

R&D in Selected Agencies

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HIGHLIGHTS

- The intramural research activities of the **National Institute of Standards and Technology (NIST)** would be favored with substantial proposed increases in 2008 for the second year of the President's American Competitiveness Initiative (ACI). NIST's Scientific and Technical Research Services (STRS) would see its R&D funding increase 12.8 percent to \$420 million (see Table II-14). But once again, the Bush Administration proposes to eliminate NIST's external Advanced Technology Program (ATP). R&D in the **National Oceanic and Atmospheric Administration (NOAA)** would fall sharply by \$57 million or 9.5 percent down to \$544 million.
- R&D in the Department of the Interior's lead science agency, the **U.S. Geological Survey (USGS)**, would fall \$23 million or 4.0 percent in the FY 2008 budget from the recently finalized 2007 appropriation (see Table II-16). As in previous years, the cuts would be concentrated in USGS' mineral resources and water resources R&D.
- **Department of Transportation (DOT)** R&D funding would increase 2.4 percent to \$813 million (see Table II-15) because of requested cuts in aviation R&D combined with increases for highway R&D.
- The **Environmental Protection Agency's (EPA)** R&D portfolio of \$540 million in 2008 would be a 3.1 percent cut from the final 2007 funding level (see Table II-17), with cuts to most research areas. EPA's R&D funding would fall to the lowest level in more than two decades (since 1985) in real terms.
- The **Department of Veterans Affairs (VA)** R&D portfolio would stay flat at \$822 million in FY 2008, an increase of just \$4 million or 0.5 percent (see Table II-19). Projected funding from other sources would bring total VA-performed R&D to \$1.8 billion.

DEPARTMENT OF COMMERCE

President Bush's proposed FY 2008 budget continues substantial increases for key physical sciences research agencies for the second year as part of his American Competitiveness Initiative (ACI) to respond to a growing wave of concern about the state of U.S. innovation. The ACI proposes to double funding for three key physical sciences agencies over the next decade, and after a mostly approved first installment in 2007 the 2008 budget continues to move forward with this ambitious plan. The National Institute of Standards and Technology (NIST) in the Department of Commerce is one of the three favored agencies (the others are the DOE Office of Science, and the National Science Foundation).

The increases would go only to NIST's intramural laboratories and intramural construction, and would be offset by steep cuts in NIST's external programs. Commerce's other main R&D agency, the National Oceanic and Atmospheric Administration (NOAA) whose portfolio is oriented toward environmental R&D rather than the physical sciences, would be in line for R&D funding cuts like most domestic programs in the declining overall domestic budget. **Total Commerce R&D would fall 2.7 percent or \$30 million to \$1.1 billion** (see Table II-14), with cuts in NOAA R&D and NIST external R&D offsetting large proposed increases for NIST's intramural portfolio.

The NIST laboratories in Maryland and Colorado would once again be favored in the 2008 R&D budget as part of the ACI. NIST intramural research would climb 12.8 percent to \$420 million within the Scientific and Technical Research and Services (STRS) account, while construction funding for NIST research facilities would jump 60 percent to \$94 million. The large proposed increases would allow for more of everything: there would be increases for R&D across the broad range of NIST programs, with particular emphasis on nanotechnology research, quantum information science, measurements and standards for climate change science, and disaster resilient structures. On the construction side, the large increase would allow for major renovations at NIST's Boulder (CO) site, repair for aging facilities, and continuing construction of NIST's Center for Neutron Research.

But once again, the increased investments for the NIST laboratories would be offset by cuts in other NIST programs, even though they all support the physical sciences and related research. **The Bush**

Administration once again proposes to eliminate NIST's extramural Advanced Technology Program (ATP), as it has in the past several budget requests. The ATP just won a total budget of \$79 million in FY 2007 in the recently finalized 2007 budget, after being on the verge of elimination for most of last year. The unexpected reprieve means that the ATP will be able to award new grants in 2007 for the first time in years. Congress has repeatedly saved the program from termination, and will be asked to do so again in the 2008 appropriations process. In another repeat of previous requests, the budget would cut the non-R&D Hollings Manufacturing Extension Partnership (MEP) by 56 percent down to \$46 million; an identical proposal was rejected in the 2007 appropriation. MEP is a program to operate 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 \$105 million current budget for MEP is in line with historical trends; the request would phase out the federal contribution to this federal-state partnership and leave MEP center funding heavily in state hands, a move that Congress has strongly resisted in past budgets.

National Oceanic and Atmospheric Administration (NOAA) R&D would fall \$57 million or 9.5 percent down to \$544 million (see Table II-14). Although NOAA would boost its support of oceans research with \$20 million in new money as part of a multi-agency Ocean Science Initiative (USGS and NSF are the other agencies) along with other ocean-related increases for ocean monitoring networks, this and other increases would be offset by cuts in other NOAA programs from a 2007 budget that was unexpectedly boosted by Congress in the 2007 joint funding resolution. NOAA R&D would also be down from previous years because neither the 2007 appropriation nor the 2008 request contain congressional R&D earmarks that have been increasing as a share of the NOAA budget in recent years. (For more information on NOAA climate programs, please see Chapter 15.)

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. R&D to support Interior's land management responsibilities would total \$621 million in the FY 2008 budget, a cut of \$19 million or 2.9 percent from the recently finalized 2007

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appropriation, mirroring proposed cuts in other environmental R&D agencies (see Table II-16).

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, NSF, 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. Because of these characteristics, USGS is left well out of the spotlight that shines on basic research in the physical sciences in the ACI. While the FY 2008 budget proposes substantial increases for key physical sciences research programs, the President's budget proposes \$975 million for the total USGS budget, a cut of \$3 million from a 2007 appropriation that was just finalized on February 15 and also a cut from the 2006 budget of \$977 million (see Table II-16).

USGS R&D totals \$547 million in the FY 2008 request for a cut of \$23 million or 4.0 percent (see Table II-16). Just over half of the USGS budget is devoted to R&D activities, with the remainder going for science support, data gathering and dissemination, facilities operations, mapping, and natural hazards reduction. **R&D funding would decline in three of the four USGS research divisions**, with only the Biological Research Division showing a slight increase.

The Geologic Hazards, Resources, and Processes Division would see its R&D funding cut \$16 million or 7.3 percent down to \$198 million, but as in past years this proposal is unlikely to make it through Congress. In what is now an annual ritual, USGS proposes to cut the \$53 million mineral resources R&D program in half to just \$30 million, just as it has in the last several requests. But in past years, Congress has disagreed strongly with USGS' rationale that minerals research could be funded by the private sector, and has repeatedly reaffirmed the federal role in minerals research with restored funding. There would be a modest \$3 million in new funding for oceans research, to go along with larger infusions of new money for oceans research in the NSF and NOAA budgets. Half of the new oceans money would be in the Geologic division, and the other half in Water Resources. In another earth sciences-related division, Geography R&D would fall \$2 million down to

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\$42 million after a one-year increase in 2007 to pay for Landsat upgrades.

Water Resources Investigations R&D would fall \$8 million or 6.2 percent to \$119 million, but Congress is likely to reject these cuts as it has in the past. USGS puts forward its perennial proposal to eliminate federal funding for the water resources research institutes for a savings of \$6 million in 2008, but Congress has rejected similar proposals in past years and has preserved the federal role in these cooperatively funded institutes. The Cooperative Water Program would decline slightly to \$62 million. This program supports the collection of basic hydrologic data, studies of specific water-resources problems, and hydrologic research through USGS partnerships with state governments and other entities. Funding for the **Toxic Substances Hydrology Program** would fall to \$14 million; 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. There would be a slight increase for **the National Water Quality Assessment Program (NAWQA)** to \$65 million; 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. The remaining water portfolio would mostly stay flat, although some funding would be shifted from R&D activities to the mostly non-R&D National Streamflow Information Program.

USGS biological research programs would barely increase to \$181 million. The largest increase in USGS would go to the newly created Enterprise Information unit, whose R&D funding would increase from \$5 million to \$7 million. This mostly non-R&D unit contains the National Geospatial Program transferred from the Geography R&D division. (For more on USGS, see Chapter 16.)

DEPARTMENT OF TRANSPORTATION (DOT)

The Department of Transportation (DOT) funds a broad range of highway, aviation, traffic safety, rail, transit, and marine transportation programs. R&D is a relatively small part of a \$67 billion DOT budget and would total \$813 million in FY 2008, a small increase of 2.4 percent or \$19 million over the recently finalized 2007 budget that just keeps pace with expected inflation (see Table II-15). Funding for aviation

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R&D would fall, along with R&D on most other transportation modes, but highway R&D would increase to \$410 million (up 13.7 percent).

Transportation funding is unusual in that although funds are appropriated, as they are for other discretionary programs, minimum funding levels each year are guaranteed by transportation authorization bills. Transportation appropriators must provide the funds necessary to meet these guarantees, occasionally adding to them or modifying them, before appropriating funds for programs outside the authorization bills. Because of congressional delays in wrapping up 2007 appropriations DOT only received its final 2007 budget on February 15, 4 ½ months into the fiscal year. DOT's R&D programs received far less than requested and a cut compared to 2006.

DOT programs are operating under a transportation authorization bill signed into law in August 2005 that dramatically increases highway R&D funding beginning in 2006 and extending through 2009. Nearly all the funds from the transportation authorization bill go to the Federal Highway Administration (FHWA) for state and local road projects, mostly in formula distributions but also in congressionally designated earmarked projects. FHWA's R&D portfolio is a mixture of formula funds for state transportation R&D, earmarked R&D projects, and intramural research. The highway bill helped FHWA R&D climb in 2006 and 2007 to record highs. The FY 2008 budget, still based on the multi-year highway bill, would sustain those increases with a \$410 million R&D investment, an increase of 13.7 percent. Based on past experience, FHWA is unlikely to get the full increase after Congress diverts some of the proposed increases to other programs. The surface transportation research portfolio on highway safety, pavement technologies, highway operations, environmental impacts, and other road topics would increase \$20 million to \$136 million in FY 2008. The Intelligent Transportation Systems (ITS) portfolio of innovative technologies to improve traffic flow would also increase dramatically to \$84 million, up \$20 million. The FHWA budget also includes state highway R&D, distributed to state and local governments to support their R&D efforts, with a proposed 5.7 percent increase to \$172 million in the 2008 request.

Federal Aviation Administration (FAA) R&D would total \$258 million in 2007, a sharp cut of 15 percent or \$46 million that repeats recent attempts to cut aviation R&D. The past two DOT budget requests have proposed cuts in FAA R&D, but Congress has ended up boosting

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FAA's R&D efforts in a number of aviation-related topics, including weather research, aircraft safety technology, human factors research, and development of next-generation technologies to improve aviation system capacity. The FY 2008 request proposes an increase in FAA's main Research, Engineering, and Development account, which is mostly focused on aviation safety, but once again proposes steep cuts in the Facilities and Equipment portfolio of advanced technology development for next-generation aviation systems.

ENVIRONMENTAL PROTECTION AGENCY (EPA)

The Environmental Protection Agency (EPA), the primary regulatory agency for the U.S. environment, funds a broad portfolio of R&D to meet the science and technology needs of its regulatory and enforcement responsibilities. **The FY 2008 request would cut EPA's R&D funding by \$17 million or 3.1 percent to \$540 million from the recently finalized 2007 funding level** (see Table II-17). In most years, cuts in EPA R&D would be primarily due to the proposed elimination of congressional earmarks, but because the 2007 EPA budget is earmark-free the 2008 cuts would be cuts to core EPA research programs. Nearly all EPA research areas would decline, and even the few increases would only partially recover ground lost from cuts in previous years. EPA R&D would fall to the lowest funding level in more than two decades (since 1985) if the FY 2008 budget becomes final.

EPA's R&D is managed by its Office of Research and Development (ORD), which funds both R&D at EPA laboratories around the country and external R&D, mostly at universities. Nearly all of EPA's R&D comes from the Science and Technology (S&T) budget account, which would total \$755 million in 2008, down slightly from the final 2007 funding level. R&D makes up most but not all of the S&T account. Subtracting non-R&D items such as critical infrastructure protection, operating overhead costs, and clean air standards and certification activities leaves an R&D portfolio of \$512 million from S&T, down 3.0 percent (see Table II-17). ORD also receives R&D funding from the Superfund program (down \$2 million to \$26 million) for hazardous wastes research, and small amounts of funding from other EPA accounts.

Funding for nearly all EPA research areas would decline in the 2008 budget (see Table II-17). Clean air research would increase slightly to \$98 million, but would remain below the \$101 million 2006 funding

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level. EPA's contribution to global change research would continue to slide, down to \$17 million. The clean air portfolio tries to understand the composition and effects of air pollution and to develop technologies for reducing it, and also funds research on related topics such as the health effects of fine particles in the atmosphere. Human health and ecosystems research, the largest part of the ORD portfolio, would fall \$11 million to \$218 million, with an increase in the computational toxicology program offset by cuts in other areas. Within this portfolio, fellowships funding would remain at \$8 million, down by half from \$16 million last year.

Homeland security related R&D, a growth area in previous years, would fall from \$38 million this year down to \$34 million. Some of this effort is devoted to protecting drinking water supplies against terrorist attack through vulnerability assessments and a laboratory network for surveillance. This portfolio also funds EPA's National Homeland Security Research Center (NHSRC) to conduct R&D on a wide variety of terrorist threats that may have an impact on the natural environment, such as radiation, drinking water contamination, and the environmental impacts of cleanup technologies after a terrorist attack.

DEPARTMENT OF VETERANS AFFAIRS (VA)

The Department of Veterans Affairs (VA) is one of the 10 largest R&D funding agencies in the federal government, with the 8th largest R&D portfolio in the FY 2008 budget, but receives relatively little attention because its entire R&D investment goes to its own nationwide network of VA hospitals.

After including support costs, total federally funded VA R&D would be \$822 million in FY 2008, up just 0.5 percent from the final 2007 funding level (see Table II-19). The effects of inflation would result in the funding of approximately 2,094 research projects, down by nearly 100 from last year.

VA scientists also compete for research funding from other agencies (such as NIH and DOD), foundations, and industry. Next year, VA projects that \$975 million in R&D funding will come from other sources, mostly from VA scientists winning federal research grants, resulting in a total VA portfolio of \$1.8 billion (up 3.0 percent) when combined with VA appropriations (see Table II-19).