

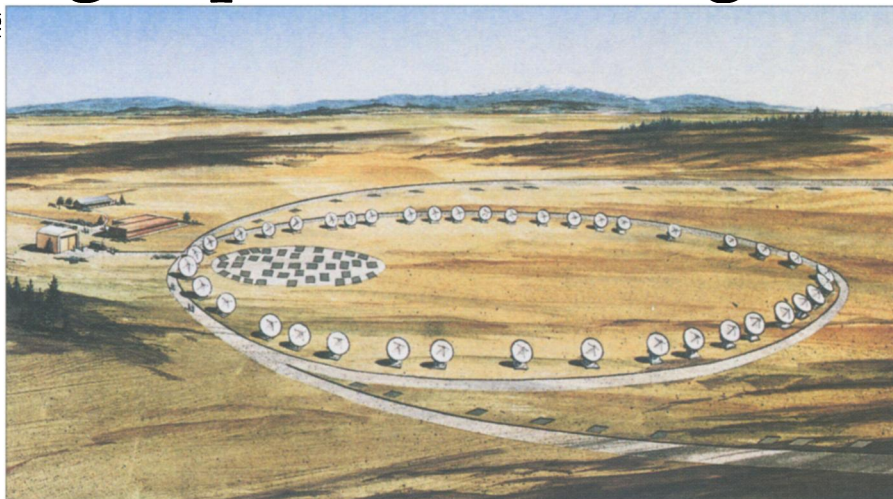
# Science funding slips in 1998 budget

During his State of the Union address last week, President Bill Clinton told the nation that “to prepare America for the 21st century, we must harness the powerful forces of science and technology to benefit all Americans.” Yet evidence of this commitment to research and development (R&D) did not shine forth 2 days later, when the President unveiled his budget blueprint for the 1998 fiscal year.

In the \$1.7 trillion proposed budget package, total spending by the federal government would climb 3.4 percent, whereas funds for science and technology would rise only 2.2 percent, to \$75.5 billion. Because this percentage falls short of the inflation rate, estimated at 2.6 percent for 1997 by the Office of Management and Budget, actual funding for science and technology would decline by 0.4 percent. While that difference may seem minor, it amounts to \$264 million in decreased spending power—enough to provide a year’s support for an additional 4,600 typical research projects funded by the National Science Foundation.

The picture looks even bleaker when viewed in terms of the last 5 years. Between FY 1994 and FY 1998, defense-related R&D funding has fallen 4 percent, in inflation-adjusted dollars, and civilian R&D support has dropped 3 percent, according to an analysis conducted by the American Association for the Advancement of Science.

With the President’s stated commitment to balancing the budget by 2002, science and technology are expected to continue to suffer in the future. Over the next 5 years, “the science and technolo-



Artist's rendering of the National Science Foundation's Millimeter Array.

gy budget may lose as much as 8 percent of total buying power,” says John H. Gibbons, assistant to the President for science and technology.

Despite the slight overall drop in support for science and technology in the FY 1998 budget, several funding agencies would receive increases. What follows is a closer look at the President’s proposed R&D budget. All percentages have been adjusted for the estimated 2.6 percent inflation rate.

Funding for defense R&D would drop 2.0 percent, while civilian R&D would climb slightly, by 1.6 percent. Basic research in the civilian sector would hold steady.

One of the biggest R&D winners in the proposed budget would be computing

and communications research, which is slated to grow 7.4 percent, to \$1.1 billion. The budget includes \$100 million annually for the next 3 years for development of a Next-Generation Internet.

Environmental research would expand 1.4 percent, to \$5.3 billion. The largest slice of that total would feed the \$1.9 billion research program on global climate change.

The Department of Energy, which suffered in FY 1997, would win a significant boost, almost \$900 million of which would pay for construction of the National Ignition Facility. This laboratory will do double duty, investigating laser fusion and simulating nuclear weapons tests.

## Biomedicine

The National Institutes of Health continues to place a high priority on the support of basic biomedical research. The President’s blueprint would give NIH \$7.2 billion, a 1.3 percent increase, for peer-reviewed grants awarded to biomedical investigators outside NIH. Areas of emphasis include research on the biology of the brain, medical genetics, and new approaches to the origins of disease. Funding for AIDS-related research would total \$1.5 billion, keeping pace with inflation.

NIH would get \$90 million to complete the construction of a new clinical research center designed to treat about 20,000 people each year.

The Centers for Disease Control and Prevention would get \$142 million, an increase of \$2.3 million, to help prevent breast cancer and cervical cancer. Under the President’s proposal, \$112 million would go to CDC to prevent and respond to outbreaks of infectious diseases.

## NASA

NASA Administrator Daniel S. Goldin professed enthusiasm for the President’s

### Research and Development Funding Budget Authority (in millions of dollars)\*

Agency or Department	FY 1996 (actual)	FY 1997 (estimated)	FY 1998 (proposed)	Percent Change 1997–1998†
<b>Defense</b>	<b>35,784</b>	<b>37,461</b>	<b>36,780</b>	<b>-4.3</b>
Health and Human Services (National Institutes of Health)	12,040 (11,871)	12,933 (12,710)	13,478 (13,028)	1.6 (-0.1)
<b>NASA</b>	<b>9,432</b>	<b>9,314</b>	<b>9,603</b>	<b>0.5</b>
Energy	6,306	6,186	7,312	15.2
<b>National Science Foundation</b>	<b>2,422</b>	<b>2,458</b>	<b>2,553</b>	<b>1.2</b>
Agriculture	1,488	1,545	1,485	-6.3
<b>Commerce</b>	<b>1,040</b>	<b>1,050</b>	<b>1,115</b>	<b>3.5</b>
Interior	571	581	605	1.5
<b>Transportation</b>	<b>604</b>	<b>639</b>	<b>754</b>	<b>15.0</b>
Environmental Protection Agency	466	504	555	7.3
<b>Other</b>	<b>1,186</b>	<b>1,150</b>	<b>1,229</b>	<b>4.2</b>
Total	71,339	73,821	75,469	-0.4

\* Adapted from Office of Management and Budget data; figures are rounded.

† Adjusted for 2.6 percent inflation.

budget, even though his agency would barely outpace inflation in FY 1998. What's more, the long-term plan calls for trimming \$300 million from NASA's \$13.5 billion budget by FY 2000. That's better than last year's proposal, which would have cut NASA's budget to \$11.6 billion by FY 2000.

Funding for space science programs would rise to \$2 billion, a 1.4 percent increase. Goldin cited a trio of new missions in the Origins program, devoted to studying the beginnings of structure and life in the universe. These include robotic exploration of the Jovian moon Europa, a flyby of Pluto, and a craft that would bring back samples from a comet. NASA would double the life of the Galileo mission, now scheduled to complete its 2-year tour of Jupiter and its moons this December.

Mission to Planet Earth, which studies the environment from space, would receive a modest increase of 1.4 percent, to \$1.42 billion. Funding for the international space station would remain at its congressional cap of \$2.1 billion.

### Energy

Though the Department of Energy is slated to receive a big R&D increase, much of it for the National Ignition Facility, funding for many of its science programs would remain flat or fall slightly. This includes basic energy sciences (\$668 million), high-energy physics (\$675 million), biological and environmental research (\$377 million), nuclear physics (\$315 million), and fusion science (\$225 million).

The proposed budget does contain \$10.5 million for two new starts at the Fermi National Accelerator Laboratory. One project would create a higher-intensity beam for experiments aimed at establishing whether neutrinos have mass or charge. Construction of a C-Zero hall would allow for heavy-quark experiments.

### National Science Foundation

Research and related activities funded by the National Science Foundation would gain a modest 1.2 percent in FY 1998. The bulk of these funds would support more than 19,000 research and education projects in science and engineering.

Among big-ticket items, the agency has earmarked \$25 million to construct a Polar Cap Observatory for atmospheric sciences near the North Pole. Another \$26 million would allow completion of the Laser Interferometer Gravitational Wave Observatory. Initial construction of the Millimeter Array, a group of 40 telescopes, would require \$9 million. The agency also plans to spend \$25 million to address safety and environmental problems at the United States' South Pole station.

### Technology

The Commerce Department's National Institute of Standards and Technology

would receive \$692.5 million, an increase of 18.5 percent over FY 1997. In the past, however, Congress has repeatedly deflated such large proposals for NIST.

President Clinton has asked for \$275.6 million to go to the Advanced Technology Program, which funds high-risk projects with an eye toward the marketplace—such as creating prosthetic tissue from animal by-products. The Manufacturing Extension Partnership, which assists small businesses in adopting modern technology and manufacturing processes, would garner \$123.4 million, a \$28.4 million rise.

### Agriculture and Conservation

The President proposed \$741 million for the Agricultural Research Service. Allowing for inflation, the budget trims 1.2 percent from the Agriculture Department's internal research funds.

New work in Integrated Pest Management—which seeks to reduce the use of chemical pesticides—would account for \$4 million of the ARS budget. This fits into the administration's goal of implementing the plan on 75 percent of U.S. cropland by the year 2000.

Funds for peer-reviewed agricultural research outside the department would increase from \$94 million to \$130 million.

The Fish and Wildlife Service in the Department of the Interior would see a budget of \$1.3 billion, including an \$11.4 million increase for the endangered species program.

### Earth Science

The President proposes a budget of \$2.05 billion for the Commerce Department's National Oceanic and Atmospheric Administration, a 1.4 percent increase over last year's \$1.97 billion. Of that figure, \$503 million will go to a new fund for repairing ships, launching new weather satellites, and building new research facilities.

The \$745 million request for the U.S. Geological Survey represents a 1.7 percent drop from the FY 1997 enacted budget. The survey would get an additional \$9 million to expand water quality research and monitoring; an additional \$7.5 million for biological research on federal land, including improved monitoring of Pacific salmon and invasive weeds; and an increase of \$3 million to expand and upgrade the global seismographic network.

### Environment

The President would boost the Environmental Protection Agency's total budget 9.4 percent, using most of the additional funds for programs that emphasize the protection of children.

The more than \$900 million he has proposed for this initiative would include \$650 million to clean up the worst toxic waste sites by the year 2000—doubling the current pace—and \$36 million to implement the new Food Safety Act and Safe Drinking Water Act.

Among the R&D components of these initiatives, Clinton has recommended spending \$8 million in new money to begin assessing pollutant risks to children, especially potential hazards posed by chemicals that mimic hormones.

—R. Monastersky and staff

Civilian and Defense R&D Funding Budget Authority (in millions of dollars) *				
Sector	FY 1996 (actual)	FY 1997 (estimated)	FY 1998 (proposed)	Percent Change 1997-1998†
<b>Civilian</b>				
Basic research	13,308	13,747	14,112	0
Applied research	10,192	10,469	11,125	3.6
Development	7,855	7,860	8,117	0.7
Equipment	536	492	506	0.2
Facilities	973	984	1,128	11.7
<b>Total</b>	<b>32,864</b>	<b>33,552</b>	<b>34,988</b>	<b>1.6</b>
<b>Defense</b>				
Basic research	1,165	1,138	1,191	2.0
Applied research	3,926	4,060	4,034	-3.2
Development	32,719	34,293	33,519	-4.7
Equipment	458	445	454	-0.6
Facilities	207	333	1,283‡	275.5
<b>Total</b>	<b>38,475</b>	<b>40,269</b>	<b>40,481</b>	<b>-2.0</b>

\* Adapted from Office of Management and Budget data; figures are rounded.  
† Adjusted for 2.6 percent inflation.  
‡ Includes \$900 million for construction of the National Ignition Facility, which will be spread over 5 years.