MANAGING U.S. SCIENCE

R&D Agencies Spell Out Goals Under New Accountability Law

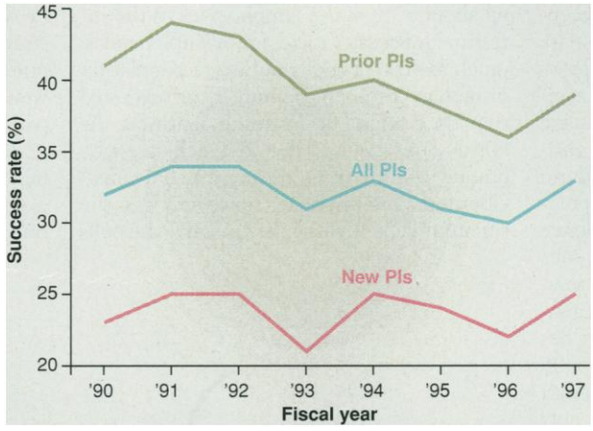
It's not quite science by the numbers, but a new law is forcing R&D agencies, along with the rest of the federal government, to spell out what they expect to accomplish in 1999. The exercise represents the most detailed attempt ever to quantify what the public receives for its investment in science. For researchers, the written plans being filed this year offer a glimpse of how their favorite agency sets priorities on subjects ranging from funding young investigators to emphasizing the commercial value of basic science.

This unprecedented effort in self-justification is mandated by the Government Performance and Results Act (GPRA), which is aimed at making government more accountable. The law, passed in 1993, requires agencies to submit so-called performance plans to Congress this year along with their fiscal year 1999 budget requests. Officials have spent countless hours figuring out how to comply with GPRA, which also requires them to draw up a set of general goals and to report each year on how well they have done. Legislators, in turn, are supposed to use this information to help divvy up federal funds.

Although the law covers all government activities, from penitentiaries to the Pentagon, its application to research has been problematic (*Science*, 6 January 1995, p. 20). Federal officials have worried that the legislation might force them to predict the outcome of the research they fund, or to devise a scorekeeping system that might trivialize the scientific process. "The whole GPRA process has been a real challenge to us," says Lana Skirball, head of the National Institutes of Health's (NIH's) science policy office, which produced that agency's 1999 plan. "We wanted Congress to know that we were taking the law seriously, but we didn't want to be tied to a set of metrics that were beyond our control. It's also hard to fit what we do into a 1-year time frame."

Not surprisingly, the most detailed blueprints for science, running to 30 pages or so, come from the government's two leading basic research agencies, the National Science Foundation (NSF) and NIH. (Other agencies have devoted a handful of pages to R&D activities within an overall performance plan.) Much of what they promise—such as supporting high-quality, peer-reviewed research or encouraging more women and minorities to pursue careers in science—fits comfortably within their current operations. But some of the goals could force managers to rethink their operations and priorities. For example, NSF's performance plan, released last month, sets some quantitative funding goals: It says the agency hopes to increase the award success rate of first-time investigators by 10%, narrowing the gap between experienced investigators and those just embarking on their careers. NSF also anticipates a nearly 20% boost in the length of the average grant to all recipients.

"I'm aware that we are siphoning money from established PIs [principal investigators], but it's vital to keep new Ph.D.s alive," says Bennett Bertenthal, head of NSF's social and behavioral science directorate, who last year created a small pot of money to back 16 young scientists who had just missed out on obtaining NSF funding. This year the program will more than double in size, to $800,000, and an agency-wide initiative is on the drawing board for 1999.



SOURCE: NSF

A helping hand. NSF hopes to narrow the gap between new and experienced scientists in winning grants by funding more new PIs.

NSF also hopes to reduce the lag time of its surveys on doctoral recipients, funding trends, the composition of the scientific work force, and other subjects. "Yes, it's an arbitrary figure," admits Jeanne Griffith, who heads NSF's data-gathering unit. "We think we're a little bit slow [the average survey contains data that are 1.5 years old], and we asked ourselves, 'What can we do to squeeze some time without reducing the quality of the data?' "

NIH has scoured its research inventory for some quantitative goals too—and come up with such things as a pledge to increase by 50% the amount of DNA sequence data churned out next year by the high-profile Human Genome Project. NIH's report calls for sequencing 100 million base pairs in 1999, rising to 300 million a year by 2003, and completing the project in 2005. "The community is telling us what's possible," explains Jane Peterson of the National Human Genome Research Institute. "But it depends on greater efficiency as well as money."

In keeping with its mission to improve public health, NIH has also promised a 5% annual rise in the number of reports filed by its intramural scientists on potentially patentable discoveries, along with a sharp reduction in the percentage of inactive patents on the agency's books. Maria Freire, director of NIH's technology transfer office, says the projected increase is based on a rule of thumb used by universities—one report for every $2 million in sponsored research—and reflects a feeling that "we have not tapped into everything that's going on in our [intramural] labs." A more difficult goal, she says, will be to reduce the number of unlicensed inventions by 70%.

The performance plans devote considerable space to the nuts and bolts of governing to achieve greater efficiency. In that regard, both NSF and NIH pledge to make greater use of electronic processing of grant proposals. NSF has set a goal of handling 10% of its workload—some 3000 proposals—electronically in 1999; NIH merely promises to develop a way for applicants to check on the status of their proposal. Both agencies also are seeking faster decisions on grant applications. NSF says it hopes to complete action on 70% of its proposals within 6 months, up from 61% currently. NIH declines to specify a target, but says it wants to "expedite" decisions on 15% of its awards.

Federal officials involved in implementing the law characterize their 1999 plans as a work in progress. "Nobody really knows what a plan is supposed to look like," says Judy Sunley, who leads NSF's GPRA activities. And a congressional appropriations staffer says it's too early to know how the plans will affect the 1999 budget cycle. To help answer those questions, the National Academy of Sciences will host a meeting next week to discuss the plans of 10 R&D agencies, as part of a study on the law's impact on federal research (www2.nas.edu/cosepup).

In spite of these uncertainties, Sunley says the law has already had a positive impact: "Some of these things we would have done anyway, because they are just good management tools. But GPRA has given us a new, and very helpful, way to look at the world."

–Jeffrey Mervis