SCIENCE POLICY

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NSF Authorization Act Approved; Moves to Appropriations

Just before the U.S. Congress broke for the winter holidays, President George W. Bush signed H.R. 4664, The National Science Foundation (NSF) Authorization Act of 2002—more colloquially known as the NSF doubling bill. The provisions of the 92-page bill set the NSF on track to double its federal funding level by 2007 after suffering from essentially flat budgets since the 1980s. The move came as a welcome surprise to some, since the bill initially met with resistance from the Bush administration, which had requested a 3% increase for NSF earlier this year.

Hearings in September helped clarify the contested issues, and the discrepancies between the Senate and House of Representatives versions of the bill were resolved in a compromise bill. The administration and the authorizing committees reached an agreement on compromise language in late November.

"I think it bodes well for the future of NSF funding," said Thomas Weber, director of NSF's Materials Science Division, of the final version of H.R. 4664. "It signals strong bipartisan support for NSF within Congress, and that's definitely a good thing."

Increases in authorization levels specified in the bill for each of the next five fiscal years (FYs) range from 13.1% to 15.5%, with specific allocations provided for FY 2003: $704 million for information technology research, $301 million for nanoscale science and engineering, $1006 million for education and human resources, $172 million for major research equipment and instrumentation, and $3.5 million for the National Science Board.

John Hunt, acting director for the mathematical and physical sciences at NSF, is particularly heartened by the allocation for nanoscience, in which materials play a critical role. "We have experienced an incredible amount of interest in this topic, with a large number of proposals," he said. "But the funding rates have been so low that we've had to turn down quite a lot of good proposals. Having more funds would enable us to fund more of those, which is extremely important for the economic future of the country."

Weber estimates that his division needs a 30% increase to fund all of the worthwhile proposals it receives, not including the corresponding need to increase individual grant sizes. "There was a time when industrial giants like Bell Labs conducted a lot of basic research; but today, industry is increasingly backing away from funding fundamental science, so it's very important that the government steps in," he said. "New materials lead to new technologies, which produce new markets and economic wealth. And 70% of today's technical jobs are in materials and the physical sciences, yet those budgets have been flat for a very long time."

Among the new provisions in the compromise bill is language stating that sustained increases in funding levels are "contingent on a determination by Congress that the Foundation has made successful progress toward meeting management goals." The NSF director will be required to submit an annual plan summarizing the allocation of funding for research and related activities, including information on grant size and duration, trends in research support for major fields, and agency efforts to ensure that an appropriate balance is maintained among the major fields and subfields of science, mathematics, and engineering.

Fortunately, according to Weber, NSF is in good stead to meet the new management requirements, having instituted numerous management changes in recent years. In 2002, for the first time, the agency met its goal of making a decision within six months on 70% of proposals received—an achievement all the more impressive when one considers that the number of proposals has increased 10% in the last two years.

"I think the Bush administration is placing more and more stress on good management, and more budgets are going to be driven by management goals," Weber said. "And that's not necessarily bad."

H.R. 4664 provides for much more than suggested authorization levels, detailing specifics on changes in the agency's program management and including language stating that the NSF must be "more proactive" in sustaining the U.S. competitive advantage. It also addresses the role of the National Science Board by making that body financially independent of the NSF, with authority to hire its own staff, and requiring it to hold open meetings. The bill also provides for numerous education programs in science, math, engineering, and technology, combining the provisions of several other science and technology education bills that had been introduced to Congress.

Specific authorizations include a partnership program to improve K–12 science and math education, as well as a scholarship program to encourage students majoring in these areas to pursue teaching careers. There are provisions for the establishment of research centers on learning and education improvement, as well as a talent expansion program to encourage more college students to pursue careers in science, math, engineering, and technology. Of particular importance for materials science are the NSF programs for improving teacher education and attracting more students to science and mathematics, according to Hunt. "Non-U.S. students have always been, and will continue to be, an important part of the mix in this country, but we can't continue to depend on them as the major source of graduate students in the future," he said. "It's vital that we focus on growing our own."

Both Weber and Hunt are careful to point out that, as encouraging as the passage of H.R. 4664 is for the NSF, it is merely an authorization bill. It is useful as a roadmap to guide future spending, but not a guarantee that the funds will materialize. That responsibility lies with Congressional appropriations committees, which will be facing tough financial decisions as they grapple with increased spending on national security, the threat of impending war, a flagging national economy, and possible future additional tax cuts.

"I personally wonder whether the money will actually be there when the appropriations committees meet; that's when the rubber really hits the road," said Weber in January. "But [H.R. 4664] is a promising first step."

Weber's fears might be well founded. A draft Senate appropriations bill went into conference at the end of January with significantly lower increases for NSF than specified in H.R. 4664. That bill calls for a 10% increase in research and a 6.5% increase for the agency overall, compared to the 15% increase for research and 10–14% overall increase outlined in the NSF doubling act. While those numbers may improve during conference deliberations in February, as of press time political insiders deemed this unlikely.

JENNIFER OUELLETTE

ARC Selects Research Centers of Excellence

Eight centers of excellence were selected by the Australian Research Council (ARC) to share ~$90 million during the next five years to undertake scientific research, announced Dr. Brendan Nelson, Commonwealth Minister for Education, Science, and Training, last December.

Brendan said, "The new centers will provide the scale and focus needed for Australia to compete internationally, with exceptional strength in fundamental research and commitment to building linkages between researchers and industry. These eight centers have already formed extensive national and international partnerships, attracting nearly $50

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million through collaborations."

Two of the new centers are Advanced Silicon Photovoltaics and Photonics, with The University of New South Wales as the administering university and S.R. Wenham as interim director, and Ultrahigh-Bandwidth Devices for Optical Systems, with The University of Sydney as the administering university and C.M. de Sterke as interim director.

Research in the ARC centers of excellence will address the national research priorities recently announced by the Australian Prime Minister.

China and U.S. Renew S&T Protocol

The *China Science and Technology Newsletter*, published by the Ministry of Science and Technology of the People's Republic of China, announced a joint agreement between China and the United States to renew the Protocol on the Cooperation in the Field of Industrial Technologies and S&T Information and Policies. Xu Guanhua, Chinese Minister of Science and Technology (S&T), and Donald Evans, U.S. Secretary of Commerce, signed the agreement to renew the Protocol for the next 10 years during a trip by Minister Xu to the United States.

As defined by the renewed Protocol, both parties will focus their cooperation on the exchange of S&T reports and literature; the development and improvement of an information system and an associated database; studies on S&T policies, laws, regulations, and by-laws concerned with intellectual property protection; foreign investment and technical permission; an industrial precompetition study; and technical standards. Exchanges and cooperation aimed at policies, plans, and management for promoting the development of small and medium-sized businesses are also main topics for future cooperation.

The Protocol was formerly signed in 1979 under the framework of the China-U.S. Agreement on the Cooperation in the Field of Science and Technology.

Government to Invest in Bandwidth Development for Research Universities

During the next two years, The Australian Commonwealth Government will invest $42.5 million in bandwidth infrastructure for Australian universities, according to Dr. Brendan Nelson, Minister for Education, Science, and Training, and Senator Richard Alston, Minister for Communications, Information Technology, and the Arts. As a first step, officials announced the establishment of the Australian Research and Education Network (AREN) last December.

The AREN will address future as well as current bandwidth needs of Australian higher education institutions and the research community. A large bandwidth connection enables researchers to control a large instrument such as a radio telescope in a remote or distant locality from their laboratory on campus. Alternatively, it enables a university to provide online courses to many more students than they presently can. Increased bandwidth can also link groups of researchers in different parts of the country or overseas in real time with advanced video conferencing facilities, enabling far greater collaboration at reduced cost than is currently available.

The establishment of AREN was guided by the Higher Education Bandwidth Advisory Committee's report, "A Framework for an Australian Research and Education Network," which can be accessed at Web site http://www.dest.gov.au/highered/otherpub.htm#bandwidth.

Competition Encourages Creation of Innovative Technological Enterprises

The French Ministry for Research and New Technologies, in association with Agence nationale de valorisation de la recherche (ANVAR) and the European Social Fund, has launched the fifth national competition to encourage the creation of innovative technological enterprises in France. The competition, announced in January, aims to discover and reward the best technological innovation projects.

Projects eligible for participation in the competition are enterprises that are just starting and need time to develop and mature. Recipients will receive grants of up to €45 thousand to finance up to 70% of the services needed to complete the project.

Another category rewards projects at a more advanced stage, where the creation of a business enterprise is completed. After the business enterprise is set up, selected projects will receive a grant of up to €450 thousand, which will be used to finance up to 50% of the innovation program.

Special prizes will be awarded to the three most promising projects of the year and the two best projects presented by graduate students and young graduates, respectively.

Interested participants from France and the other member states of the European Union, whether they are students, unemployed, or working in the public or private sector, are invited to compete. For further details about the rules of the competition and to obtain an application form, access Web site http://www.recherche.gouv.fr/technologie/concours. □

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