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Budget blow to US science

Physics takes a hit despite earlier promises.

Eric Hand

It was an imperative that was supposed to transcend party politics. The America COMPETES Act, put forth by congressional Republicans and Democrats and signed into law by President Bush in August, was meant to signal support for boosting basic science in the name of remaining competitive internationally.

Taking a hit: high-energy physics at Fermilab faces severe cuts in funds in the budget approved by Congress.
P. GINTER

But in a mammoth $555-billion spending bill passed by Congress on 19 December, funding for basic science took a beating. Gone are plans to double funding at the National Science Foundation (NSF) and the Office of Science of the Department of Energy (DOE). "It's dead in this budget," says Samuel Rankin, Washington DC office director for the American Mathematical Society and chair of the Coalition for National Science Funding. "Hopefully we can resurrect that feeling again next year."

The spending bill marks the end of the annual budget wrangling in Congress (see Nature 449, 962; 2007). It includes spending for all government departments other than defence, which has already been approved. The final numbers for fiscal year 2008 include what amounts to a 0.5% increase for the National Institutes of Health (NIH), less than one-sixth of the rise that Congress had sought in an earlier, unsuccessful bill. Within the physical sciences, programmes in high-energy physics and fusion are hit particularly hard. "This is probably the worst budget for science that anyone can remember," says Michael Lubell, a spokesman at the American Physical Society in Washington DC. "It absolutely devastates and probably wipes out American high-energy physics."

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Democrats blame veto threats from the Bush administration, which forced a last-minute showdown over the size of spending on domestic programmes such as science. The Republican version of the story is that Congress could have kept the domestic priorities if it hadn't been for thousands of special 'earmarked' projects worth billions of additional dollars.

One Democratic priority, energy research, fared relatively well; Congress ignored a flat presidential request and instead boosted research and development (R&D) money for renewables, energy efficiency and nuclear energy by 30%, to nearly $1.3 billion, according to an analysis by budget expert Kei Koizumi at the American Association for the Advancement of Science. The bill also boosts funding for clean coal and other fossil-fuel R&D activities by 13%, to $557 million. Overall funding for nuclear-energy programmes increased, although the president's request for the Global Nuclear Energy Partnership, to hasten work on reprocessing nuclear waste, was cut by more than half, to $181 million.

The DOE Office of Science took bigger hits. Although its total science budget grew 4.6% to $4 billion, most of those increases were for supercomputers and biological research. Congress withheld money for the energy department's $160-million commitment to ITER, the international fusion reactor in France, and slashed funding for the International Linear Collider (ILC), the next-generation particle accelerator, from $60 million to $15 million.

Most of the ILC money would have gone to Fermilab in Batavia, Illinois. The lab also saw its NO_A neutrino experiment programme eliminated. Fermilab's director, Pier Oddone, told his staff to expect 200 lay-offs in the spring (from a 1,900-person workforce), along with mandatory unpaid leave for remaining employees. The lab may even temporarily shut down its Tevatron accelerator.

Elsewhere within the energy department, at the National Nuclear Security Administration, money was found for non-proliferation and verification, which saw a 43% increase to $387 million, at the expense of designing and maintaining nuclear weapons. The Reliable Replacement Warhead programme, to develop a new generation of nuclear weapons (see Nature 442, 18–21; 2006), was cut completely.

The National Science Foundation saw its R&D funding grow 1%, to $4.5 billion — not the 8% rise requested by Bush.

At the National Oceanic and Atmospheric Administration, R&D funding rose 7.6%, to $573 million. At the National Institute of Standards and Technology, total R&D funding rose nearly 5% to $514 million, but within that the agency's main research programme drops 0.8% from $372 million in the previous year.

NASA saw a 5.7% increase in its overall R&D budget, to $12.5 billion. But much of that money is tied to completion of the International Space Station and for rockets to return astronauts to the Moon. Within the $5.5-billion science directorate, Earth sciences

received the biggest boost — of 4.4%, to $1.5 billion — while planetary science suffered the most, with a 1.4% cut, to $1.4 billion.

The NIH, which had been set to receive a 3.1% boost in a budget bill vetoed by Bush in November (see Nature 450, 470; 2007), will instead get a 0.5% increase of $133 million, bringing its effective budget to $28.9 billion. That will make 2008 the fifth consecutive year of effectively flat funding for the NIH.

The 0.5% increase drew sharp rebukes from advocates for biomedical research, who criticized Bush for forcing Congress to shave more than half-a-billion dollars from what it had allotted to the NIH in November. "That was a really big hit," says David Moore, senior associate vice-president at the Association of American Medical Colleges in Washington DC. "We're extremely disappointed," adds Jon Retzlaff, the senior lobbyist at the Federation of American Societies for Experimental Biology.

Still, some corners of the NIH will have reason to celebrate, such as the once-embattled National Children's Study, which Bush had tried to eliminate but which ended up growing by $42 million, to $111 million. Open-access advocates also applauded a provision in the bill that will require NIH-funded investigators to submit — or have submitted for them — their peer-reviewed manuscripts to the National Library of Medicine's PubMed Central when they are accepted for publication. The manuscripts will be made publicly available no later than 12 months after publication.

Meanwhile, Speaker of the House Nancy Pelosi (Democrat, California) sent out a letter to the research community, saying that "her commitment to the innovation agenda remains strong and steadfast". And advocates of the physical sciences vowed to keep fighting. Charles Vest, president of the National Academy of Engineering, says that other countries are proceeding apace with research investments. "If we keep doing business as usual," he says, "we're going to get our lunch eaten."

Additional reporting by Meredith Wadman and Jeff Tollefson

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