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R&D in Selected Agencies

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HIGHLIGHTS

- The intramural research activities of the **National Institute of Standards and Technology (NIST)** benefit from the President's American Competitiveness Initiative (ACI) with substantial proposed increases. NIST's Scientific and Technical Research Services (STRS) would see its R&D funding increase 16.1 percent to $447 million (see Table II-14). Once again, the Bush Administration proposes to eliminate NIST's external Technology Innovation Program (TIP). R&D in the **National Oceanic and Atmospheric Administration (NOAA)** would fall slightly to $576 million.

- R&D funding in Interior's lead science agency, the **U.S. Geological Survey (USGS),** would fall $41 million or 6.9 percent in the FY 2009 budget compared to 2008 (see Table II-16). As in previous years, the cuts would be concentrated in USGS' mineral resources and water resources R&D, partially offset by a sharp increase in global change research.

- The **Department of Transportation's (DOT)** R&D funding would increase 9.9 percent or $81 million to $902 million in fiscal year (FY) 2009 (see Table II-15) because of large requested increases for aviation R&D and highway R&D.

- The **Environmental Protection Agency's (EPA)** R&D portfolio of $541 million in 2009 would be a $7 million or 1.3 percent cut from the 2008 funding level (see Table II-17), with flat funding or cuts to most research areas partially offset by increases for homeland security-related research. 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 decline slightly by 0.8 percent to $884 million in the FY 2009 budget (see Table II-19).

DEPARTMENT OF COMMERCE

President Bush's FY 2009 budget continues to propose substantial increases for key physical sciences research agencies as part of the American Competitiveness Initiative (ACI). The National Institute of Standards and Technology (NIST) in the Department of Commerce is one of the three favored ACI agencies, and would receive a substantial increase for its intramural programs in 2009 to get back on track to doubling by 2016. 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 cuts like most domestic programs in the tight overall domestic budget. **Total Commerce R&D would barely increase by 1.2 percent or $14 million to $1.2 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.

NIST intramural research, performed in NIST facilities in Maryland and Colorado, would climb 16.1 percent to $447 million within the Scientific and Technical Research and Services (STRS) account. Construction funding for NIST research facilities appears to fall, but subtracting $30 million in 2008 funding that would go to extramural construction outside of NIST results in a $20 million increase in NIST construction from $69 million to $99 million in 2009.

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 Technology Innovation Program (TIP),** as it has in the past several budget requests. The TIP was formerly the Advanced Technology Program (ATP) but was restructured, reauthorized, and renamed the Technology Innovation Program (TIP) in the August 2007 America COMPETES Act; the TIP received a 2008 appropriation of $46 million, down 40 percent from the previous year, but the 2009 request would bring funding down to zero. The 2009 request would also eliminate the non-R&D Hollings Manufacturing Extension Partnership (MEP) with $4 million just for close-out costs instead of the roughly $100 million annual appropriations of recent years. 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. Congress has repeatedly saved these two programs from elimination, and will try to do so again in the 2009 appropriations season.

National Oceanic and Atmospheric Administration (NOAA) R&D would fall $5 million or 0.9 percent down to $576 million based on preliminary data (see Table II-14). Within Oceanic and Atmospheric Research (OAR), the Climate Research program would increase by $3 million to $195 million, with increases for the competitive research program partially offset by cuts in earmarks and intramural programs. The National Sea Grant College Program would see its funding decline $2 million down to $55 million, and the National Undersea Research Program (NURP) would be merged with the Ocean Exploration and Research program at a funding level of $28 million, down slightly from 2008. (For more information on NOAA climate programs, please see Chapter 15; also 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. R&D to support Interior's land management responsibilities would total $618 million in the FY 2009 budget, a cut of $59 million or 8.7 percent from the 2008 funding level (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 (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 the physical sciences in the Bush Administration's American Competitiveness Initiative. While the FY 2009 budget, as in the past two years, proposes substantial increases for key physical sciences research programs, the President's budget proposes $969 million for the total USGS budget, a cut of $38 million from a $1.0 billion 2008

appropriation finalized in December and also a cut from the 2007 budget of $994 million (see Table II-16).

USGS R&D totals $546 million in the FY 2009 request for a cut of $41 million or 6.9 percent (see Table II-16). R&D funding would decline in three of the four USGS research divisions, with the Biological Research Division remaining flat and the lone increase going to a new program on global change.

The Geologic Hazards, Resources, and Processes Division would see its R&D funding cut dramatically by 15 percent or $33 million down to $185 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 $51 million mineral resources R&D program in half to just $26 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. In this budget, there would also be cuts in other geologic programs, including a $5 million cut in the earthquake hazards program to $49 million, a proposed $3 million cut to the $13 million Earth Surface Dynamics program with the remaining $10 million moving to the Global Change program, and reductions in volcano hazards and global seismographic network funding. The lone increase would go to Coastal and Marine Geology, up $7 million to $47 million for oceans-related research and oceans mapping, a USGS priority in 2009 in collaboration with other federal agencies with an emphasis on mapping the outer continental shelf in the Arctic. In another earth sciences-related division, Geographic Research R&D would fall $6 million down to $42 million.

Water Resources Investigations R&D would fall $21 million or 17 percent to $107 million. Congress is likely to reject these cuts as it has in the past, but will be hard pressed in the 2009 budget season to come up with the necessary dollars to restore funding. USGS puts forward its perennial proposal to eliminate federal funding for the water resources research institutes for a savings of $6 million in 2009, 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 $3 million to $11 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 steep cut of $10 million down to $54 million for the National Water Quality Assessment Program (NAWQA); 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. USGS would also cut $4 million from the currently $15 million Hydrologic Research and Development program. The few increases would go to the National Streamflow Information Program (up $4 million to $24 million) and the Ground-Water Resources Program (up $3 million to $11 million) to start the first national water census in three decades on water availability, quality, and use.

USGS biological research programs would barely increase to $180 million. The largest increase would go to the new Global Change research program, which was created by Congress in 2008 with a $7 million appropriation and would nearly quadruple to $27 million in the 2009 request by taking in climate change activities previously funded in the four traditional USGS divisions. The program aims to give federal land managers adaptive management tools to respond to land changes from climate change, through a national climate change research and observation network. (For more on USGS, see Chapters 16 and 17.)

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 $57 billion DOT budget but would increase nearly 10 percent to $902 million in FY 2009,** an $81 million increase primarily for aviation programs but also for highway R&D (see Table II-15). R&D funding would increase even as the total DOT budget would fall 10 percent to $57 billion, though primarily because of proposed rescissions in previously appropriated funds.

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. 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 2009 budget, still based on the multi-year highway bill, would sustain those increases with a $393 million R&D investment, an increase of $20 million or 5.4 percent. The surface transportation research portfolio on highway safety, pavement technologies, highway operations, environmental impacts, and other road topics would increase $23 million to $167 million in FY 2009 with increases across the board. The Intelligent Transportation Systems (ITS) portfolio of innovative technologies to improve traffic flow would also increase to $51 million, up $7 million. The FHWA budget also includes state highway R&D, distributed to state and local governments to support their R&D efforts, but funding for these state funds would decline $11 million or 6.4 percent to $156 million in the 2009 request.

Federal Aviation Administration (FAA) R&D would receive a large increase of 24 percent in 2009 to $335 million, a reversal of the past three DOT budget requests which proposed cuts in FAA R&D. The FAA funds a number of R&D efforts on 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 2009 request focuses its increases on the Next Generation Air Transportation System (NextGen), a suite of technologies and operating systems envisioned to transition the U.S. civil aviation system from radar-based to satellite-based navigation and to boost capacity while preserving safety. Increases related to NextGen would boost funding for both FAA's main Research, Engineering, and Development (RE&D) account and also the Facilities and Equipment portfolio of advanced technology development for next-generation aviation systems. The RE&D NextGen increases would focus on

environmental research, especially on aircraft technologies that would reduce emissions and noise.

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 2009 request would continue the trends of recent years by cutting EPA's R&D funding by $7 million or 1.3 percent to $541 million** (see Table II-17). Nearly all EPA research areas would decline.

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. Nearly all of EPA's R&D funding comes from the Science and Technology (S&T) budget account, which would total $764 million in 2009, up slightly from the final 2008 funding level. R&D funding makes up two-thirds 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 $513 million from S&T, down $7 million of which $4 million would be from the elimination of 2008 earmarks (see Table II-17). ORD also receives R&D funding from the Superfund program (up $1 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 2009 budget (see Table II-17). Clean air research would fall $3 million to $97 million after Congress added funds in 2008 appropriations. EPA's contribution to global change research would continue to slide, down to $16 million from a congressionally boosted $20 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 $6 million to $217 million, with an increase in the computational toxicology program to $15 million offset by cuts in other areas such as endocrine disrupting chemicals and human health and ecosystems protection. Within this portfolio, fellowships funding would fall $1 million to $9 million.

Homeland security related R&D, a growth area in recent years, would increase from $31 million to $37 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.

Environmental research in general and EPA R&D in particular would fall steeply in the 2009 budget within a tight overall domestic budget. In inflation-adjusted dollars, **EPA R&D would fall to the lowest funding level in more than two decades (since 1985) if the FY 2009 budget becomes final**. EPA's R&D support has been declining steadily for the past few years after steady growth in the late 1990s.

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.

After including support costs, **total federally funded VA R&D would be $884 million in FY 2009, down $7 million or 0.8 percent from the final 2008 funding level (see Table II-19).** The final 2007 and 2008 funding levels include $33 million in 2007 and $69 million in 2008 emergency appropriations for R&D related to Iraq war veterans' needs, so the 2009 request would be an increase over non-emergency appropriations.

VA scientists also compete for research funding from other agencies (such as NIH and DOD), foundations, and industry. Next year, VA projects that $961 million in R&D funding will come from other sources, mostly from VA scientists winning federal research grants, which could result in a total VA portfolio of $1.8 billion when combined with VA appropriations.