

Increased funding for physical sciences evaporates after budget showdown

Particle physics and ITER participation are the losers as Congress wraps up fiscal year 2008 appropriations. NSF growth is slowed.

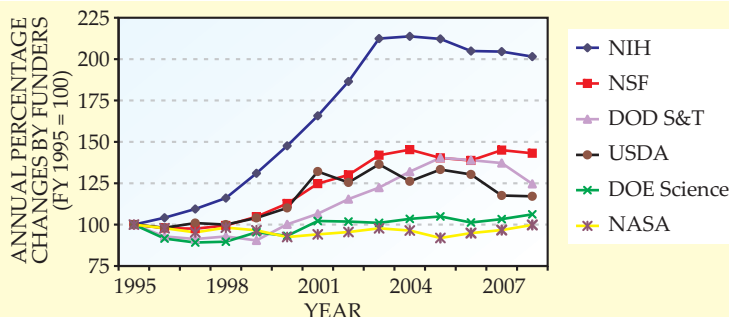
What Congress gives, Congress can take away. When the dust finally settled from one of the most rancorous and partisan appropriations processes in recent memory, the big funding increases for basic physical sciences research that had seemed a certainty as recently as mid-December had all but disappeared.

Among the sciences, particle physics was hardest hit by the omnibus spending package that was signed into law in December, nearly three months into the 2008 fiscal year. Caught in the crossfire of a budget feud between the White House and congressional Democrats, the Department of Energy's Fermilab and SLAC were forced to announce plans to shed hundreds of jobs and terminate R&D on several accelerator projects. And the \$160 million US contribution to the ITER experimental fusion facility was practically eliminated by last-minute cuts that were made to reduce overall spending to the level demanded by President Bush. NSF was wounded too, losing \$500 million of the funding increases that had been included in bills already cleared by House and Senate appropriators.

At press time, some science advocates were readying a plan for congressional allies to introduce a supplemental appropriations bill that would add back \$100 million of the ITER contribution and \$50 million for high-energy physics. The bill would also include \$150 million to permit full utilization of the x-ray and neutron user facilities at several DOE labs.

It's a long-shot strategy, since supplementals are ostensibly limited to funding for emergencies such as wars and natural disasters. Still, Michael Lubell, director of public affairs at the American Physical Society, said the cuts to high-energy physics and ITER qualify as emergencies, since the layoffs and project terminations will permanently damage US particle physics, and the loss of ITER funding will further tarnish US credibility on international scientific projects. Cutbacks at DOE user facilities will accelerate the flight of high-tech R&D to Europe and Asia, he warned.

White House science adviser John Marburger said he was surprised at the way the numbers came out, although



Source: AAAS analysis of R&D in AAAS Reports VIII-XXXII. FY 2008 figures are latest AAAS estimates of FY 2008 appropriations.

Last-minute cuts made by Congress to research at the Department of Energy and NSF continue a trend of stagnating federal support for science.

he had expected that Congress would have trouble trying to find money for the new programs authorized in last year's America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science (COMPETES) Act, which is supposed to shore up US technological leadership. Marburger hinted that the administration might take some "corrective action" to mitigate the shortfalls, particularly for ITER. But he declined to be specific. "I'm not an expert on how this all works," he said. "I'm the science guy."

Before the budget standoff with Bush, House and Senate appropriators had approved a 16% increase for DOE's Office of Science and a 9% jump for NSF. But by the time a truce was declared, the increases had shrunk to 4.5% and 2.5%, respectively. After subtracting \$123 million in congressional earmarks that were placed in the science office budget, the DOE science programs rose just 2.6%. (By tradition, lawmakers do not earmark NSF's budget.)

Fermilab hit hardest

Nowhere was the impact of the cuts greater than at Fermilab, where distressed director Piermaria Oddone told the 1900 employees to brace for 200 layoffs. Those who remain on staff will be required to take two unpaid days off each month. "In my career of 35 years with the DOE, I have never been handed a problem more difficult than this one," Oddone told an all-hands

meeting on 20 December.

Another casualty of the spending measure is R&D for the International Linear Collider, most of which took place at Fermilab. The cutbacks Congress ordered in the ILC program effectively terminated the effort for the remainder of the year (see related story on page 21).

In a "dear colleague" letter, Dennis Kovar, acting associate director for high-energy physics in DOE's Office of Science, said the 8% cut to his program's budget from fiscal year 2007 levels—\$94 million below Bush's request for FY 2008—forced the "premature" termination of the B factory at SLAC. The PEP-II accelerator that powers the B factory had been scheduled to close at the end of 2008. Kovar said the decision was based on recent guidance from the scientific community that ranked Fermilab's Tevatron collider and its Neutrinos at the Main Injector experiment as higher priorities than the B factory.

SLAC's newly installed director Persis Drell told employees that the B factory will be shuttered in early March. The lab "will move with all deliberate speed" to lay off about 125 staff, she said at an all-hands meeting on 7 January. Combined with the 100 redundancies that were already planned to "re-adjust the skills mix" of the 1500-member SLAC workforce, it will be the largest number of job cuts ever for the lab. Pink slips will be handed out this month and take effect in April, she said.

"It pains me greatly that at a time

when particle physics needs to be ever more international, the political process in the US has resulted in real damage to the relationships with our international partners,” Drell lamented. As the lab’s highest priority for the future, the Linac Coherent Light Source, which is under construction, will be protected from the funding cuts. But the lab’s Synchrotron Radiation Laboratory will have to cut operations 15% to accommodate the budget reductions.

US ITER support slashed

The jettisoning of all but \$10 million of DOE’s scheduled \$160 million contribution to ITER won’t immediately affect jobs, but it will cement the reputation of the US as an unreliable partner in international scientific collaborations, observers said. Raymond Orbach, undersecretary of energy for science, told ITER director general Kaname Ikeda that DOE was “forced to defer” its cash contribution, postpone some US design and R&D activities, and forego some long-lead hardware acquisitions. Stephen Dean, president of the industry trade group Fusion Power Associates, said the fiscal impact on ITER will be small, since the project is just getting under way and won’t need the money this year. DOE was specifically enjoined by the legislation from diverting any of the \$289 million appropriated for the domestic fusion research program to pay for ITER. The department could use resources from other programs but would first need approval from its authorizing and appropriations committees.

A spokeswoman for the European Commission said the European Union, as host of the ITER project, trusts that the US will find a way to honor its commitment to contribute.

An effort to develop energy applications for inertial confinement fusion also was reduced, from \$25 million last year to \$14 million in FY 2008. That high-average-power lasers program

owes its existence to a recurring congressional earmark in the nuclear weapons budget.

Research initiatives halted

The budget shortfall has forced the basic energy sciences unit of DOE’s science office to halt research initiatives in solar energy utilization, hydrogen, advanced nuclear energy systems, and mid-scale instrumentation, said the unit’s acting director Harriet Kung. Her division had planned on funding a portion of the 660 grant proposals in those areas that were left over from a 2007 solicitation, she said in a letter to colleagues. Smaller appropriations than expected last year provided only enough for 40 awards.

The Intense Pulsed Neutron Source user facility at Argonne National Laboratory has been shut down permanently, Kung said. Each of the other user facilities at national laboratories—synchrotron light sources, neutron scattering facilities, electron-beam micro-characterization centers, and nanoscale research centers—will have to reduce their hours of operation by as much as 20%. Construction funding for a successor to the National Synchrotron Light Source at Brookhaven National Laboratory has been cut by one-third, and construction and major instrumentation fabrication under way at SLAC and at Lawrence Berkeley and Oak Ridge national laboratories will be stretched out.

The basic energy science unit’s core programs will be funded at 2007 levels, and Kung said some layoffs are likely, due to the effects of inflation.

NSF, which stood to get a 7.4% increase in the appropriations bills, will have to make do with a 2.5% rise. The research and related activities accounts, the grants-issuing side of NSF, ekes out just a 1.1% increase. Tony Chan, assistant director for mathematics and physical sciences, by far the largest of the NSF directorates, admitted that “a lot of hard

decisions will have to be made, but we have a lot of experienced people here.” In accommodating the smaller budget, Chan said, all efforts will be made to protect the individual investigator grants that are the agency’s bread and butter. It’s also been determined that the \$52 million NSF-wide Cyber-enabled Discovery and Innovation initiative will be fully funded in 2008.

Finger-pointing

Congress and the administration took turns blaming each other for the bad news. The omnibus bill “turned its back on Congress’s concern for competitiveness,” Marburger said, by wiping out most of the increases for science and technology that had received strong bipartisan support in the America COMPETES Act, which was signed into law in August 2007.

But the White House was hardly without fault. Bush’s 11th-hour refusal to negotiate with Democrats on a spending ceiling he had imposed forced lawmakers in the dead of night to trim back spending bills that had been assembled and approved in a far more thoughtful process. In doing so, they unsurprisingly took their red pen to presidential priorities. The increases for the physical sciences were part of Bush’s American Competitiveness Initiative to revitalize US technological leadership. Marburger said he had little doubt that Congress has deliberately chosen the science programs for the budget-cutting scissors.

Ironically, House Speaker Nancy Pelosi’s (D-CA) “Innovation Agenda” proposed to double nondefense R&D spending over 10 years. Admitting that funding levels this year fall short of the 7% annual increases needed to meet the goal, Pelosi assured the scientific community in a letter that her commitment to growing the physical sciences budgets “remains strong and steadfast.”

David Kramer

New UK research council abruptly abandons some major international projects

Withdrawal from the International Linear Collider and from several observatories without peer review or even consultation angers British research communities.

What appeared last spring to be a rational reorganization of the way in which the UK funds several fields of science and technology has now elicited howls of outrage from British particle physicists and astronomers. In April the Particle Physics and Astronomy Research Council (PPARC) was merged

with the Council for the Central Laboratory of the Research Councils (CCLRC) to create the Science and Technology Facilities Council. Astronomer Keith Mason was appointed chief executive of the new STFC.

The CCLRC had been responsible for the Daresbury and Rutherford Ap-

pleton central laboratories as well as for major UK facilities like the ISIS spallation neutron source and the Diamond synchrotron light source. The STFC also took on the nuclear-physics responsibilities that had been the province of the Engineering and Physical Sciences Research Council.