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R&D in Selected Agencies

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HIGHLIGHTS

- Intramural research at the **National Institute of Standards and Technology (NIST)** would be favored with substantial proposed increases in 2007 as part of the President's American Competitiveness Initiative. NIST's Scientific and Technical Research Services (STRS) would see its R&D increase 21.3 percent to $382 million (see Table II-14), while intramural R&D construction would jump 41 percent to $68 million. But proposed cuts in other Commerce R&D programs would more than offset the gains. Once again, the Bush Administration proposes to eliminate NIST's Advanced Technology Program (ATP). R&D in the **National Oceanic and Atmospheric Administration (NOAA)** would fall by $39 million or 6.3 percent down to $578 million.

- R&D in Interior's lead science agency, the **U.S. Geological Survey (USGS)**, would fall $27 million or 4.7 percent in FY 2007 (see Table II-16). As in previous requests, the cuts would be concentrated in USGS' mineral resources and water resources R&D. R&D in the Department of the Interior would fall 6.2 percent to $595 million.

- After a dramatic increase to an all-time high in 2006 due to last summer's highway bill, the **Department of Transportation's (DOT)** R&D funding would fall 8.5 percent or $71 million to $767 million in FY 2007 (see Table II-15). Highway R&D would continue to increase, with a 4.6 percent boost to $397 million.

- The **Environmental Protection Agency's (EPA)** R&D budget would be a proposed $557 million in FY 2007 (see Table II-17), a $43 million or 7.1 percent cut after a similar cut in 2006. Funding for most EPA research areas would decline, with the exception of homeland security.

- The **Department of Veterans Affairs (VA)** would maintain a flat R&D budget of $765 million in FY 2007 (see Table II-19).

DEPARTMENT OF COMMERCE

President Bush's proposed FY 2007 budget proposes substantial increases for key physical sciences research agencies as part of an "American Competitiveness Initiative" (ACI) that was first previewed in his State of the Union address. The ACI proposes to double funding for three key physical sciences agencies over the next decade, and the 2007 budget requests the first installment of 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), and would receive a substantial increase in the 2007 budget after years of flat or declining funding.

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. **Total Commerce R&D would fall 0.9 percent or $10 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 be stars in the 2007 R&D budget as part of the President's American Competitiveness Initiative (ACI). NIST intramural research would climb 21.3 percent to $382 million within the Scientific and Technical Research and Services (STRS) account, while construction funding for NIST research facilities would jump 41 percent to $68 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, including hydrogen, nanotechnology, neutron research, measurement science and technology, cybersecurity, and bioimaging. On the construction side, the large increase would allow for major renovations at NIST's Boulder (CO) site, repair for aging facilities, and 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. **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 has a total budget of $79 million in FY 2006, down by nearly half from the previous year, and can only fund previously awarded grants because it has no money available for new grants in 2006. Congress has repeatedly saved the program from termination, and will be asked to do so again in the 2007 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. 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 slightly off the previous year's funding level, but 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.

The cuts to NIST's external programs leave the total NIST budget down a steep $171 million or 22.7 percent to $581 million. Among the proposed cuts are $126 million in non-R&D congressionally earmarked projects in places far away from NIST facilities within the normally R&D and internal Construction of Research Facilities account in 2006. Because the budget cuts disproportionately affect the non-R&D earmarks and the non-R&D MEP in the 2007 budget, total NIST R&D would increase 6.4 percent to $451 million.

National Oceanic and Atmospheric Administration (NOAA) R&D would fall $39 million or 6.3 percent down to $578 million (see Table II-14), primarily but not entirely due to the proposed elimination of a bumper crop of 2006 congressional earmarks in 2007. Within the NOAA budget, the largest research office is Office of Oceanic and Atmospheric Research (OAR), whose budget would fall from $380 million to $349 million. In OAR, the entire cut would be from eliminating earmarks, allowing for increases in OAR core programs. Climate Research would increase from $170 million to $182 million, including a 14 percent boost to $126 million for competitively awarded research programs after a reorganization and a cut in 2006. The National Sea Grant College Program would hold steady at $55 million after a cut in 2006, as would the core Weather and Air Quality Research program at $41 million. (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. R&D to support Interior's land management responsibilities would total $595 million in the FY 2007 budget, a cut of $40 million or 6.2 percent from 2006, 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, 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. Because of these characteristics, USGS is left well out of the spotlight that shines on basic research in the physical sciences in the American Competitiveness Initiative (ACI). While the ACI and FY 2007 budget propose substantial increases for key physical sciences research programs, the Bush Administration proposes $950 million for the total USGS budget, a cut of $20 million from 2006.

USGS R&D would make up most of the Interior portfolio, totaling $532 million in FY 2007 for a cut of $27 million or 4.7 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 divisions, with only the National Mapping Division proposed to increase.

The Geologic and Mineral Resources Division would see its R&D funding cut $18 million or 8.6 percent down to $194 million, but as in past years this proposal is unlikely to make it through Congress. USGS proposes to cut the $53 million mineral resources R&D program in half to just $31 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. The Division's slightly smaller program in energy resources would increase to $26 million in order to perform oil shale assessments and gas hydrate research mandated by the Energy Policy Act of 2005. There would also be modest increases for the earthquakes hazards research portfolio. In another earth sciences-related division, Mapping and Geography R&D would increase $6 million to $46 million, primarily for R&D related to the Landsat 8 satellite scheduled for launch in 2010.

Water resources R&D would fall $11 million or 8.9 percent to $115 million, but Congress is likely to reject these cuts as it has for past proposed cuts. USGS puts forward its perennial proposal to eliminate federal funding for the water resources research institutes for a savings of $6 million in 2007, but Congress has rejected similar proposals in past years and has preserved the federal role in these cooperatively funded institutes. Funding for the Toxic Substances Hydrology Program would fall to $13 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 $63 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.

USGS biological research programs would fall $6 million to $173 million because of the proposed elimination of 2006 earmarks. Within the remaining portfolio, there would be flat funding for most areas. In 2006, emergency funding of $3.7 million was provided for USGS to initiate an avian flu research program; the program would continue in 2007 with $3.2 million in funding, a slight reduction because the 2006 funds include one-time purchases of equipment.

DEPARTMENT OF TRANSPORTATION (DOT)

The Department of Transportation (DOT) funds a broad range of highway, aviation, traffic safety, rail, transit, and marine transportation programs. Its total budget would be $63.6 billion in the FY 2007 request, an increase of $1.8 billion or 2.9 percent. R&D is a relatively small part of the DOT budget and would total $767 million in FY 2007, a cut of 8.5

percent or $71 million that would retreat from a dramatic increase of $131 million in 2006 to an all-time high (see Table II-15). Funding for aviation R&D would fall, along with R&D on most other transportation modes, but highway R&D would continue to increase by $18 million to $397 million.

After nearly two years of stops and starts and temporary extensions, Congress approved a new authorization bill 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, commonly called the highway 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 25 percent in 2006 to a record $380 million. The FY 2007 budget, still based on the multi-year highway bill, would sustain those increases with a $397 million R&D investment, an increase of 4.6 percent. The surface transportation research portfolio nearly doubled last year to $147 million for R&D on highway safety, pavement technologies, highway operations, environmental impacts, and other road topics, and would be sustained at that level for FY 2007. The Intelligent Transportation Systems (ITS) portfolio of innovative technologies to improve traffic flow and reduce traffic congestion enjoyed a big boost last year from the highway bill and would be sustained at $75 million in 2007.

Federal Aviation Administration (FAA) R&D would total $235 million in 2007, a sharp cut of 24 percent or $75 million coming after a large increase in 2006. Last year's budget request proposed cuts in FAA R&D, but Congress boosted FAA's R&D efforts in 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 FY 2007 request proposes only slight cuts in FAA's main Research, Engineering, and Development, which is mostly focused on aviation safety, but proposes steep cuts in the Facilities and Equipment portfolio of advanced technology development and 'free flight' technologies.

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. Mirroring trends in the overall EPA budget, the FY 2007 request would cut EPA's R&D funding by $43 million or 7.1 percent to $557 million in 2007 following a similarly sized cut in 2006 (see Table II-17). Most of the cut would be from the elimination of $33 million in congressionally earmarked 2006 projects from the 2007 request, but the remaining $10 million cut would be distributed across the broad EPA R&D portfolio, with only clean air and homeland security research slated to receive increases.

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 $788 million in 2007, an increase of 8.0 percent. 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 $528 million from S&T, down 7.1 percent. R&D would fall even as the overall budget increases because funding for non-R&D activities would increase dramatically from a transfer in operating costs from the Environmental Programs and Management (EPM) account to S&T. ORD also receives R&D funding from the Superfund program (down $3 million to $30 million) for hazardous wastes research, and small amounts of funding from other EPA accounts.

Congressional earmarks account for much of the decline in the most recent two years for EPA's R&D portfolio. Congressionally designated R&D projects totaled $74 million in 2005; appropriators showed some restraint in 2006 in providing only $33 million for earmarks, while the 2007 request continues the standard practice of deleting earmarks from the request. But because total R&D funding would decline $10 million more than the $74 million earmarks reduction over two years, most core EPA R&D programs would receive slight increases in 2006, but cuts in 2007. Clean air research would fall $6 million down to $95 million after an increase in 2006; within the portfolio, global change research would be $17 million (down $1 million for the second year in a row). Human

health and ecosystems research, the largest part of the ORD portfolio, would fall $10 million to $238 million, with an increase in the computational toxicology program offset by cuts in other areas such as endocrine disruptor research and human health risk assessment. Within this portfolio, there would be a nearly one-third reduction in funding for fellowships down to $8 million.

Homeland security related R&D, however, would continue to be a growth area in the portfolio, rising from $23 million to $30 million this year and up to $38 million in 2007. 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. Another area proposed for an increase is clean water research, up $10 million to $106 million for drinking water and water quality research.

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, but receives relatively little attention because its entire R&D investment goes to its own nationwide network of VA hospitals. VA's Medical and Prosthetic Research is a longstanding program of research aimed at improving health care for veterans through research on injuries and illnesses with special relevance to veterans. All scientists and engineers who receive VA funds must be VA employees, and thus its entire R&D investment takes place in VA hospitals and laboratories except for a small percentage of VA investigators who hold joint appointments with academic institutions.

After including support costs, total federally funded VA R&D would be $765 million in FY 2007, exactly even with the 2006 budget (see Table II-19). The effects of inflation would result in the funding of approximately 2,045 research projects, down 66 from this year.

VA classifies its R&D program into four major areas: biomedical laboratory science, rehabilitation research, health services research, and clinical science. Funding for all four areas would decline in 2007.