

DOE R&D: High on high-tech

The Department of Energy (DOE) budget request for fiscal year 1985 reads much as it did last year: healthy increases for defense programs as well as basic energy and physical sciences, with less enthusiasm for short-range research and solar, fossil and conservation programs. Over half of the agency's \$15 billion budget request, made public last week, is allocated to defense projects which, like general science programs, receive a hefty 16 percent increase over last year's levels.

Accelerator physics thrives in this budget. In addition to maintaining a myriad of existing high energy facilities, DOE plans to spend \$20 million on research this year to explore the feasibility of a superconducting super collider (SN: 8/20/83, p. 118). A final decision — based mostly on economics — will be made in several years.

The new star of the nuclear physics program is a \$225 million electron-beam accelerator in Newport News, Va., that will be able to deliver up to 4 billion electron volts continuously (present high-energy electron beams are pulsed) when it is completed in about five years. DOE has earmarked \$7 million this year for research and construction of the machine.

The FY '85 budget request also provides \$10.3 million to connect a tandem Van de Graaff heavy ion source with the more energetic Alternating Gradient Synchrotron (AGS) at Brookhaven in much the same way that the Bevalac was created in Berkeley, Calif. (SN: 8/27/83, p. 134). (About half of the money comes from an FY '84 allocation to Brookhaven's Isabelle project, which DOE cancelled last fall.) According to Presidential Science Adviser George A. Keyworth II, for a total cost of about \$15 million this project, as a precursor to larger accelerators, could take researchers to the frontier of heavy ion physics.

A number of new and continuing projects are responsible for the dramatic jump in funds requested for the Basic Energy Sciences (BES) program, which is devoted to long-term research. A new supercomputer (SN: 5/14/83, p. 309) program aimed at improving university scientists' access to state-of-the-art computers would increase the applied mathematics outlay by 91 percent to \$28.2 million this year. The 50 percent increase in energy-related nuclear sciences, funded \$59 million in FY '85, is due largely to enhancing the Stanford Synchrotron Radiation Laboratory.

The National Center for Advanced Materials, proposed in DOE's budget last year, was to include a plan for upgrading Stanford's Synchrotron Light Source (which provides a very intense source of light over a wide range of wavelengths) and constructing surface science and electronics materials facilities at Berkeley as well as building a new \$85 million syn-

chrotron light source. While the former three items are budgeted \$10.8 million this year, there are no funds reserved for the Berkeley light source since there is some dispute within the scientific community as to the need for and best design of the machine (SN: 11/26/83, p. 345).

Another major expenditure in FY '85 would come from a DOE assumption of responsibility for the upgrade of Argonne National Laboratory, thereby increasing the BES general plant fund from \$4 million to \$5.7 million. Other programs within BES, including chemistry, biology and geosciences, are funded at levels comparable to last year.

DOE is requesting less than it did last year for the nuclear fission program because Congress cancelled the Clinch River Breeder Reactor project last fall (SN: 11/19/83, p. 329). DOE still plans to keep a hand in developing breeder technology that industry could draw on in the future. According to Donald P. Hodel, the recast breeder program will emphasize international collaboration with other countries such as Japan that have breeder programs.

Support for solar, conservation and fossil fuel programs was sharply cut in DOE's budget requests for FY '83 and FY '84, only to be reinstated by Congress during appropriations. Of the \$215 million appropriated by Congress last year for solar and other renewables, for example, DOE had requested only \$102 million. This year DOE seems to be catching on and has

	FY '84 Estimate (Million \$)	FY '85 Request (Million \$)	Percent Change from FY '84
Magnetic Fusion	471	483	+ 3
Nuclear Fission	675	618	- 8
Environment	219	228	+ 4
Fossil	330	273	-17
Conservation	151	148	- 2
Solar and Other Renewables	215	191	-11
High Energy Physics	480	561	+17
Nuclear Physics	159	183	+15
Basic Energy Sciences	337	420	+24

asked for levels just slightly lower than what Congress appropriated last year. The fossil fuel program shows a larger decrease because the government expects the private sector to assume more responsibility, especially in the development of fuel cells and synfuels. DOE will focus its effort in both the fossil fuel and environment programs on the environmental impact of coal.

Two years ago, President Reagan was trying to do away with the Department of Energy. Now, according to one DOE spokesman, the administration would still like to abolish the agency, but won't pursue that route because of lack of similar sentiment in Congress. —S. Weisburd

Earth Sciences

Some losses for earth sciences

The main agencies funding basic research in the earth sciences came through the fiscal year 1985 budget cycle with generally moderate proposed decreases. Within the United States Geological Survey (USGS), two areas stand out from the agency allocation, which totals \$391.8 million, down by \$14.1 million from the appropriation for FY '84. The survey's Water Resources Research Institutes have been eliminated from the proposed budget (saving the federal government \$6.4 million), while the government has proposed a \$3.3 million increase for the digital cartography program, bringing funding for that program to \$11.3 million. The effort to digitize hydrographic and transportation data for the nation is related to the mapping needs of the Bureau of the Census as it prepares for the 1990 census. Decreases also are proposed for the earthquake studies program, down by \$3 million to \$33 million, and for the volcanic hazards program, down \$1.5 million to \$9.5 million.

Programs under the National Oceanic and Atmospheric Administration (NOAA) are slated for a 10 percent decrease, down from FY '84's \$1.01 billion to \$915 million

in FY '85. The proposed NOAA budget includes funds for next-generation weather radar, and for development of geostationary satellite instruments to improve short-term weather forecasts and warnings. The proposed decreases include a drop of \$8.35 million from ocean circulation studies, the marine boundary survey, regional ocean pollution projects and the Chesapeake Bay Study. The Sea Grant program, which sponsors applied research in ocean sciences and ocean engineering, is slated for termination.

In other areas relating to the earth sciences, the National Science Foundation budget includes proposed funding for an advanced vector computer to be used at the National Center for Atmospheric Research in Boulder, Colo., for atmospheric and ocean studies. The National Aeronautics and Space Administration (NASA) budget includes funds for the development of a scatterometer, an instrument to enhance research of global wind patterns on the ocean surfaces. NASA's Geodynamics Program will receive a slight increase to \$29.9 million, up from \$28 million last year. —C. Simon