's request includes \$2.3 million for this fund. These funds pay for inundation mapping and other programs to assist states and local communities with preparedness. The request also eliminates \$2 million in funding for the Tsunami Warning and Environmental Observations for Alaska. The \$5.97 million increase for the tsunami warning system includes funds to staff the warning center on a 24/7 schedule, to maintain the existing buoys and to fund the placement of the new buoys. The tsunami warning system receives \$3.53 million in procurement funds for the purchase of additional buoys. When all of these additions and cuts are put together, the tsunami warning system receives an increase of \$5.5 million, not the \$9.5 million advertised.

#### Oceanic and Atmospheric Research:

The Office of Oceanic and Atmospheric Research contains most of the research programs at NOAA. This office receives a cut of \$42 million below the FY05 enacted levels, a ten percent reduction. This reduction in OAR programs is higher than \$42 million because OAR nets an additional \$11.2 million through the transfer of an education program from the Program Support line to OAR.

The United States Commission on Ocean Policy's Report recommends that Congress double the Federal ocean and coastal research budget over the next five years. In response, the Administration's budget cut the Ocean, Coastal, and Great Lakes Research account from \$147 million to \$119 million, a 19 percent reduction.

The President's budget continues funding for Climate Research at a level similar to this year. Weather and air quality research declines by \$13 million dollars (25% reduction).

#### National Environmental Satellite Data and Information Service (NESDIS):

The NESDIS budget is dominated by the satellite procurement programs: the Geostationary Operational Environmental Satellite (GOES), the Polar Orbiting Environmental Satellite (POES), and the National Polar-orbiting Operational Environmental Satellite System (NPOESS). The multi-year design, construction, and launch schedules for these satellites determine most of the increases and decreases of this account.

In FY06, the procurement schedule for these satellite systems results in an increase in the NESDIS budget of \$76 million over the FY05 enacted level. These increases in the NESDIS budget are offset by reductions in spending of \$21 million for NOAA's data centers and information services. NOAA is

responsible for collecting, processing, disseminating and archiving all data collected through its satellites and other environmental monitoring networks.

This function has been chronically under-funded. Without these services the data gathered through the satellites and other observing networks is unavailable for operations or research. If we cannot adequately fund the data services needed for today's satellites and observing networks, it is questionable that we will be able to utilize data from any new networks or enhanced satellite systems under development.

### **C. NATIONAL SCIENCE FOUNDATION (NSF)**

#### **Overview**

Overall, the FY 2006 budget growth is below inflation and well below the 15% annual increase needed to meet the 5-year budget doubling called for in the NSF authorization statute. Three fiscal years after the NSF authorization was enacted, the cumulative shortfall from the doubling goal has reached \$5.8 billion.

The President's FY 2006 budget proposal for NSF is \$5.61 billion, which is \$132 million, or 2.4%, above the FY 2005 appropriations level and \$2.91 billion, or 34%, below the FY 2006 level authorized in P.L. 107-368 (see table below). The actual budget increase is 1.5% because \$48 million of the \$132 million increase is to reimburse the Coast Guard for the use of icebreakers to support research in polar regions. Previously, most of these costs were in the Coast Guard budget, so this budget increase does not provide for new activities at NSF. Most of the actual budget increase goes for mortgages on ongoing large research facility construction projects and for improvement of internal operations at NSF, leaving only an increase of 0.3% for research project support. Distressingly, K-12 education programs continue to be devastated; down another 24% from last year [down \$150 million from FY 04 (-43%)].

**TABLE 6: NSF Funding**

(Budget Authority in Millions)  
 Negative numbers in parentheses

<b>NSF Programs</b>	<b>FY2003 Actual</b>	<b>FY2004 Actual</b>	<b>FY2005 Request</b>	<b>FY2005 Estimate</b>	<b>Authorization FY2006*</b>	<b>FY2006 Request</b>	<b>Dollar Change: 2005 to 2006</b>	<b>Percent Change: 2005 to 2006</b>
<b>Research – Total</b>	4054.4	4293.3	4452.3	4220.6		4333.5	112.9	2.7%
<b>Education</b>	934.9	944.1	771.4	841.4		737	(104.4)	(12.4%)
<b>Major Research Equip. &amp; Facilities Construction</b>	179.0	184.0	213.3	173.6		250.0	76.4	44%
<b>Salaries &amp; Expenses</b>	189.4	218.9	294.0	223.2		269.0	45.8	20.5%
<b>Inspector General</b>	8.7	9.5	10.1	10.0		11.5	1.5	15%
<b>National Science Board</b>	2.9	2.2	4.0	4.0		4.0	0.0	0.0%
<b>Total</b>	<b>5369.3</b>	<b>5652.0</b>	<b>5745.0</b>	<b>5472.8</b>	<b>8519.8</b>	<b>5605.0</b>	<b>132.2</b>	<b>2.4%</b>

\* no funding levels were designated for subcategories for FY 06 by P.L. 107-368

Major features of the budget proposal:

- The assumption of costs for operation of Coast Guard icebreakers (\$48 million) cuts into the announced budget increase, reducing the effective increase to 1.5%.
- No real growth (+0.3%) for research project support.
- Continued phase out of the K-12 Math and Science Partnerships (MSP) program (-\$20 million) and additional cuts (-23%) to the K-12 activities in the education directorate. The cuts to K-12 programs are in addition to cuts totaling \$90 million (-25%) between FY 2004 and FY 2005. Between the year of initiation of the MSP program, FY 2002, and the FY 2006 request, total funding for K-12 programs would drop by \$176 million, or by -47%.
- Addition of \$76 million (+44%) to continue funding (including ramp-up funding for two projects initiated in FY 2005) for 5 major research facilities construction projects.
- Addition of \$46 million (+20%) for personnel support and information technology infrastructure at NSF.

#### Research Programs

For the research accounts, the request totals \$112.9 million (+2.7%) above the FY 2005 appropriations level:

**TABLE 7: NSF Research Program Funding**

(Budget Authority in Millions)  
 Negative numbers in parentheses

<b>NSF Programs</b>	<b>FY2004 Actual</b>	<b>FY2005 Estimate</b>	<b>FY2006 Request</b>	<b>Dollar Change: FY2005 to FY2006</b>	<b>Percent Change: FY2005 to FY2006</b>
<b>Biological Sciences</b>	587.0	576.6	581.8	5.2	0.9%
<b>CISE</b>	605.4	613.7	620.6	6.8	1.1%
<b>Engineering</b>	565.6	561.3	580.7	19.4	3.5%
<b>Geosciences</b>	713.4	694.2	709.1	14.9	2.2%
<b>Math &amp; Physical Sciences</b>	1091.6	1069.9	1086.2	16.4	1.5%
<b>Social, Behavioral &amp; Economic Sciences</b>	184.3	196.9	198.8	1.9	1.0%
<b>Office of International S&amp;E</b>	40.8	33.7	34.5	0.8	2.3%
<b>U.S. Polar Research Programs</b>	274.2	276.8	319.4	42.6	15.4%
<b>U.S. Antarctic Logistical Support Activities</b>	67.5	67.5	67.5	0.0	0.0%
<b>Integrative Activities</b>	163.5	129.9	134.9	5.0	3.8%
<b>Total, Research and Related Activities</b>	<b>4293.3</b>	<b>4220.6</b>	<b>4333.5</b>	<b>112.9</b>	<b>2.7</b>

Of the \$113 million increase, \$48 million is for assuming costs for the operation of Coast Guard icebreakers to support scientific programs in polar regions. The remaining funds provide small increases (all below the inflation rate, except for Engineering) for the scientific directorates. The budget description indicates efforts will be made to increase award success rate, which has dropped to 20%. But the total increase proposed for research project awards is only 0.3%.

For major research initiatives: National Nanotechnology Initiative, +1.6% (\$3.344 billion); Networking and Information Technology Research and Development +1% (\$803 million); and Climate Change Science Program, -6% (\$197 million).

#### Major Research Equipment and Facilities Construction

The request funds 5 ongoing major facilities construction projects: ALMA telescopes (\$49.2 million); IceCube neutrino observatory (\$50.4 million); EarthScope, an earthquake detection and earth sciences research network (\$50.6 million); the Rare Symmetry Violating Processes experiment at the Brookhaven National Laboratory Gradient Synchrotron (\$41.8 million); and the Scientific Ocean Drilling Vessel (\$57.9 million). No new starts are included.

In accordance with PL 107-368, the budget request also identifies three facilities construction projects that are next in line for funding in FY 2007: the Ocean Observatories Network (cited for an FY 2005 start in last year's request), an Alaska Region Research Vessel (cited for an FY 2005 start in last year's request), and an Advanced LIGO (a physics/astronomy experiment to measure gravity waves).

#### Education Programs

For the education directorate, the request totals \$104 million (-12.4%) below the FY 2005 appropriations level, continuing a decline that began last fiscal year. Most of the decrease is comprised of the continuing close out of the Math and Science Partnership (MSP) program (-\$19 million), a cut to other K-12 teacher education and professional development programs (-\$41 million), a cut to undergraduate education programs (-\$19 million), and a cut to education research and evaluation programs (-\$26 million).

Only the Graduate Education and EPSCoR programs are not cut, receiving slight increases of 0.2% and 0.3%, respectively. The women and minorities education programs are reduced by 0.1%.

#### Salaries and Expenses

The budget request for internal operations at NSF totals \$269 million (+20%), including costs for adding 25 permanent employees and for improving information technology capabilities for grants management and information security.

## **D. NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)**

### **Overview**

The FY 2006 NASA budget request is for \$16.456 billion. It is approximately \$386 million above the FY 2005 omnibus appropriation of \$16.070 billion (a 2.4 percent increase).

**TABLE 8: NASA Research Program Funding**

(Budget Authority in Millions)  
Negative numbers in parentheses

<b>NASA Programs</b>	<b>FY2005 Estimate</b>	<b>FY2006 Request</b>	<b>Dollar Change: FY2005 to FY2006</b>	<b>Percent Change: FY2005 to FY2006</b>
<b>Solar System Exploration</b>	1,858	1,900	42	2.3%
<b>The Universe</b>	1,513	1,512	(1)	(0.1%)
<b>Earth-Sun Systems</b>	2,156	2,064	(92)	(4.3%)
<b>Exploration Systems</b>	2,684	3,165	481	17.9%
<b>Education Programs</b>	217	167	(50)	(23.0%)
<b>Aeronautics</b>	906	852	(54)	(6.0%)
<b>Space Station</b>	1,676	1,857	181	10.8%
<b>Space Shuttle</b>	4,543	4,531	(12)	(0.3%)
<b>Space and Flight Support</b>	485	376	(109)	(22.5%)
<b>TOTAL NASA</b>	<b>16,070</b>	<b>16,456</b>	<b>386</b>	<b>2.4%</b>

**TABLE 9: NASA Five Year Funding Plan**

Budget Authority in Millions)

<b>Account</b>	<b>FY2005 Approp.</b>	<b>FY 2006 Request</b>	<b>FY 2007 Request</b>	<b>FY 2008 Request</b>	<b>FY 2009 Request</b>	<b>FY 2010 Request</b>
<b>Solar System Exploration</b>	1,858	1,900	2,348	2,832	2,999	3,066
<b>The Universe</b>	1,513	1,512	1,532	1,539	1,495	1,407
<b>Earth-Sun Systems</b>	2,156	2,064	2,081	2,132	2,359	2,325
<b>Exploration Systems</b>	2,684	3,165	3,707	3,826	4,474	5,126
<b>Education Programs</b>	217	167	155	155	155	155
<b>Aeronautics</b>	906	852	728	731	728	718
<b>Space Station</b>	1,676	1,857	1,835	1,791	2,152	2,376
<b>Space Shuttle</b>	4,543	4,531	4,172	3,866	2,815	2,419
<b>Space and Flight Support</b>	485	376	371	400	400	399
<b>TOTAL NASA</b>	<b>16,070</b>	<b>16,456</b>	<b>16,962</b>	<b>17,306</b>	<b>17,612</b>	<b>18,027</b>
<b>%Increase</b>		<b>2.4 %</b>	<b>3.1 %</b>	<b>2.0 %</b>	<b>1.8 %</b>	<b>2.4 %</b>

The FY 2006 budget request reflects the impact of the President's new space exploration initiative. NASA has restructured its budget accounts yet again, so that it is not a straightforward task to compare past year funding for various NASA activities with the amounts in the FY 2006 budget request. One notable feature of the FY 2006 budget request is that the amount requested for FY 2006 is \$546 million less than NASA had indicated in its FY 2005 request would be needed in FY 2006. For the period FY 2006-09, NASA's funding profile has been cut by a total of \$2.5 billion relative to the amounts assumed in last year's five-year funding plan.

Finally, it should be noted that the FY 06 NASA budget request cuts NASA's funding contributions to all three of the President's interagency initiatives (Networking and Information Technology, Nanotechnology, and Climate Change Science) relative to the FY 05 levels, a repetition of what happened in the FY 05 request relative to FY 04 levels.

Additional information on specific funding cuts and increases, as well as policy issues contained in the FY 2006 budget request will be provided in the background memorandum prepared for the February 17<sup>th</sup> hearing on NASA's budget request.

Some of the Policy Decisions Assumed in the Budget

- Funding priority to be given to exploration initiative-related programs and projects.
- Elimination of funding for a servicing mission to the Hubble Space Telescope.
- Indefinite deferral of the Jupiter Icy Moons Orbiter (JIMO) mission.
- Elimination of Space Shuttle program in 2010, four years before a replacement vehicle (the Crew Exploration Vehicle) is available.
- Elimination of the ability to carry replacement research racks up to the Space Station after the 2010 termination of the Shuttle program. There currently is no other vehicle capable of carrying the racks.
- Purchase of *Soyuz* crew transfer and crew return services from Russia, the Iran Nonproliferation Act restrictions notwithstanding.
- Purchase of cargo services from Space Station international partners (Europe, Japan, Russia) and/or commercial companies (if available).



## E. DEPARTMENT OF ENERGY (DOE)

### Overview

DOE would see its non-defense R&D funding decline 1.2 percent to \$8.5 billion in FY 2006, after a similar cut in 2005. R&D funding for the Office of Science (OS) would decline 3.8 percent to \$3.2 billion, leaving its R&D funding at levels not seen since 2000. The cuts would be spread across a broad portfolio of programs in physics, fusion, biology, and energy sciences. Operation times would be reduced at its scientific user facilities. DOE's energy-related R&D would climb 11.3 percent to \$1.3 billion because of increased investments in hydrogen, nuclear energy, fuel cells, and coal. DOE would invest \$257 million (up from \$224 million) in a Hydrogen Fuel Initiative to develop technologies for hydrogen-powered cars. But DOE would eliminate R&D on gas and oil technologies and sharply reduce funding for several renewable energy technologies.

**TABLE 10: Department of Energy Science Related Funding**

(Budget Authority in Millions)  
Negative numbers in parentheses

<b>DOE Programs</b>	<b>FY2003 Actual</b>	<b>FY2004 Actual</b>	<b>FY2005 Request</b>	<b>FY2005 Estimate</b>	<b>FY2006 Request</b>	<b>Dollar Change: 2005 to 2006</b>	<b>Percent Change: 2005 to 2006</b>
<b>Renewable Energy</b>	322.1	352.2	374.8	380.3	353.6	(26.7)	(7.0%)
<b>Energy Conservation</b>	880.1	867.9	875.9	868.2	846.7	(21.5)	(2.5%)
<b>Nuclear Energy</b>	375.4	402.8	409.5	486.6	510.7	24.1	5.0%
<b>Fossil Energy</b>	564.1	658.9	564.1	571.8	491.4	(80.4)	(14.1%)
<b>Electric Trans. &amp; Dist.</b>	83.5	101.1	85.8	118.6	95.6	(23.0)	(19.4%)
<b>Science TOTAL</b>	<b>3,322.40</b>	<b>3,536.30</b>	<b>3,431.70</b>	<b>3,599.50</b>	<b>3,462.70</b>	<b>(136.8)</b>	<b>(3.8%)</b>

## F. DEPARTMENT OF HOMELAND SECURITY (DHS)

### Overview

DHS R&D programs are once again the big winner in the civilian R&D budget. After a 43% increase in FY2004 and a 13% increase in FY2005, the Administration proposed a 23.8% (22.6%) increase to \$1.5 billion (\$1.4 billion) for FY2006 and would consolidate the department's R&D into the Directorate of Science and Technology.

**TABLE 11: DHS S&T Funding**

(Budget Authority in Millions)  
Negative numbers in parentheses

DHS Programs	FY2004 Actual	FY2005 Estimate	FY2006 Request	Dollar Change: 2005 to 2006	Percent Change: 2005 to 2006
Science and Technology directorate*	1,053	1,185	1,467	282	23.8%
Science and Technology directorate**	913	1,116	1,368	252	22.6%

\*according to *Analytical Perspectives* R&D portion of FY2006 budget

\*\* according to agency documents and briefings on the FY2006 DHS S&T budget

The only real decreases (after accounting for transfer to the new directorate) in this budget appear to a decrease of \$1.3 million for cybersecurity and a \$6.4 million reduction in university and fellowship funding. (The reduction seen for Rapid Prototyping is due to the shifting of funding for this purpose into the individual project lines.)

A new Domestic Nuclear Detection Office (DNDO) was proposed within the S&T Directorate that would unify Federal radiological and nuclear detection efforts. This new entity would be funded at \$227.3 million in FY2006. Other increases include \$20 million in new funds to develop a Low Volatility Agent Warning System against hard-to-detect chemical threats and an increase in funding to \$110 million (up \$49 million) for R&D to counter the threat of shoulder-fired anti-aircraft missiles.

**TABLE 12: DHS Detailed Program Funding**

(Budget Authority in Millions)  
 Negative numbers in parentheses

<b>DHS Programs</b>	<b>FY2004 Actual</b>	<b>FY2005 Estimate</b>	<b>FY2006 Request</b>	<b>Dollar Change: 2005 to 2006</b>	<b>Percent Change: 2005 to 2006</b>
Bio Countermeasures	285	397.7	362.3	(35.4)	(8.9%)
Chemical Countermeasures	52	53	102	49	92.5%
High-Explosive countermeasures	9.5	19.7	14.7	(5)	(25.4%)
Radiological and Nuclear Countermeasures	126.3	122.6	19.1	(103.5)	(84.4%)
Domestic Nuclear Detection Office	0	0	227.3	227.3	100%
Threat and Vulnerability, Testing and Assessments	67.2	65.8	47	(18.8)	(28.6%)
Standards	39	39.7	35.5	(4.2)	(10.6%)
Support of Department of Homeland Security Components	34	54.7	93.7	39	71.3%
University and Fellowship Programs	68.8	70	63.6	(6.4)	(9.1%)
Emerging Threats	21	10.8	10.5	(0.3)	(2.8%)
Rapid Prototyping	73	76	20.9	(55.1)	(72.5%)
Counter MANPADS	60	61	110	49	80.3%
SAFETY Act	0	10	5.6	(4.4)	(44.0%)
Office of Interoperability and Compatibility	0	21	20.5	(0.5)	(2.4%)
Critical Infrastructure Protection	14.8	27	20.8	(6.2)	(23.0%)
Cybersecurity	18	18	16.7	(1.3)	(7.2%)
Research and Development Consolidation	0	0	116.9	116.9	100%
Total Salary and Expense	44.2	68.6	81.4	12.8	18.7%
<b>TOTAL</b>	<b>912.8</b>	<b>1115.6</b>	<b>1368.5</b>	<b>252.9</b>	<b>22.7%</b>

## **G. OFFICE OF SCIENCE AND TECHNOLOGY POLICY (OSTP)**

### **Overview**

Overall, OSTP appears to have flat funding but the rounding of the numbers in the Administration's budget hides a 12.8% cut from \$6.4 million in FY2005 to \$5.6 million requested for FY2006.

**TABLE 13: OSTP Funding**

(Budget Authority in Millions)  
Negative numbers in parentheses

	<b>FY2004 Actual</b>	<b>FY2005 Estimate</b>	<b>FY2006 Request</b>	<b>Dollar Change: 2005 to 2006</b>	<b>Percent Change: 2005 to 2006</b>
<b>OSTP</b>	<b>7</b>	<b>6.4</b>	<b>5.6</b>	<b>(0.8)</b>	<b>(12.8)%</b>

## **H. FEDERAL AVIATION ADMINISTRATION (FAA)**

### **Overview**

The principal change from FY 2005 is the 34% decrease in Facilities and Equipment (F&E) Advanced Technology Development and Prototyping (ATDP), which mainly results from eliminating congressional earmarks in the FY 2005 appropriation (-\$17 million). Also, airport research (\$10 million for FY 2005) is moved from this account to Grants-in-Aid for Airports for FY 2006, and creation of a new Airspace Management Laboratory (\$7 million) is proposed.

**TABLE 14: FAA Funding**

(Budget Authority in Millions)  
 Negative numbers in parentheses

<b>FAA Program Activity</b>	<b>FY2004 Actual</b>	<b>FY2005 Estimate</b>	<b>FY2006 Request</b>	<b>Dollar Change: 2005 to 2006</b>	<b>Percent Change: 2005 to 2006</b>
<b>RE&amp;D</b>					
System Planning & Resource management	0.5	0.5	1.3	0.76	146.3%
Joint Program & Development Office	-	5.1	18.1	13.04	257.7%
Hughes Tech Center	3.4	3.4	3.4	0.03	0.9%
Weather	23.7	20.7	20.6	(0.09)	(4.4%)
Wake Turbulence	--	4.3	2.3	(1.96)	(46%)
Aircraft Safety Technology	57.2	53.0	43.6	(9.43)	(-17.8%)
Human Factors	17.2	21.1	17.8	(3.26)	(15.5%)
Aeromedical Research	8.8	10.1	6.9	(3.19)	(31.6%)
Environment & Energy	7.9	11.8	16.0	4.20	35.6%
<b>RE&amp;D – Total</b>	<b>118.7</b>	<b>129.9</b>	<b>130.0</b>	<b>0.12</b>	<b>0.1%</b>
<b>F&amp;E – Advanced Technology Development &amp; Prototyping (ATDP) *</b>	<b>69.7</b>	<b>58.6</b>	<b>38.5</b>	<b>(20.14)</b>	<b>(34.4%)</b>
<b>TOTAL RE&amp;D and F&amp;E ATDP</b>	<b>188.4</b>	<b>188.5</b>	<b>168.5</b>	<b>(20.0)</b>	<b>(10.6%)</b>

\* The FY 1999 appropriations bill for FAA moved R&D activities on Capacity & Air Traffic Management; Communications, Navigation & Surveillance; and Airport Technology from the RE&D account to a new budget category, Advanced Technology Development and Prototyping, in the F&E account.

The President's FY2006 budget request for the FAA RE&D activity, including activities now designated under Facilities & Equipment as Advanced Technology Development and Prototyping, is \$168 million, which is \$20 million (-11%) below the FY2005 appropriations level.

Within the RE&D account, funds are reallocated to ramp up funding for the Joint Program Development Office (+\$13 million), which is responsible for the planning and development of the next generation air transportation system, and to increase funding for environmental and energy research (+\$4 million), which includes noise and emissions analysis. The principal reductions are for aircraft safety technology (-\$9 million) in the areas of propulsion and fuel system research and advanced materials and structural safety research; human factors research (-\$3 million); and aeromedical research (-\$3 million).