

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** in FY 2006. The ATP has a budget of \$140 million this year. The savings would allow for a 12.7 percent boost for intramural research at the National Institute of Standards and Technology (NIST) laboratories (see Table II-14) after a similar increase this year, and a doubling of the Construction of Research Facilities (CRF) investments in NIST laboratory facilities. National Oceanic and Atmospheric Administration (NOAA) R&D would decline by 11.2 percent to \$565 million, mostly from the proposed elimination of FY 2005 congressional earmarks.

- R&D in the **Department of the Interior** would fall 5.5 percent to \$581 million in FY 2006 (see Table II-16). There would be a cut of 4.8 percent for R&D in Interior's lead science agency, the U.S. Geological Survey (USGS). The cuts would be concentrated in USGS' mineral resources and water resources R&D, with modest increases or flat funding for other R&D priorities. R&D funding for Interior would be flat or declining for the sixth year in a row.

- **Department of Transportation (DOT)** R&D funding would rise 8.5 percent to \$807 million in FY 2006 (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 11.4 percent to \$233 million.

- The **Environmental Protection Agency's (EPA)** R&D budget would decline 0.7 percent or \$4 million to \$568 million in FY 2006 (see Table II-17). The proposed elimination of R&D earmarks and a decline in the Superfund R&D program would leave room for modest increases to core EPA R&D programs in areas such as global change, particulate matter,

Kei Koizumi

drinking water, and water quality. Homeland security-related R&D would be the big winner in the R&D portfolio, with large increases for decontamination research and drinking water security research.

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 2006 budget. NOAA R&D would fall 11.2 percent or \$71 million to \$565 million while NIST R&D would fall 9.7 percent to \$416 million (see Table II-14). These cuts would leave total Commerce R&D at \$1.0 billion in FY 2006, a cut of \$121 million or 10.6 percent.

In a repeat of the last several budget requests, the FY 2006 budget proposes to eliminate NIST's 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 was no exception: the House and Administration zeroed out the program but the Senate prevailed with an appropriation of \$140 million, down substantially from \$177 million in 2004, of which \$114 million would go for R&D costs. The FY 2006 budget does not request approximately \$30 million in close-out costs for ATP, which would presumably have to be found in other NIST accounts if Congress agrees to the request.

The budget would also reduce funding for the non-R&D **Hollings Manufacturing Extension Partnership (MEP)** by 57 percent down to \$47 million. MEP operates a nationwide network of extension centers to disseminate better manufacturing technologies to small- and medium-sized manufacturers on a cost-shared basis with state governments and with users. The MEP has had its ups and downs in recent years. Historically, it has received roughly \$100 million a year, including the \$108 million for this year, but in FY 2004 MEP only received \$39 million and would receive a similar amount next year. The FY 2006 budget would leave MEP center funding heavily in state hands. As a result, many MEP centers will likely close as states continue to face tough budgetary times.

R&D IN SELECTED AGENCIES

The ATP and MEP savings would allow for a 12.7 percent boost for intramural research at the National Institute of Standards and Technology (NIST) laboratories to \$357 million. **But the requested increase could come at a high cost:** two years ago, 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 and MEP. In FY 2004, these cuts meant delays or cancellations of planned projects. The FY 2005 budget provided some relief through extra funds for the NIST labs, ATP, and MEP, but the FY 2006 request presents Congress with a familiar dilemma: saving the ATP or restoring funding to MEP could require cuts in NIST laboratories, and even eliminating the ATP could require Congress to provide \$30 million or so in close-out costs out of the laboratory accounts.

With the intramural R&D increase, NIST plans to invest an additional \$20 million for an Advances in Manufacturing initiative to perform R&D on standards and measurement technologies needed by U.S. industry, including a new nanotechnology user facility and nanomanufacturing research, and an additional \$17 million for measurement infrastructure investments. (For more on NIST nanotechnology, see Chapter 24.)

Another NIST R&D program, Construction of Research Facilities, would double to \$59 million, after excluding \$43 million in congressionally designated projects inserted into the FY 2005 budget. The FY 2006 request would allow for major renovations to NIST facilities in Maryland and Colorado.

NOAA R&D would fall by 11.2 percent down to \$565 million. The FY 2006 request would keep most NOAA R&D programs level-funded or would increase funding; the overall cuts would be due primarily to the proposed elimination of 2005 congressional earmarks. In Oceanic and Atmospheric Research, or NOAA Research, the total R&D portfolio would fall, but most of the cuts would be from earmarks. NOAA's climate research program would stay even at \$178 million, but the elimination of \$18 million in earmarks would allow for a similar increase in core research. Weather and air quality research would fall to \$38 million from \$51 million because of the elimination of earmarks. Funding for the National Sea Grant College Program would stay even at \$61 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.

Kei Koizumi

The National Undersea Research Program would keep core funding even in 2006 but would decline from \$17 million to \$10 million after cutting out earmarks. (For more information on NOAA climate programs, please see Chapter 16.)

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. USGS is one of the leading federal sponsors of earth sciences research, along with the Department of Energy, the National Science Foundation, and the National Aeronautics and Space Administration. Within the earth sciences, USGS is particularly important in geological hazards research, including research on earthquakes and volcanoes. USGS is also a leading sponsor of water resources research and biological research. Nearly 90 percent of this research is conducted within Interior labs to address the science needs of Interior's other agencies.

In the FY 2006 budget, the Bush Administration requested \$934 million for the USGS total budget in FY 2006, \$2 million or 0.2 percent less than this year (see Table II-16). In addition to the FY 2006 request, a few weeks ago the Administration requested an extra \$8 million in emergency 2005 funds for the National Earthquake Information Center as part of its \$81 billion Iraq war supplemental.

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 4.8 percent for USGS R&D activities to \$515 million.** The request proposes to cut funding for R&D in two USGS divisions (Geology and Water Resources), keep funding flat in Biological Research, and boost funding for the Mapping division.

Unlike past requests in which nearly every USGS R&D program would have been cut, the budget cuts are more selective in the FY 2006 request, leaving most programs with flat or slightly increasing funding. R&D in the Water Resources Division would fall \$7 million or 5.7 percent to \$119 million, mostly from the proposal to eliminate the \$6.4 million water resources research institutes program, a proposal Congress has

R&D IN SELECTED AGENCIES

rejected before. Funding for the **Toxic Substances Hydrology Program** would decline \$1 million to \$13.1 million, but again Congress has rejected similar cuts in previous years. 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. Other water programs would remain near current funding levels. The budget proposes a slight increase for the National Water Quality Assessment Program (NAWQA) to \$63 million to bring it back to last year's funding level. NAWQA is charged with monitoring the nation's water quality, and its data are used by the Environmental Protection Agency (EPA) and many state regulatory agencies. Similarly, R&D in the Cooperative Water Program would stay even at last year's funding level of \$64 million after a cut in the 2005 budget. This program supports the collection of basic hydrologic data, studies of specific water-resources problems, and hydrologic research through USGS partnerships. (For more on these programs, see Chapter 18.)

R&D in the Geologic Hazards, Resources, and Processes Division would fall \$27 million or 13.0 percent down to \$179 million, mostly because USGS would cut the \$54 million mineral resources R&D program in half to \$25 million. Congress has disagreed strongly with similar proposals in the past two years, and restored funding to proposed cuts; a similar reaction is expected in the FY 2006 budget process. Funding for R&D on earthquakes, volcanoes, landslides, geologic mapping, geology, and earth surface dynamics would stay flat or increase slightly. Among the other divisions, Mapping and Geography R&D would increase 22 percent or \$8 million up to \$43 million, but this would only restore funding to the 2004 level after a cut in 2005. The ups and downs in this division are in the land remote sensing programs, which operate satellites but also fund R&D on data retrieval, archiving, processing, and imaging. (For more on these programs, see Chapter 17.)

The FY 2006 cut to Interior R&D would be the sixth year in a row that Interior R&D funding has lost ground to inflation, and would leave the department nearly 25 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. After a large increase in FY 2000, Interior R&D has been mostly flat since then, resulting in losses after adjusting for inflation.

DEPARTMENT OF TRANSPORTATION (DOT)

R&D is a relatively small part of the DOT budget and would total \$807 million in FY 2006, an increase of \$63 million or 8.5 percent, out of a total DOT budget of \$58.8 billion (see Table II-15). Although the DOT R&D increase would be the largest percentage increase among the major R&D funding agencies, the increase is highly unlikely to make it through Congress and reflects a perennial give-and-take between DOT and Congress over transportation spending priorities.

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. Transportation funding increased dramatically beginning in FY 1999 as a result of the six-year (FY 1998-2003) reauthorization of transportation programs known as the Transportation Equity Act for the 21st Century (TEA-21), which governed spending out of the highway trust funds. The law expired in September 2003, and a series of temporary funding authorizations, the current one lasting through the end of May 2005, have kept transportation funding going until Congress can agree on a new reauthorization law.

Nearly all the funds from the transportation authorization bill go to the Federal Highway Administration (FHWA) for funds to state and local governments to finance road projects. Within a declining FHWA budget, however, the Bush Administration budget would increase FHWA R&D by 32.0 percent for a total of \$445 million, but similarly large increases proposed in past years have gone nowhere in Congress (see Table II-15). The Administration once again proposes a reshuffling of the FHWA accounts to allow for more spending on highway R&D, but in the past Congress has consistently rejected similar proposals and maximized state and local funding instead. FHWA spending on surface transportation research would nearly double to \$166 million, mostly for DOT laboratory-performed research on highway operations, safety, and pavements. The FHWA total includes \$67 million for R&D in the Intelligent Transportation Systems (ITS) program, down \$6 million 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 remain flat at \$158 million.

R&D IN SELECTED AGENCIES

The **Federal Aviation Administration (FAA)** would receive \$233 million for its R&D programs, a steep cut of 11.4 percent that mirrors other agencies' proposed cuts in aviation and aeronautics R&D. At the National Aeronautics and Space Administration (NASA), aeronautics research would fall 6 percent down to \$852 million, while the Department of Homeland Security (DHS) would reduce funding for aviation security R&D from \$178 million down to roughly \$100 million in FY 2006. 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.

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. But with the transfer of aviation security R&D to the 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 2004 before rebounding this year.

ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA's R&D, mostly funded in the **Science and Technology** account, would total \$568 million in FY 2006, a modest cut of \$4 million or 0.7 percent (see Table II-17). The FY 2005 omnibus bill contained \$51 million in R&D earmarks, many of them renewed from previous years (AAAS estimates). The FY 2006 budget would eliminate these earmarks, allowing for a net increase for EPA's core R&D programs.

R&D in the S&T account would increase slightly by \$1 million to \$536 million in FY 2006, but the proposed elimination of R&D earmarks would free up an additional \$50 million for program increases. Funding for particulate matter research (\$61 million this year) would combine with \$4 million in tropospheric ozone research in a new research program of \$71 million. Global change research would rise modestly from \$20 million to \$21 million; drinking water research from \$44 million to \$46 million; and water quality research would increase from \$45 million to \$56 million. Other areas of research such as pollution prevention and human health/ecosystems would see cuts in funding.

Kei Koizumi

Homeland security-related R&D would be the big winner in the R&D portfolio, nearly tripling from \$33 million in FY 2005 to \$94 million next year (AAAS estimates based on OMB data). EPA efforts would be focused in two areas. Drinking water security research would be one priority, and would involve EPA efforts to develop better surveillance and laboratory networks for drinking water supplies to counter potential terrorist threats. The other priority would be decontamination research, to develop better technologies and methods for decontaminating terrorist attack sites such as the Senate office buildings that EPA decontaminated from anthrax in 2001. EPA would also continue threat and consequence assessments and testing potential biodefense and other decontamination technologies. Much of this work would be conducted at EPA's National Homeland Security Research Center (NHSRC) in Cincinnati.

EPA's S&T investments are a small part of the overall EPA portfolio (see Table II-17), and are designed to support EPA's regulatory and enforcement missions. R&D would fare better than the overall FY 2006 budget of \$7.6 billion, a loss of \$455 million or 5.7 percent. EPA requests only \$3.0 billion for **State and Tribal Assistance Grants (STG)**, perennially a higher priority for Congress than for EPA and funded at \$3.6 billion this year. Most of this money goes to state, local, and tribal governments to fund environmental projects, primarily projects to preserve clean drinking water.

Roughly 47 percent of EPA's R&D is performed in the agency's own laboratories, while about 10 percent is performed by industrial firms. Nearly a third of EPA's R&D is performed by colleges and universities, a share that has been growing in recent years as EPA has attempted to expand its links with academia. The remainder is performed by nonprofit institutions and state and local governments.

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 eroded slowly in real dollars since then except for a one-time boost in FY 2004 for homeland security. EPA R&D has stayed at \$600 million in today's dollars for more than a decade.

(For information on Department of Veterans Affairs (VA) R&D, please see Chapter 8.)