Financial realities hit US science budget

■ Grants may be cut by 50 per cent

■ Space missions face cancellation

Washington

THE optimism of last January's White House budget request for science has finally given way before the realities of the gigantic government deficit and economic slowdown. The 15 per cent boost in major scientific research areas announced nine months ago is now on its way down, reaching 12 per cent in the latest budget figures available this week. But as budget negotiators make a last-ditch effort to bring the US deficit under control, science budgets could still be cut by some 30 per cent across the board.

Although congressional support of science has been stronger this year than many had expected, the estimated \$150,000 million national deficit (excluding the still unknown — and probably massive — cost of rescuing the crumbling savings and loan industry) leaves little room for magnanimity in budget negotiations.

All federal agencies have been asked to make provisional plans for a 32.4 per cent reduction, the amount required to bring the 1991 budget deficit under the ceiling prescribed by the Gramm–Rudman–Hollings deficit-reduction act. Unless Congress changes the law or reaches some other compromise in the next week, Gramm–Rudman takes effect on 1 October. Federal agencies were forced to absorb Gramm–Rudman cuts for almost two months last year while congressional negotiators hammered out a budget agreement that met the deficit ceilings.

Assuming that Congress moves no more quickly this year (it seems likely that legislators will wait until after the November elections to make unpopular budget cuts), federal science agencies are preparing to make draconian funding reductions on the first of the month. The National Science Foundation (NSF) has warned funding recipients that existing grants will be cut by 50 per cent from 1 October, to allow some new grants to be awarded. "Unless there's some miracle, a 50 per cent cut seems likely", says NSF budget officer Joel Whitter. A year-long Gramm–Rudman sequestration (admittedly unlikely) would mean 21,000 fewer scientists and students supported by NSF grants.

At the National Institutes of Health (NIH), budget officials are also preparing to make difficult compromises. Latest figures suggest that existing grants would

be reduced by around 30 per cent in dollar amount in the event of sequestration. The number of new and competing grants will be reduced by about 70 per cent while Gramm–Rudman cuts are in effect. If Congress delays in reaching a budget compromise, "we are talking in terms of a significant reduction in existing grants to allow for new ones", says one NIH budget officer.

Department of Energy (DOE) research facilities are likely to be another victim of austerity. Protracted sequestration would

1991 US SCIENCE BUDGET (\$ million)

	1990 Budget	1991 Request	House*	Senate*
NIH	7,277	7,623	8,318	8,003
NSF	2,080	2,383	2,337	2,360
NASA	12,221	15,125	14,296	13,450
DOE (R&D)	3,283	3,359	3,976	4,019

* Budgets approved by congressional subcommittees.

stop construction of the Continuous Electron Beam Accelerator Facility and halt the beginning of the Superconducting Supercollider and the Relativistic Heavy Ion Collider. Existing accelerator facilities such as Fermilab and the Stanford Linear Accelerator Centre would find their operating budgets cut by at least half.

Congressional priorities

Although the budget negotiations make bottom-line figures necessarily soft, the appropriations process is still an accurate gauge of Congress' science priorities, and a good indicator of cuts to come. Last week, appropriations subcommittees passed the Senate's versions of the budgets for the National Aeronautics and Space Administration (NASA), NSF and NIH. The bills join the already completed House measures and wait only for the conclusion of the budget negotiations before their differences can be reconciled in conference and final appropriations voted on.

The biggest surprises lie mostly at NASA, where the Senate joined the House in eliminating almost all funding for the Moon/Mars initiative, for which the president had requested \$300 million.

The Senate subcommittee also cut \$864 million (35 per cent) from the space station, more than four times the House cut and a significant blow to the programme.

Although the space station may be able to weather the loss, some smaller projects face outright cancellation. The CRAF/Cassini cometary exploration probes lost

\$50 million from their \$148 million request. Because work must begin soon on the spacecraft if they are to be ready in time for a mid-1990s launch window (when the intended comets will be within reach), even a one-year funding delay could cause NASA to abandon parts of the project. As the European Space Agency has already committed itself to the Cassini mission, CRAF appears to be the odd man out. "If the end result of the \$50 million cut is that one of them has to be dropped, it will be CRAF", says NASA project manager Henry Brenton.

The Senate also shifted funding within the Earth Observation System programme from large satellites to smaller ones, and restored funding for an existing search for extraterrestrial life that the House bill had derisively deleted. The crippled Hubble space telescope was given \$30 million in extra funding to help speed corrective measures.

Among the federal science agencies, NSF fared best last week, as the Senate appropriations subcommittee approved a 14 per cent increase to \$2,360 million, a figure that lies close to the presidential request. Like the House, however, the Senate eliminated funds for the Laser

Interferometer Gravitational Wave Detector and emphasized education increases over research.

No crisis at NIH?

In last week's NIH bill, the Senate differed from the House in granting the full administration request for the genome project (\$108 million; the House had cut that to \$66 million [see *Nature* 346, 309; 26 July 1990]). With the exception of AIDS funding, which the Senate reduced by some \$300 million, overall NIH funding in both bills represents a 10 per cent increase over last year.

Like the House bill, the Senate report is expected to include controversial language instructing NIH to reform their grant process. Among the directives, the House bill calls for NIH to increase the number of grants they issue to 6,000 (compared to 4,600 new grants this year) by reducing the length and the rate of growth of the average award, and favouring institutions with lower financial overhead, or "indirect costs". Claiming that the "crisis" in health research "has been overstated", the House bill offers the reforms as a way to "bring more stability and predictability to NIH's current fiscal situation". Although Senate staff say their language will be much more "muted", it appears likely that reforms of one sort or another will become law. NIH have formed ten committees to suggest how the institutes should implement the congressional language. Their reports are due by mid-October.

Christopher Anderson