

## R&D in Selected Agencies

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### HIGHLIGHTS

- Once again, the Bush Administration proposes to eliminate the Advanced Technology Program (ATP) at the **Department of Commerce**. The ATP has a budget of \$171 million this year. The savings would allow for a 30 percent boost for intramural research at the National Institute of Standards and Technology (NIST) laboratories (see Table II-14). National Oceanic and Atmospheric Administration (NOAA) R&D would decrease by 1.1 percent to \$610 million.
  
- R&D in the **Department of the Interior** would fall 4.0 percent to \$648 million in FY 2005 (see Table II-16). There would be a cut of 4.0 percent for R&D in Interior's lead science agency, the U.S. Geological Survey (USGS). The \$525 million FY 2005 R&D portfolio would mean cuts to nearly every USGS program and flat funding for the remainder, in areas such as mapping, earth sciences, water resources, and biology.
  
- **Department of Transportation (DOT)** R&D funding would rise 6.7 percent to \$755 million in FY 2005 (see Table II-15). There would be a big boost in highway R&D, due to a perennial proposal to shift some resources away from state highway grants to highway research; similar proposals have been rejected by Congress in past years. R&D in the Federal Aviation Administration (FAA) would decline 10.4 percent.
  
- The **Environmental Protection Agency's (EPA)** R&D budget would fall 7.1 percent or \$44 million to \$572 million in FY 2005 (see Table II-17). Although some of the cuts would be due to the proposed elimination of R&D earmarks, funding for many R&D programs would also decline. The extramural Science to Achieve Results (STAR) program would see its budget fall to \$65 million, a steep drop from the \$100 million annual funding levels of the past several years.
  
- The **Department of Veterans Affairs (VA)** R&D portfolio would decline 6.1 percent to \$770 million (see Table II-19).

**DEPARTMENT OF COMMERCE**

The Department of Commerce's two major R&D agencies—the National Oceanic and Atmospheric Administration (NOAA) and the National Institute of Standards and Technology (NIST)—would both have declining R&D portfolios in the FY 2005 budget request. NOAA R&D would fall 1.1 percent or \$7 million to \$610 million while NIST R&D would fall 9.5 percent to \$426 million (see Table II-14).

**Once again, the FY 2005 budget proposes to eliminate the Advanced Technology Program (ATP).** Although the House has sided with the Bush Administration in voting to eliminate the program in previous budget bills, the program has been saved every year by the Senate. Last year, the Bush Administration proposed to eliminate ATP in FY 2004, but requested a total of \$27 million to fund already-awarded grants and also to pay close-out costs for the program. Congress ended up approving \$171 million for ATP this year, most (\$145 million) of which would be for R&D. The FY 2005 request proposes no funding for the program, meaning approximately \$30 million in close-out costs would presumably have to be found in other NIST accounts.

The main NIST R&D activity—**Scientific and Technical Research and Services (STRS), which funds intramural research at the NIST laboratories—would be the beneficiary of ATP savings with a 29.8 percent increase for its R&D to \$367 million. But the large requested increase could come at a high cost:** last year, the Administration requested a large increase for the NIST laboratories and the elimination of ATP. Congress saved the ATP but found the money by cutting deeply into NIST's intramural R&D, down nearly 10 percent this year from last year. In FY 2004, these cuts could mean early retirements or layoffs of NIST scientists, and delays or cancellations of planned projects such as developing standards for voting machines. The FY 2005 budget could present Congress with similar difficult choices: saving the ATP could require further cuts in NIST laboratories, and even eliminating the ATP could require Congress to provide \$30 million or so in unrequested close-out costs out of the laboratory accounts.

With the intramural R&D increase, NIST plans to invest \$26 million for state-of-the-art instrumentation for the new Advanced Measurement Laboratory on NIST's Gaithersburg, MD campus; \$8 million for improvements at the NIST Center for Neutron Research; \$16 million for

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advanced measurement science and standards; \$19 million for measurements and standards work on homeland security; and \$16 million in advanced manufacturing R&D, including nanoscale manufacturing. These investments cut across the traditional laboratory program areas in Table II-14, and would result in large increases for most of them.

Another NIST R&D program, Construction of Research Facilities, would increase \$16 million to \$59 million in FY 2005, after excluding \$21 million in congressionally designated projects inserted into the FY 2004 budget. The FY 2005 request would allow for construction and major renovations to NIST facilities in Maryland and Colorado, with an emphasis next year on aging facilities at the Boulder, CO, NIST labs. The non-R&D **Manufacturing Extension Partnership (MEP)**, a program to operate a nationwide network of extension centers to disseminate better manufacturing technologies to small- and medium-sized manufacturers, would receive only \$39 million, the same as this year but down nearly two-thirds from the \$106 million FY 2003 funding level and similar funding levels in previous years. The FY 2004 appropriation confirmed the Administration's plans to phase out the federal contribution to this federal-state partnership, and the FY 2005 request would leave MEP center funding heavily in state hands.

**NOAA R&D would fall by 1.1 percent down to \$610 million.** In Oceanic and Atmospheric Research, or NOAA Research, the total R&D portfolio would fall 10.1 percent down to \$293 million, mostly because of the proposed elimination of FY 2004 congressional earmarks. NOAA's climate research program would increase from \$170 million to \$183 million, composed of \$51 million in new funds to support the Administration's Climate Change Research Initiative (CCRI) offset partially by reductions in longstanding climate change programs. Weather and air quality research would fall steeply from \$55 million to \$35 million because of deleted earmarks and the proposed elimination of the US Weather Research Program. Funding for the National Sea Grant College Program would decline from \$62 million down to \$57 million. Begun in 1966, Sea Grant provides research grants to more than 200 universities to gain better understanding of marine life and marine resources through education, outreach, and technology transfer. (For more information on CCRI and its parent program, the Climate Change Science Program, please see Chapter 16. For more on the NOAA budget, please see Chapter 17.)

## **DEPARTMENT OF THE INTERIOR**

The Department of the Interior manages most of the publicly owned lands in the United States, from the national park system to Indian lands to publicly owned mines. The **U.S. Geological Survey (USGS)** is the primary sponsor of R&D in Interior. For FY 2005, the Bush Administration requested \$921 million for the USGS total budget, \$18 million or 1.9 percent less than the current year (see Table II-16).

R&D accounts for nearly two-thirds of the USGS budget, with the remainder going to non-R&D activities such as environmental data collection, mapping, and natural hazards reduction. **The Bush Administration proposes a cut of 4.0 percent for USGS R&D activities to \$525 million.** The request proposes to cut funding for R&D in three USGS divisions (Geology, Water Resources, and Biological Research) and keep funding flat in the remaining division (Mapping).

Funding for nearly every USGS R&D program would decline in FY 2005, and the remainder would see flat funding. There would be a steep 7.2 percent cut to \$120 million for R&D in the Water Resources Division. Funding for the **Toxic Substances Hydrology Program** would decline by 14 percent down to \$14.6 million, but Congress rejected a similar cut last year. The program is a collaborative effort of USGS scientists, university and private-sector researchers, and state, local, and other federal agency scientists to conduct long-term research on water resource contamination in surface and groundwater environments. The request again proposes to eliminate the \$6.4 million water resources research institutes program, a proposal Congress rejected last year. The Biological Resource Division (BRD) would receive \$172 million, a reduction of \$3 million. (For more on these programs, see Chapter 19.)

R&D in the Geologic Hazards, Resources, and Processes Division would fall \$10 million down to \$201 million, mostly because of a proposed \$6.8 million reduction to \$48.7 million for mineral resources R&D. Congress disagreed strongly with a similar proposal last year, and restored funding to the proposed cut. Funding for R&D on earthquakes, volcanoes, landslides, geologic mapping, geology, and earth surface dynamics would stay flat or decline slightly. Mapping and Geography R&D would remain at \$33 million. (For more on these programs, see Chapter 18.)

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Although USGS is the primary science agency in Interior, four other Interior bureaus also fund R&D (see Table II-16). These include funds for minerals and mining research in the Minerals and Management Service (MMS), wildfire prevention research in the Bureau of Land Management (BLM), water resources research in the Bureau of Reclamation, and R&D for the Florida Everglades restoration project in the National Park Service.

**The FY 2005 cut to Interior R&D would be the fifth year in a row that Interior R&D funding has stagnated and lost ground to inflation**, and leaves the department 20 percent below the funding levels of a decade ago. Interior R&D has declined sharply since FY 1994, primarily because of the elimination of the Bureau of Mines in FY 1996 and the merging of the former National Biological Service into USGS in the mid-1990s. Since then, Interior R&D has been mostly flat, after climbing back in FY 2000 from hitting bottom in FY 1999.

### **DEPARTMENT OF TRANSPORTATION (DOT)**

R&D is a relatively small part of the DOT budget and would total \$755 million in FY 2005, an increase of \$48 million or 6.7 percent, out of a total DOT budget of \$58.4 billion (see Table II-15). More than half of the DOT budget goes to the Federal Highway Administration (FHWA), mostly for spending out of the highway trust funds for road projects managed by state and local governments.

DOT's budget climbed from \$44 billion in FY 1998 all the way to \$67 billion in FY 2001. However, transportation tax revenues have dropped off significantly in recent years as a result of a stagnant economy, and thus total DOT funding has leveled off. In addition, the Transportation Security Administration (TSA) and the Coast Guard transferred to the new Department of Homeland Security (DHS) in March 2003, bringing the DOT budget down to its current level of \$58.6 billion.

In FY 2005, President Bush's budget would reduce DOT spending by 0.3 percent down to \$58.4 billion, but Congress is likely to approve a transportation authorization bill shortly containing much higher funding. Within a declining FHWA budget, however, the Bush Administration budget would increase FHWA R&D by 23.7 percent for a total of \$394 million (see Table II-15). The Administration proposes a reshuffling of the FHWA accounts to allow for more spending on highway R&D at the

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expense of funds to state and local governments, but in the past Congress has rejected similar proposals and maximized state and local funding. FHWA spending on surface transportation research would increase by more than 50 percent, mostly for DOT laboratory-performed research on highway operations, safety, and pavements. The FHWA total includes \$76 million for R&D in the **Intelligent Transportation Systems (ITS)** program, up slightly from this year. The largest portion of FHWA R&D funding goes to state and local governments for their transportation-related research projects; this funding would increase to \$151 million.

The **Federal Aviation Administration (FAA)** would receive \$222 million for its R&D programs, a decline of 10.4 percent. FAA's R&D addresses a number of aviation-related topics, including weather research, aircraft safety technology, human factors research, and development of 'free flight' technologies to improve aviation system capacity. The FAA's R&D portfolio used to be much larger in the \$300 to \$400 million range annually before the September 2001 terrorist attacks, but most of its aviation security R&D portfolio has transferred to the Transportation Security Administration (TSA), now housed within the Department of Homeland Security (DHS). FAA investments in aircraft safety technology and aviation advanced technology development would decline in the FY 2005 budget proposal.

Because of large increases for DOT R&D in FY 2001 and FY 2002 responding to the September 11 terrorist attacks on U.S. aviation, DOT's support for R&D reached a peak in FY 2002, after adjusting for inflation. DOT's R&D crested in FY 1995 and then suffered a steep decline, particularly in the FAA, as a result of efforts to bring the federal budget into surplus. FAA and FHWA R&D then increased in the late 1990s, and with the help of emergency R&D funds for aviation security R&D in the aftermath of September 11 rose to the FY 2002 peak. But with the transfer of aviation security R&D to the TSA, now in DHS, recent reductions in transportation tax revenues, and the transfer of the Coast Guard and its R&D program to DHS, DOT R&D declined sharply in FY 2003 and held steady this year.

#### **ENVIRONMENTAL PROTECTION AGENCY (EPA)**

**EPA's R&D**, mostly funded in the **Science and Technology** account, would total \$572 million in the FY 2005 budget request, a cut of \$44 million or 7.1 percent (see Table II-17). The FY 2004 omnibus bill

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contained 41 congressional earmarks in the S&T account and another 11 R&D earmarks in normally non-R&D Environmental Programs and Management account, many of them renewed from FY 2003, for a total of \$56 million in R&D earmarks (AAAS estimates). The FY 2005 budget would eliminate these earmarks, for a slight net increase in FY 2005 for EPA's core R&D programs.

**R&D in the S&T account would fall by 4.7 percent to \$535 million in FY 2005.** Much of the decrease is due to the proposed elimination of R&D earmarks. This would free up money for some program increases, such as particulate matter research which would increase from the congressionally appropriated level of \$35 million this year back up to last year's funding level of \$64 million next year, and computational toxicology (\$5 million in FY 2003 to \$9 million this year to \$13 million next year). But most EPA research areas would see flat or declining funding, including global change research (down slightly to \$21 million), water quality research (down slightly to \$47 million), pollution prevention research (down \$5 million to \$33 million), pesticides and toxics research (down \$7 million to \$29 million), human health and ecosystems research (down \$13 million to \$177 million), and drinking water research (flat at \$46 million).

**EPA's funding of competitively awarded extramural research would fall steeply.** EPA's Science to Achieve Results (STAR) program of extramural research grants would receive only \$65 million in FY 2005, down a third from the \$100 million level of this year and the previous three years. EPA would eliminate STAR grants entirely in the areas of endocrine disruptors, ecosystems, mercury, and pollution prevention, and cut next year's funding in half for existing extramural hazardous substance research centers. Hardest hit would be ecosystems research, with the elimination of \$22 million in STAR grants. EPA would shift funds toward intramural research in its own labs for the affected areas. With a typical STAR grant totaling \$500,000, EPA estimates that 70 fewer research projects would be funded next year. Because STAR grants are often multi-year projects, the reduced FY 2005 request would also mean reductions in planned grant awards this year to reduce the commitment base next year.

In non-R&D programs, the FY 2005 budget requests **\$8 million for the STAR Fellowship Program**, below the \$9.7 million appropriation in FY 2004 and similar appropriations in previous years for this program to

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encourage science and engineering graduate students to study environmental science fields that could be of use to EPA's mission.

EPA's R&D support has been declining slowly for the past few years after steady growth in the late 1990s. EPA's R&D budget declined sharply after FY 1994 and bottomed out in FY 1996. In subsequent years, EPA's R&D grew until FY 1999. EPA R&D declined again in FY 2000, and has mostly just kept pace with inflation since then. EPA R&D has essentially stayed at \$600 million in today's dollars for more than a decade.

#### **DEPARTMENT OF VETERANS AFFAIRS (VA)**

The VA Medical and Prosthetics Research Program was established to improve health care for veterans and to stress research into injuries and illnesses specifically relevant to the veteran population. The VA research program is an intramural program and requires all grantees to be VA employees (meaning VA principal investigators must hold at least a 5/8 appointment from the VA. Many grantees also hold joint faculty appointments at affiliated universities and medical schools.) Unlike other federal research agencies, VA does not make grants to colleges and universities (although some may administer grants of jointly-appointed investigators), cities and states, or any other non-VA entity.

The FY 2005 budget provides \$770 million for the VA research program, a decrease of \$50 million (6.1 percent). Basic research comprises \$308 million (40.0 percent) of this total, a decrease of \$24 million (7.2 percent); applied research accounts for \$423 million (54.9 percent) of the total, a decrease of \$23 million (5.2 percent); and \$39 million (5.1 percent) is allocated to development, a decrease of \$3 million (7.1 percent). VA scientists are also successful in competing for, and leveraging, research support from other federal agencies (such as NIH and DOD), foundations and industry. In FY 2005, VA is estimating that VA investigators will increase the amount of grants received from other federal agencies by 10.6 percent and from other groups by 19.2 percent. When all these figures are combined, VA estimates its total research enterprise would be \$1.7 billion, an increase of \$60 million (3.7 percent) over FY 2004 (see Table II-19).

*The VA section was contributed by Jonathan Fishburn, AAMC (Chapter 8).*