and the oil embargo to send the budgeteers back to the drawing board.

The new budget recommends total outlays of $304.4 billion in the 1975 fiscal year, which begins on 1 July, compared to the estimated $274.7 billion to be spent during the current year. The deficit for fiscal 1975 would be $9.4 billion compared to an estimated $4.7 billion for the current year.

The watchword this year, as OMB deputy director Frederic V. Malek reiterated at the Treasury-OMB briefing on the budget on 2 February is "flexibility," and the obvious intention and hope of the Administration is to be able, if necessary, to head off a recession precipitated by a rise in unemployment and disruption in industry caused by the energy shortage and rising oil prices.

Treasury Secretary George P. Shultz and Council of Economic Advisers chairman Herbert Stein made extraordinary efforts at their briefings to explain how economic projections, which show a very low, 1 percent growth in the gross national product in the coming year, do not necessarily spell recession. The Administration's reasoning seems to boil down to the argument that under the very unusual circumstances prevailing it is necessary to disentangle, as Schultz put it, "the short-term effects of the energy shortage from the broad movement of the economy."

However recession is defined, the Administration is clearly prepared to spend more money than is called for in the budget under a "contingency plan" which would be put into effect to bolster the economy should a serious sag develop. It is unlikely that R & D spending would be greatly affected if a Keynsian contingency plan were invoked since such spending is not held to be very effective in providing the economy an immediate shot in the arm.

While the budget has required heavy revision in recent months, the Administration's basic strategy in dealing with research and development seems to have changed little. Administration R & D requests continue to reflect a higher priority for work on applications than for basic research. This emphasis is not surprising in the context of the energy shortage, but it is fairly consistent throughout the budget. In the Department of Defense budget, funds for R & D would rise by about 10 percent, but according to National Science Foundation director/President's science adviser H. Guyford Stever, virtually all the new money will go into development.

R & D funds for colleges and universities—most of which goes to support basic research—would rise from about $2.1 billion to nearly $2.3 billion under the new budget. Much of this increase, of course, would be eaten up by inflation. A lot of questions remain to be answered on how the new money for energy R & D will be allocated among government labs, industry, and universities, and the decisions could increase the flow of funds to universities.

At the risk of sounding like a Kremlinologist speculating on who was standing where on the podium in Red Square on May Day, it is worth noting that the main briefing on the R & D budget, which in the past was usually given by the President's science adviser, was handled this year by a triumvirate of Stever, AEC chairman Dixy Lee Ray, and the new energy office's deputy director John C. Sawhill. Such a constellation may be in the ascendant over R & D for some time.—JOHN WALSH

Energy

Not since the early, halcyon days of the space program has an Administration seen fit to inject so much money so rapidly into a single major sector of civilian research as the Nixon Administration proposes to pump into energy R & D next year: an 81 percent, $816 million increase over the billion dollars obligated in fiscal 1974. Some, like Senator Henry Jackson (D–Wash.), believe the government could justifiably spend even more on energy R & D, but the infusion of funds proposed for fiscal 1975 is nonetheless massive.

Money isn't everything, of course, and a lot of it doesn't necessarily add up to a new Project Manhattan or Apollo. The energy program falls short of this lofty stature, lacking as it does both a central leadership and clearly defined objectives. Nor is there a lot about it that could be called daring or innovative.

For the most part, the new budget would rapidly inflate existing R & D programs and reduce the disparities among the major categories—nuclear energy, fossil fuel technology, and everything else. In this respect the budget generally follows (though with some deviations in detail) the path of conventional wisdom staked out by the 5-year spending plan that Atomic Energy Commission chairman Dixy Lee Ray produced hurriedly last fall at the President's request. The narrowing of disparities continues a trend apparent in the 1973 and 1974 energy budgets, and is less dramatic in this one than the sheer growth in overall size.

Thus, nuclear fission remains the single largest item in the 1975 energy budget (at $725 million); within that category the liquid-metal fast breeder project retains its status as the government's most expensive energy R & D undertaking. Even so, nuclear fission's 40 percent share of the overall energy budget represents a substantial drop from 60 percent in 1973.

At the same time, support for fossil fuel and related "environmental control" technology—with one-quarter of the energy budget in 1973—would rise to one-third of the budget or $636 million in 1975. Funding of solar energy, geothermal power, and conservation R & D—"the neglected resources," Ray calls them—would undergo dramatic percentage increases, though actual sums spent would remain an order of magnitude less than for the major fossil fuel and nuclear efforts.

Few new departures are evident in the 1975 energy budget, a reflection either of its conservatism or the possibility that R & D support in the past has left few stones completely unturned. In one notable exception, the AEC will spend $11 million to learn whether high-powered lasers can be used to enrich uranium and concentrate deuterium from water, a project for which physicist Edward Teller has been lobbying lately. The AEC also will significantly increase support of gas-cooled reactors—one of the few areas of energy technology in which industry has shown more interest than the government. Gas-cooled reactors are thought to offer some significant advantages over the conventional water-cooled variety. Not the least of these advantages are said to be greater efficiency, less vulnerability to catastrophic accidents, and a capability of using thorium, a resource quite possibly as abundant in the United States as uranium.

Just how the near doubling of the energy budget will affect the research enterprise as a whole is hard to say. (There are no indications, however, that support has been reduced in other areas to foot the bill for energy R & D.) The most obvious effect will be a substantial bloating in the budgets of four federal agencies—the AEC, the Environmental Protection Agency, the National Science Foundation, and the Interior Department. AEC comes off the big winner with half of all energy R & D money ($932 million), or enough to push the AEC's budget over the $3 billion mark for the first time.

No one at this point, however, seems to know how much of the new largesse will percolate down to colleges and universities. Figures released on 23 January showed how the $1.8 billion would be divided among subject areas, but almost up to the day the new budget was released in full, the White House still had not decided how to divide the money among the federal agencies; apparently the agencies know even less about where *they* would spend it, though NSF director H. Guyford Stever told a 2 February news briefing that he suspected the universities' portion would be "substantial."

As for two other questions—What's the money supposed to buy? And who, besides the President, is ultimately in charge of delivering the goods?—answers remain a bit misty.

In his State of the Union address on 30 January,

Federal energy research and development program (millions of dollars).

Program area	Program level (obligations)			Percent change from	Estimated total
	FY 1973	FY 1974	FY 1975	FY 1974–1975	FY 1975–1979
Conservation	**32.2**	**65.0**	**128.6**	+ **78**	**700**
End use (residential and commercial)		15.0	27.9		
Improved efficiency (transmission)	2.9	5.0	18.8	+ 276	
Improved efficiency (conversion)	6.5	15.9	29.8	+ 100	
Improved efficiency (storage)	1.6	2.9	6.4	+ 121	
Automotive	7.4	14.2	23.7	+ 67	
Other transportation	13.8	13.0	22.0	+ 69	
Oil, gas, and shale	**18.7**	**19.1**	**41.8**	+ **119**	**400**
Production	.3	3.0	17.0	+ 467	
Resource assessment	4.5	5.0	13.1	+ 162	
Oil shale	3.2	2.3	3.0	+ 30	
Related programs	10.7	8.8	8.7	− 1	
Coal	**85.1**	**163.1**	**415.5**	+ **160**	**2,900**
Mining	1.7	7.5	55.0	+ 633	
Mining health and safety	28.2	27.0	27.7	+ 10	
Direct combustion	1.5	15.9	36.2	+ 128	
Liquefaction	11.0	45.5	108.5	+ 138	
Gasification (high Btu)*	32.5	33.0	65.3	+ 98	
Gasification (low Btu)	4.6	21.3	50.7	+ 138	
Synthetic fuels pioneer program			42.2		
Resource assessment	1.0	1.2	1.9	+ 58	
Other (including common technology)	4.6	11.7	28.1	+ 140	
Environmental control	**38.4**	**65.5**	**178.5**	+ **173**	**800**
Near term SO_x	19.0	39.9	82.0	+ 174	
Advanced SO_x		4.0	12.0	+ 200	
Other fossil fuel pollutants (including NO_x, particulates)	8.8	13.1	57.0	+ 335	
Thermal pollution	.6	1.5	18.5	+1133	
Automotive emissions	10.0	7.0	9.0	+ 29	
Nuclear fission	**406.5**	**530.5**	**724.7**	+ **37**	**4,000**
Liquid-metal fast breeder reactor	253.7	357.3	473.4	+ 33	
Gas-cooled and molten salt breeder reactors	5.6	4.0	11.0	+ 175	
High-temperature gas reactor	7.3	13.8	41.0	+ 197	
Light-water breeder reactor	29.5	29.0	21.4	− 26	
Reactor safety research	38.8	48.6	61.2	+ 26	
Waste management	3.6	6.2	11.5	+ 85	
Uranium enrichment	50.3	57.5	66.0	+ 15	
Resource assessment	2.8	3.4	10.4	+ 206	
Other (including advanced technology)	14.9	10.7	28.8	+ 169	
Nuclear fusion	**74.8**	**101.1**	**168.6**	+ **67**	**1,600**
Controlled thermonuclear	39.7	57.0	102.3	+ 79	
Laser†	35.1	44.1	66.3	+ 50	
Other	**16.5**	**53.5**	**154.5**	+ **189**	**900**
Solar	4.0	13.8	50.0	+ 262	
Geothermal	4.0	10.9	44.7	+ 310	
Systems studies	7.2	17.3	30.0	+ 73	
Miscellaneous	.9	12.8	33.1	+ 159	
Total, direct energy R & D	672.2	999.1	1815.5	+ 81	11,300
Additional funds for support programs					
Environmental and health effects research			+133.7		
Basic research and manpower development			+ 82.3		
Total, additional funds for support programs			+216.0		

*Funds for high Btu gasification in Office of Coal Research budget do not include trust fund amounts. † Includes amounts for laser fusion directed toward military applications.

Nixon reaffirmed his objective of achieving energy "self-sufficiency" by 1980, although the term's definition remains obscure. He went on to assert that "we will break the back of the energy crisis."

But federal energy officials politely demur on that point. Dixy Lee Ray told a budget briefing that she assumed self-sufficiency meant the "capability" of being independent from fuel imports, but that she certainly couldn't speak for the President. John C. Sawhill, the deputy chief of the Federal Energy Office (FEO) said his view was that "by 1980 we want to be able to demonstrate to the rest of the world that we're on our way to self-sufficiency." This, Sawhill said, should strengthen the United States' leverage in negotiating "the prices we pay for energy."

Whatever the goal, responsibility for achieving it presently is divided among competing energy R & D agencies, the White House Office of Management and Budget, and the FEO. Much of this responsibility would come to rest in the Energy Research and Development Administration proposed by the White House last year. But the bill establishing ERDA (though it has passed the House) is stalled in the Senate, and there its prospects are mixed. Last week, William Kriegsman, a former White House staffer for energy affairs and now an AEC commissioner, said he thought ERDA's chances for Senate passage were about fifty-fifty in the next few months. If it slips much longer, Kriegsman said, passage may be a year or two away.—ROBERT GILLETTE

Health

President Nixon will ask Congress to give him $2 billion in fiscal 1975 for the National Institutes of Health.

It is a record NIH budget; federal budgets always set records. But it will leave many people unhappy and advocates of various health and education programs will surely be heading for Capitol Hill to ask Congress to do something about what these special interest groups will see as serious deficiencies in the President's sense of what is most important.

The biomedical community is not going to like the fact that this budget confirms its expectation that only the cancer and heart programs would get an increase in funds. And even the prosperous cancer people will not be overjoyed. On the surface, the budget figures show them getting $100 million more than they received in fiscal 1974 but, in reality, the increase is about $73 million. It's all a matter of which set of figures one uses in making a comparison between one year and another; there are lots from which to choose. The heart budget is up $22 million in actual dollars. The increase for the rest of the institutes combined—there are eight of them—is less than $1 million.

As is customary, the United States budget was released —embargoed—to the press 48 hours before the White House sent it to Congress. The budget traditionally goes to the Hill on a Monday; the preceding Saturday, top officials of each of the departments and agencies stage briefings to tell reporters what they think the budget means and, for the most part, the reporters tend to disbelieve them. It is a Washington ritual.

This year, the HEW briefing, which attracted a couple of hundred reporters, began in the department's main auditorium at noon, Secretary Caspar Weinberger presiding. The Secretary opened the briefing by reading a prepared statement which began:

> The 1975 HEW budget would commit a record $111 billion for human resources programs. Many of these programs will help all Americans reach their fullest potential. But many are continuations of uncontrollable programs carrying over from the past. We still have a conglomerate of programs which are too often ineffective, inequitable, or needlessly duplicate other programs.

The Secretary reiterated his theme from last year, namely, that there are programs that do not work or are not the federal government's business to continue and the government should stop supporting them. Several are of special interest to the health community. The government will try again to either immediately end or phase out its support of regional medical programs, community mental health centers, schools of public health, and Hill-Burton hospital construction assistance. Last year, Congress foiled HEW's attempts to kill some of these programs, granting them a year's stay of execution. In the health manpower area, its previously stated intention of ending training grants for biomedical researchers and capitation grants to medical schools for support of undergraduate students still holds.

During the main HEW briefing, at which biomedical research hardly came up at all, Weinberger noted the programs he considers most important for the coming year. The main thrust is that financial assistance of whatever kind go to individuals. "Hence, we emphasize assistance to students instead of assistance to colleges, and a Comprehensive Health Insurance plan instead of provision of health services by the Federal Government." Certainly, national health insurance will be a major item in fiscal 1975. Similarly, aid to families will be an important issue. Weinberger said he expects to propose by spring a plan for giving needy families cash, rather than food stamps, free services, and so forth. He said it is undignified for families to have to "justify their personal budgets to inquiring social workers" and that the Administration will seek a substantial change in the welfare system.

Following the main briefing, the crowd broke up into smaller groups for briefings in special fields. The health briefing, run by assistant secretary Charles C. Edwards, began with complaints from the press about the way the HEW budget information had been put together. Many things were lumped in broad categories instead of being itemized, program by program. For instance, the brief section dealing with NIH identified funds for the cancer and heart institutes and then lumped everything else together under one heading, "Other Research Institutes." It was the same with respect to other agencies and proved to be generally dissatisfying. Edwards acknowledged that he did not "have the remotest idea how this was put together," adding that he had complete budget data in hand and would provide whatever specific figures anyone wanted.

Nevertheless, the briefing was as confusing as it was enlightening. Among other problems, in stepping into the wonderland of the federal budget, it is necessary to define terms so that everyone is talking about the same thing. Budgets can be discussed in terms of authorities