

Budget '85: Defense Still the Big Winner

The Reagan administration's proposed budget for fiscal year 1985 would boost federal support of research and development (R&D) to \$53 billion, 14 percent higher than in FY 1984. If approved by Congress, which received the budget proposal this week, the figure would represent a 50 percent increase in federal R&D funding since Reagan took office. Most of the proposed R&D funds are earmarked for defense-related programs.

"This budget is clear testimony to the Reagan administration's R&D policy," says Presidential Science Advisor George A. Keyworth II. "Over the past four years we've drastically reduced funds for the kinds of demonstration projects that industry can pursue better, as well as for other nondefense development; at the same time we've created a strong base for our long-term economic vitality by bringing basic research from the smallest to the largest component of nonmilitary R&D funding."

Even so, it is military spending that dominates the president's R&D agenda for FY '85, which begins in October. Defense-related projects are not only being offered 64.4 percent of the total budget slated for R&D, but they are also scheduled to receive the biggest one-year increase — 22 percent. Though most of the total would go for engineering weapons technologies, even basic-research funding within the Defense Department would increase 15 percent — half again as much as basic-research funding would increase throughout the federal government. Keyworth said that this emphasis on defense was needed to support strategic-weapons modernization, and pointed toward such specific administration priorities as the Trident II submarine-launched ballistic missile, MX intercontinental ballistic missile and B-1 bomber project.

One defense program slated for a significant cut — estimated as high as \$30 million — is inertial-confinement (laser and particle beam) fusion energy. Keyworth, who headed the laser-fusion program at Los Alamos National Laboratory before coming to work for the President, acknowledges that the program showed exciting promise in the early 1970s. In recent years, however, this research effort has been characterized by little more than building of the ever bigger lasers, he says. Specifically, he charges, the program has paid woefully inadequate attention to studying the physics behind the concept. No more. He says that from now on the program will focus on extracting good physics from the existing facilities. More important, Keyworth said at a news conference, "it is unlikely inertial-confinement fusion represents a competitive or

	(Billions of Dollars)					Percent Change	
	FY81	FY82	FY83	FY84	FY85	From 1984	From 1981
Total R&D	\$35.0	\$37.6	\$39.5	\$46.7	\$53.1	14%	52%
Total Defense R&D	\$16.5	\$20.9	\$23.2	\$28.1	\$34.2	22%	107%
Total Basic Research	\$5.1	\$5.4	\$6.4	\$7.2	\$7.9	10%	55%
Basic Research by Agencies Supporting Primarily Life Sciences	\$2.4	\$2.4	\$3.0	\$3.3	\$3.5	5%	46%
Basic Research by Agencies Supporting Primarily Physical Sciences and Engineering	\$2.7	\$3.0	\$3.4	\$3.9	\$4.4	14%	63%

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viable alternative for fusion [energy]," and as such, "there is no basis for building another laser" under this program.

The National Science Foundation (NSF) would also see robust increases — 22 percent for its engineering programs, 14 percent overall for R&D and 13 percent for basic research. The latter total is significant, because NSF provides more than 90 percent of the federal funding of basic research at universities. The \$237 million NSF has earmarked for research instrumentation represents a 21.8 percent increase; NSF director Edward Knapp notes that more than half that total would go to equip individual research projects. The \$20 million NSF has reserved for expanding researchers' access to supercomputers more than triples current spending in this area. Part of that increase would go for a new "class VII Advanced Vector Computer" at the National Center for Atmospheric Research (NCAR). Especially useful in atmospheric and ocean-modeling studies, the computer would offer NCAR scientists five times the speed and 10 times the memory of their current computing facility.

Other budget-proposal highlights include:

- A new \$10 million program to create Cross-Disciplinary Research in Engineering Centers; research would be directed toward areas deemed "essential to maintaining the competitiveness of our high-technology industries," Knapp said.
- A new program for studying agricultural biotechnology.
- Initiation of a Continuous Electron Beam Accelerator Facility, new-generation heavy-ion accelerator and Very Long Baseline Array radiotelescope.
- Support for acid rain research. Funding would go from \$27 million to \$55.5 million to enable the Environmental Protection

Agency to survey the water chemistry of 3,000 lakes nationwide and to perform other studies. Funds are also included for restoring acidic lakes and developing new pollution-control technologies.

- A 39 percent increase to \$640 million for cleaning up hazardous waste sites under the Superfund law.
 - A \$10 million initiative to begin restoring the Chesapeake Bay (SN: 1/7/84, p. 6).
 - A 22 percent increase in NSF funding for the mathematical sciences to allow for the support of more graduate students and to increase mathematicians' access to computer facilities (SN: 2/4/84, p. 71).
 - A permanently manned U.S. space station, estimated to cost about \$8 billion by the time the basic version is completed in the early 1990's (see page 69). It is the most conspicuous feature in the NASA budget plan, although it is starting with only \$150 million for planning. The administration's five-year plan for the agency, however, projects a one percent (after inflation) overall annual increase through FY 1989.
 - A Mars Geoscience/Climatology Orbiter, designed to study the planet's atmosphere, magnetic field, topography (by radar altimetry) and other aspects. It is seen as the first of a series of relatively low-cost (Pioneer class) missions as proposed by the NASA-chartered Solar System Exploration Committee.
 - An Upper Atmospheric Research Satellite, intended to make what NASA says will be the first comprehensive global measurements of Earth's stratosphere.
- Conspicuously absent, and marking in a sense the end of an era for NASA, is any funding for the launching of old-style, "expensive" rockets (meaning those other than the space shuttle), whose future operations NASA is now negotiating to turn over to private industry.

—J. Raloff, with J. Eberhart and I. Peterson