

# F.A.S. PUBLIC INTEREST REPORT

Journal of the Federation of American Scientists (FAS)

FEDERAL CONSERVATION  
PROGRAM THREATENED

Vol. 34 No. 4

April 1981

## ENERGY CONSERVATION CUTS LACK ECONOMIC AND SECURITY RATIONALE

A major Achilles heel of this country continues to be our vulnerability to disruptions in supply of foreign oil, which still accounts for 40 percent of our total oil use. Conservation of energy remains a critical element of our security against such disruptions. Indeed, there could be no greater budgetary irony than increasing spending for military efforts to protect Middle Eastern oil supplies while cutting back on domestic conservation efforts to reduce oil dependence on that same area.

In addition, at home, the still-growing share of our Nation's wealth that goes to pay for energy has important implications for our inflation and for our decline in productivity. In both of these matters, using energy more efficiently, and thus using less energy overall, can help.

Under these circumstances, it is a tragic surprise to discover that the proposed federal conservation budget has been cut a whopping 78 percent from about \$1 billion to about \$200 million—thus to only about \$1 per citizen. The Reagan Administration appears to believe that higher energy prices and the invisible hand of the market make federal conservation programs wholly unnecessary. But will they? Will the higher energy prices brought on by decontrol of oil and the anticipated deregulation of natural gas be enough in themselves to stimulate all sectors of the energy-conserving public to conserve as effectively and quickly as our Nation's interests demand? We do not believe they will.

### Energy More Valuable Than Its Price

In the first place, as indicated above, there are national security reasons for valuing energy still more highly than its price and, consequently, for federal encouragement of energy conservation efforts.

Second, even if the true cost of energy were reflected in its price, there are instances in which the market will not work anywhere near as effectively as it might without such encouragement:

In rental housing, which makes up one third of all residential housing, response to rising energy prices is bedeviled by a variety of external factors, including low vacancy rates, rent control laws, lack of information, and, above all, the disjunction between tenants (who generally end up paying the fuel bills and therefore receive the message to conserve) and landlords (who make the capital expenditures for conservation). High energy prices,

by themselves, do not solve these problems.

In residential housing and small commercial establishments, many traditional lending institutions are reluctant to make loans for conservation (quite apart from current high interest rates) because the loans are small in size and therefore it is difficult to recover their transaction costs, and because such lending institutions are unfamiliar with the process by which such improvements can be appraised.

In industry many firms will not, by themselves, undertake the research and development they really need to take advantage of new opportunities to reduce energy inefficiencies because, as with R&D generally, their financial interests in the basic research are not sufficiently great to justify its cost.

### Conservation Not Instantaneous

In the third place, even when the market does succeed in delivering the message to conserve, the response to that message will not be instantaneous. It takes time for energy conservation industries to discover that a market exists for their products and to expand accordingly. And it takes time for the consuming public to find out how best to conserve and to act accordingly. Indeed, it can take years for our economic system to adjust to new market forces. But because a disruption in oil supply from abroad may occur at any time, and because the high price of energy is exacerbating the unhealthy state of our domestic economy, it is very much in our national interest to expedite the adjustment of the market to the new circumstances.

Now how can this be done? First, impartial and accurate information should be put into the market place to educate the public about the energy efficiency of its equipment, buildings, and motor vehicles so that it will be able to respond as precisely as possible to energy costs. Such information can only improve the workings of the market and its more rapid adjustment.

Second, for the medium and longer run, there must be sustained federal support for research and development in conservation in order to tap new means of reducing energy waste. The federal government has long supported basic and applied research because the focus of most business and industry is too short-term to concern itself with unpatentable efforts that will bear fruit

*(Continued on Page 2)*

(Continued from Page 1)

only years later; research and development in the energy conservation industry is no exception. Indeed, since this latter industry is itself in a state of infancy and thus understandably has very short term preoccupations, it is all the more important for conservation research to be federally supported.

Third, there must be an effort to remove the current logjam in financing energy conservation which is impeding its penetration into the marketplace. Traditional lending institutions must be encouraged to offer conservation loans, and at attractive enough terms to make them cost-effective to potential borrowers. And barring success in this area, new, more sympathetic lenders must be encouraged to enter the marketplace. Federal efforts along these lines, which include the Residential Conservation Service and the Solar Energy and Energy Conservation Bank, cannot be abandoned.

#### Serious Social Dislocation

Fourth, the government must play a role in encouraging energy conservation to mitigate the severe social dislocation that is resulting from rising energy prices. With decontrol of oil and gas, the percentage of income going to pay for energy in low income households is estimated to rise to 30 percent on the average, and to higher than 50 percent in some regions of the country. Such households, which are already finding it difficult just to meet housing and food costs, will not be able to find the capital to invest in conservation improvements to mitigate their rising fuel bills.

Of course, some Reagan strategists have decried a federal role in encouraging energy conservation, even along the lines that have just been outlined, because they believe energy should not be federally subsidized. But the fact is that, with the exception of conservation, the Reagan Administration is subsidizing energy. The nuclear fission budget has been increased 47% to include funding of the Clinch River Breeder Reactor. And unlike the Solar Energy and Energy Conservation Bank, the Administration is not proposing to cut the funding previously appropriated to the Synthetic Fuels Corporation.

There is something about conservation that has drawn special contempt from the Administration, as if it really believed the President's off-hand remark that conservation means "being hot in the summer and cold in the winter." But, in fact, conservation is every bit as worthy of special national efforts—and as relevant to our national security—as the defense budget (increased by 12% or \$25.8 billion) or the filling of the strategic oil reserve. It has taken years to develop a national consensus on energy conservation, and to imbed in law methods of complementing the market. It would be both misguided and constitutionally inappropriate to repeal this now-legislated commitment in a three-week budget-cutting review.

—Reviewed and approved by the National FAS Council

## FAS

Chairman: FRANK VON HIPPEL  
Vice Chairman: JOHN HOLDREN  
Secretary: GEORGE A. SILVER  
Treasurer: ROBERT M. SLOW  
Director: JEREMY J. STONE

The Federation of American Scientists is a unique, non-profit, civic organization, licensed to lobby in the public interest, and composed of 5,000 natural and social scientists and engineers who are concerned with problems of science and society. Democratically organized with an elected National Council of 24 members, FAS was first organized in 1945 as the Federation of Atomic Scientists and has functioned as a conscience of the scientific community for more than a quarter century.

#### SPONSORS

\*Philip W. Anderson (Physics)  
\*Christian B. Anfinsen (Biochemistry)  
\*Kenneth J. Arrow (Economics)  
\*Julius Axelrod (Biochemistry)  
\*David Baltimore (Biochemistry)  
\*Leona Baumgartner (Pub. Health)  
Paul Beeson (Medicine)  
Lipman Bers (Mathematics)  
\*Hans A. Bethe (Physics)  
\*Konrad Bloch (Chemistry)  
\*Norman E. Borlaug (Wheat)  
Anne Pitts Carter (Economics)  
\*Owen Chamberlain (Physics)  
Abram Chayes (Law)  
Morris Cohen (Engineering)  
Mildred Cohn (Biochemistry)  
\*Leon N. Cooper (Physics)  
\*Carl F. Cori (Biochemistry)  
Paul B. Corneily (Medicine)  
\*Andre Courmand (Medicine)  
\*Max Delbruck (Biology)  
\*Carl Djerassi (Organic Chem.)  
\*Renato Dulbecco (Microbiology)  
Paul R. Ehrlich (Biology)  
\*John F. Enders (Biochemistry)  
Adrian Fisher (Law)  
\*Val L. Fitch (Physics)  
\*Paul J. Flory (Chemistry)  
Jerome D. Frank (Psychology)  
John Kenneth Galbraith (Economics)  
Richard L. Garwin (Physics)  
\*Walter Gilbert (Biochemistry)  
Edward L. Ginzton (Engineering)  
Marvin L. Goldberger (Physics)  
\*Donald A. Glaser (Physics-Biology)  
\*Sheldon L. Glashow (Physics)  
\*H. K. Hartline (Physiology)  
Walter W. Heller (Economics)  
\*Alfred D. Hershey (Biology)  
Hudson Hoagland (Biology)  
\*Robert W. Holley (Biochemistry)  
Marc Kac (Mathematics)  
Henry S. Kaplan (Medicine)  
Carl Kayser (Economics)  
H. Gobind Khorana (Biochemistry)  
George B. Kistiakowsky (Chemistry)  
\*Arthur Kornberg (Biochemistry)  
\*Polykarp Kusch (Physics)  
\*Willis E. Lamb, Jr. (Physics)  
\*Wassily W. Leontief (Economics)  
\*Fritz Lipmann (Biochemistry)  
\*S. E. Luria (Biology)  
Roy Menninger (Psychiatry)  
Robert Merton (Sociology)  
Matthew S. Meselson (Biology)  
Neal E. Miller (Psychology)  
Philip Morrison (Physics)  
\*Robert S. Mulliken, (Chemistry)  
\*Daniel Nathans (Biochemistry)  
Franklin A. Neva (Medicine)  
\*Marshall Nirenberg (Biochemistry)  
Robert N. Noyce (Indust. Exec.)  
\*Severo Ochoa (Biochemistry)  
Charles E. Osgood (Psychology)  
\*Linus Pauling (Chemistry)  
Gerard Piel (Sci. Publisher)  
George Polya (Mathematics)  
George W. Rathjens (Def. Policy)  
\*Burton Richter (Physics)  
David Riesman, Jr. (Sociology)  
Walter Orr Roberts (Solar Astron.)  
\*J. Robert Schrieffer (Physics)  
\*Julian Schwinger (Physics)  
Herbert Scoville, Jr. (Def. Policy)  
\*Glenn T. Seaborg (Chemistry)  
Stanley K. Sherinbaum (Economics)  
\*Herbert A. Simon (Psychology)  
Alice Kimball Smith (History)  
Cyril S. Smith (Metallurgy)  
Robert M. Solow (Economics)  
\*Albert Szent-Gyorgyi (Biochemistry)  
\*Howard M. Temin (Microbiology)  
James Tobin (Economics)  
\*Charles H. Townes (Physics)  
\*Harold C. Urey (Chemistry)  
\*George Wald (Biology)  
Myron E. Wegman (Medicine)  
Victor F. Weisskopf (Physics)  
Jerome B. Wiesner (Engineering)  
Robert R. Wilson (Physics)  
C. S. Wu (Physics)  
Alfred Yankauf (Medicine)  
Herbert F. York

#### NATIONAL COUNCIL MEMBERS (elected)

Bruce Ames (Biochemistry)  
Harrison Brown (Chemistry)  
Nina Byers (Physics)  
Earl Callen (Physics)  
Barry M. Casper (Physics)  
Britton Chance (Chemistry)  
Hugh E. DeWitt (Physics)  
Thomas Eisner (Biology)  
Herman Feshbach (Physics)  
Lee Grodzins (Physics)  
Denis Hayes (Environ. Policy)  
John P. Holdren (Energy Policy)  
Henry C. Kelly (Energy Policy)  
Leonard Meeker (Law)  
Robert Pindyck (Economics)  
Peter Raven-Hansen (Law)  
Arthur H. Rosenfeld (Physics)  
Patricia Rosenfield (Env. Health)  
Carl Sagan (Astronomy)  
Joseph L. Sax (Environ. Law)  
Andrew M. Sessler (Physics)  
Martin J. Sherwin (History)  
George A. Silver (Medicine)  
Archie L. Wood (Defense)

\*Nobel Laureate

## FAS FUND

The Federation of American Scientists Fund, founded in 1971, is the 501(c)(3) tax-deductible research and educational arm of FAS. It is governed by eight trustees, of whom six are appointed by the FAS Chairman.

Moshe Alafi  
Mathew Meselson  
Stanley Sheinbaum  
Kirk R. Smith

\*Jeremy J. Stone (ex officio)  
\*Martin Stone (Chairman)  
Martin S. Thaler  
Frank von Hippel

\*No relation.

The FAS Public Interest Report (USPS 188-100) is published monthly except July and August at 307 Mass. Ave., NE, Washington, D.C. 20002. Annual subscription \$25/year. Second class postage paid at Washington, D.C. Copyright © 1980 by the Federation of American Scientists.

## TRANSPORTATION CONSERVATION

The most damaging budget cuts in transportation energy conservation involve information programs. These programs have three purposes: 1) to enable consumers to make rational decisions in purchasing and using transportation services; 2) to collect or generate, via research, the information needed to enable rational government policy formulation; and 3) to provide the information base on which new transportation technologies will rest (i.e., targeted R&D). Programs in these areas are being mauled in accordance with the Reagan rhetoric about "getting the government off the back of industry." Unfortunately, the generation and distribution of detailed information by the private sector is limited by the contribution generation and distribution make to corporate strategies. For the foreseeable future, the federal government is likely to be the only reliable source disseminating detailed information about transportation goods and services.

### Rational Consumer Decisions

In order to respond to market forces, consumers must have access to accurate information so as to know what to buy. As part of the effort to provide that information, the Department of Energy's Transportation Systems Utilization Division (TSU) produces the popular *Gas Mileage Guide*, which rates the gas mileage of new cars and trucks sold in the U.S. Under the Reagan cuts, the *Guide* will continue to appear, but in diminished numbers. In addition, plans to eliminate the remainder of the TSU budget mean a wide range of other information services will be ended. Among these are proposed supplemental guides indicating the fuel economy impact of various tires and lubricants. Half a million barrels of oil per day could be saved if U.S. motorists purchased the most fuel efficient tires and lubricants currently on the market.

One-half of the Department of Transportation's National Highway Traffic Safety Administration (NHTSA) budget is also slated to go. This will further hinder conservation since, in addition to implementing the fuel economy standards and overseeing the 55 mph speed limit, NHTSA has programs focusing on equipment and driving information. Its joint industry-government Voluntary Truck and Bus Fuel Economy Program has demonstrated that fuel savings of 10 percent are possible without any hardware investment. NHTSA's plans to extend this approach to automobile drivers, through its Driver Energy Conservation Program, have also been cancelled.

### Rational Government Policy

The Administration's proposals would also wreak havoc with the government's capability to assess the impact of its remaining transportation conservation programs, let alone its ability to improve these programs. One-third of NHTSA's fuel economy researchers will have to be dropped. Oak Ridge Laboratory's work on the determinants of energy efficiency in transportation sectors will likely be a casualty of the TSU cuts.

The fate of NHTSA's Integrated Vehicle Systems Research and Development Program is also uncertain. Through designing and building modified, production-run vehicles and innovative state-of-the-art autos, as well as

## ENERGY CONSERVATION BUDGET

Fiscal Year 1982  
(millions of dollars)

Department of Energy	Carter	Reagan
Buildings and Community Systems	99.5	31.1
Industrial	51.6	0.0
Transportation	121.7	38.3
State and Local	538.6	112.0
Multisector	31.7	17.7
Energy Impact Assistance	47.6	0.0
Residential/Commercial Retrofit	31.1	0.0
<b>Department of Housing and Urban Development</b>		
Solar Energy and Energy Conservation Bank	125.0	0.0
<b>TOTAL</b>	<b>1046.8</b>	<b>199.1</b>

testing alternative design vehicles produced in the private sector, this program has provided valuable information on the interaction of fuel economy, pollution, and safety goals. It has produced a modified VW Rabbit which achieves 60 mpg, accelerates from 0-60 mph in 13.5 seconds, assures protection against frontal impact into a fixed barrier at 40 mph, and still meets pollutant emission standards. Such vehicles provide a means for assessing short- and medium-term opportunities in the production of improved motor vehicles.

### Developing New Technologies

Even though the current poor health of the U.S. economy will only reinforce industry's reluctance to invest in long-range research, government support of such research is being cut back. Basic research at the Department of Energy is being reduced and the Department of Transportation's efforts, the Cooperative Automotive Research Program, has been eliminated. The Administration has failed to recognize the role the federal government must play in securing the fundamental data base on which surface transportation technology will depend 10-20 years from now.

The U.S. cannot afford to back away from transportation conservation: over one-half of U.S. petroleum consumption occurs through transportation. Unfortunately, the Reagan approach will not seize this opportunity for conservation. As one DOT official put it: "The concern has shifted away from exploiting opportunities for improving transportation both today and in the future. Now there must be a clear industry plea before anything will be done." The Administration has failed to recognize that corporate strategists do not adequately take account of individual and national interests in conservation. □

## ENERGY CONSERVATION IN BUILDINGS

The effect of the Reagan Administration's proposed budget cuts on the Department of Energy's buildings energy conservation programs has serious implications for this country: its cuts would effectively dismantle most of the related energy legislation passed in the last decade. The 75 percent cut would eliminate all information programs on new and old building performance and on appliance ef-

iciencies, and it would deliver a heavy blow to critical centers of research on buildings.

It is in the buildings energy-consuming sector where the Administration's assertion that market forces are sufficient carries the least weight. The buildings industry is a highly dispersed industry with no clear focal point. It has no center from which to disseminate information to its members, although efforts have been made in recent years to correct this. In addition, the buildings industry has little ability to support research and development even though such efforts are tremendously needed. Under such circumstances, rising energy prices, unaccompanied by other government programs, are more likely to panic consumers into investing in quick-fix, snake-oil energy conservation measures, rather than sounder options. Indeed, one could expect with increasing frequency such debacles as occurred in the Northeast, in particular, where homeowners were promised great energy savings with urea formaldehyde foam insulation only to find out later that such foam often emits noxious formaldehyde fumes which render living conditions unbearable.

Clearly, a federal role is required if energy conservation is to penetrate the buildings sector in a wise and expeditious manner. That role should take three forms: support for research; information dissemination both to builders and appliance manufacturers and to building residents; and development of training programs for energy auditors, as well as building contractors, architects, and energy conservation installers.

#### Research

The need for research in buildings and the energy-consuming appliances within them is paramount. We are only beginning to understand how energy flows out of such systems even though that energy accounts for a staggering 38 percent of the nation's total use.

Current federally-supported research efforts will not likely be picked up by either the buildings or appliance industries if federal support is removed. Such industries tend to have short-term concerns and capital constraints. Indeed, these industries are beholden to federal research efforts for producing many of the energy-efficient designs and products they do have (see box).

What research efforts need to continue to be supported? Further knowledge is required on how energy loss through a structure can be detected. We need to understand the effects that conservation improvements will have on the indoor air quality of a building. Research must be expanded from the single family building to multifamily and commercial structures. Further knowledge is required on the potential of community-scale systems for the production, storage, and distribution of heat and cold. Finally, there is a need to develop new energy-conserving equipment, such as heat pumps.

#### Information Dissemination

Over the last six years, the U.S. Congress has enacted several laws seeking to increase the information flow to consumers about the buildings they live in and the appliances they use. Building standards were mandated for all new buildings to be accompanied by information to

### A RESEARCH SUCCESS STORY: THE HIGH FREQUENCY SOLID STATE BALLAST

Since 1950, it has been recognized that if fluorescent lamps are driven at high frequency rather than the utility-supplied 60 cycles per second, the light output per watt improves 15 percent. Further reductions in energy use can be achieved by substituting a solid state ballast on such lamps for the typical steel and iron one. Together, these improvements lead to a savings of 25 percent. Though the solid state lamp costs \$14 more than the normal lamp, over its 15-year lifetime it saves about \$65, yielding a cost of conserved electricity of 2.1¢ per kilowatt-hour, much less than the average 6¢ commercial electric rate.

Yet, despite the favorable economics, the large ballast companies were not interested in pursuing the development of such a lamp. Instead, Lawrence Berkeley Laboratory worked with two small contractors to develop and test solid state ballasts. A large corporation, Beatrice Foods, was then persuaded to conduct a demonstration of the ballasts, cost-shared with the Department of Energy. Following the success of the demonstration, Beatrice constructed a manufacturing plant and is now producing such ballasts along with seven other manufacturers, many of whom were the ones showing no interest only a few years ago.

Assuming a market penetration of these ballasts of 25 percent in the next few years, an annual savings to consumers of \$1 billion will result—not bad for a total federal catalytic investment of \$1.5 million!

builders on how to meet those standards. Appliance standards were also mandated, to be accompanied by energy efficiency labels. And states were required to develop a Residential Conservation Service (RCS) in which energy audits would be offered to all residential, multifamily, and small commercial buildings.

In the anti-regulatory mood of the present Administration, funding for all of these programs has been eliminated completely. While there may be questions about the wisdom of imposing regulations, wiping out the information programs that accompany them is throwing the baby out with the bathwater. Consumers cannot respond to market signals unless they know the energy efficiency of the appliances they buy and the houses they move into and where these rank compared to other appliances and houses on the market. Builders cannot construct energy efficient buildings unless they know the features of such structures. And building owners and occupants cannot improve the efficiency of such structures unless they know how, presumably with the assistance of energy auditors.

#### Training

Experience to date with the energy conservation programs that have been developed in Rhode Island, Oregon, and the Tennessee Valley Authority has delivered one critical finding—the level of knowledge displayed by today's energy auditors, building contractors, architects, and energy conservation installers is abysmal. Were the

market left to operate alone, and the public turned to these experts for help, it would find insulation installed upside down, heating and cooling systems improperly sized, buildings incorrectly oriented, and other horrors. If the penetration of energy conservation is to proceed expeditiously and wisely, training programs for the technicians of the energy conservation service industry are necessary. Federal support for such programs, both with partial financing and with technical assistance, must be assured.

In conclusion, then, the free market left to its own devices will not be enough to assure maximal penetration of energy conservation into the buildings sector. Instead, market forces must be accompanied by research, informational and training efforts. □

## INDUSTRIAL ENERGY CONSERVATION

Amongst the casualties in the new Administration's proposed budget is the Office of Industrial Programs (OIP), which has been entirely eliminated. This is the only major federal office which directly deals with industrial energy conservation. With roughly \$6 million of its funding, the OIP has conducted a variety of informational activities which include workshops, energy audits for small firms, publications, and an annual report on the state of industrial energy efficiency. In addition, with approximately \$45 million, the OIP has operated a research and development program, which often has involved joint ventures with equipment manufacturers and targeted energy users. This research effort has addressed new technologies promoting waste energy reduction, industrial process efficiency, and industrial cogeneration.

The reason given by the Administration for the elimination of the OIP budget is that with energy prices reflecting their true market value, as a result of decontrol, industry will respond to the price signal and conserve accordingly without additional government actions. It is true that industry responds better to rising energy prices than other energy-consuming sectors in this country. However, industry has not been able to conserve nearly enough to keep up with skyrocketing energy prices—energy expenditures as a percentage of total industrial value added have risen from 5 percent in 1975 to nearly 11 percent in 1980. Indeed, it is unlikely that industry will meet its full potential of energy efficiency without government actions to remove some significant remaining barriers.

What is that potential for energy efficiency? Industry, including manufacturing, agriculture, construction, and mining, accounts for 37 percent of total primary fuel use in this country, or 28 quads (quadrillion BTUs). Analysis of that use shows that, compared to present performance, perhaps 5 additional quads per year beyond the savings that will naturally follow from response to energy price increases could be achieved by the year 2000 with suitable government actions.

### Information and Research Are Needed

What are the necessary actions? Heading the list are informational and research activities, the very activities that the Administration has now eliminated by cutting OIP. Information on new technologies, on various standard com-

ponents such as motors and how they may be improved, and on different industrial processes and how they may be improved is absolutely essential for energy efficiency to penetrate industry. Otherwise, industry receives the message to conserve but does not know how and must inevitably follow a long and expensive learning curve. Research, particularly long-term applied research, is necessary in order to take advantage continually of new ways of achieving energy efficiency, and with it, of keeping operating expenses low.

Unfortunately, without government support, industry is unlikely to address either its informational or long-term research needs. Many industries do not consider it within their purview to engage in information gathering—after all, the generation of information has never directly yielded profits. In addition, many industries are in such poor financial shape (e.g., steel) or are so small that they cannot afford to support the generation of necessary information. Finally, several key industries, most notably chemicals, are so secretive about their work, they are unlikely to generate information for fear it might be stolen by a competing firm.

The picture is equally as bleak with regard to industry supporting research activities. It is true that the healthy industries such as chemicals do support some research, but it tends to be rather short-term because of industrial concern for showing quick profits. In addition, several healthy industries, most notably paper, tend not even to support much short-term research because they wait for their counterparts overseas to develop new technologies and then copy them. Finally, many industries in poor financial

## EVEN DAVID STOCKMAN AGREES THE MARKET NEEDS HELP

...“There is some reason to doubt that market forces alone will bring about the needed shift to more efficient appliances. Numerous witnesses appearing before the subcommittee testified that the average consumer looks for a payback from higher purchase prices within 3 years. In the case of an appliance with a useful life of 10 years, this short payback horizon severely limits the amount of higher purchase price the consumer will accept in choosing a more efficient product over a cheaper, less efficient product. A second reason to doubt the efficacy of higher electric prices in changing consumer appliance buying habits is the lack of information that would enable consumers to judge the relative efficiency of competing products....A third reason that would support a regulatory approach is that the appliances in many new residential units are not purchased by the user, but are purchased by the builder, who will continue to seek appliances with the lowest initial cost...

In the face of these factors inhibiting the operation of market forces in the consumer appliance sector, a regulatory program designed to impose lifecycle cost purchasing on the consumer appears justified...”

—“Additional Views of Representative Dave Stockman, *U.S. Code Congressional and Administration News*, Volume 6, 95th Congress, Second Session (1978).

shape cannot even support short-term research, let alone longer-term activities.

#### Key Government Role in Information Dissemination

Clearly, there is a need for some government support for both industrial information generation and research. Particularly with regard to information dissemination, OIP has played a key role. It has developed technical briefing reports and manuals to be distributed to industries on new technologies and how they may be used. It has held workshops and seminars to explain the new technologies. And it has developed six Energy Analysis and Diagnostic Centers throughout the country whose purposes are to perform in-plant energy audits for small- and medium-sized industrial firms who would otherwise not be able either to generate such work from in-house staff or to pay for outside experts. These types of programs are key to encouraging the penetration of energy conservation in industry as expeditiously as possible.

On the research front, OIP has played a major role in supporting long-term research in general as well as shorter-term research for those industries that cannot afford to support any research themselves. Examples of OIP's longer-term research efforts include: development of high temperature ceramic recuperators, testing of heat-sensitive cameras for hot steel slab surface defect detection, and development of a diesel cogenerator fueled with a coal-water mixture. Examples of shorter-term research for industries not carrying out any research include investigation of rerefining of waste oils, and the development of energy-integrated farm systems.

Long-term research on basic materials manufacturing is also being supported in other federal programs; these include the new project, Advanced Conservation Technologies, in the Department of Energy; a project in Generic Technology Centers in the Department of Commerce; and a small project in Industrial Innovation at the National Science Foundation. In none of the cases just mentioned is it likely that industry will pick up the tab if the federal government drops its funding support.

The decontrol of energy prices is certainly necessary for industry to invest in energy efficiency. But such a policy must be supported by federal information and research programs in order to assure that industry moves as quickly as possible in this direction. □



*Fred Khedouri*

*OMB Assistant Director who oversees the conservation budget for David Stockman*

## EQUITY CONCERNS

A major area of concern in the budget cuts is what has happened to federal programs that mitigate the social costs on the nation's poor resulting from rising energy prices. Under the Carter Administration, there were two programs to deal with this concern. One was a fuel assistance program, which made cash payments to the poor to assist them with their rising fuel bills and was funded at \$1.8 billion annually. The other, a weatherization program, subsidized the costs of weatherizing low-income households, thereby reducing their energy consumption and their energy costs. The latter program received substantially less funding, only about \$200 million annually. What has Reagan proposed to do with these two programs? He has recognized one, the fuel assistance program, as a "safety net" for the poor that must be preserved, although at a funding level of only \$1.4 billion. Unfortunately, the weatherization program has not been included in the "safety net," but has been eliminated, and cities have been told that if they wish they can stretch their existing Community Development Block Grant (COBG) funding to include low-income weatherization, but without additional capital.

The elimination of the weatherization funding is perhaps the most tragic of the Reagan conservation cuts. It betrays the Administration's indifference to the social costs on the poor of the decontrol of energy prices and its ignorance of the value of conservation in mitigating those costs. There is no doubt that the social costs of decontrol will be great. By some estimates, energy expenses are expected to average at least 30 percent of monthly expenditures of lower-income households—up from 10 percent as recently as 1978. And in colder climes, energy costs will account for more than 50 percent of total income in many poorer households. It is ironic that in cutting the weatherization program, the Administration has eliminated a program which is in the long term more cost-effective for the federal government than direct fuel assistance. This is also a program that will remove low-income households from the federal dole for fuel assistance, thereby making them more self-sufficient.

#### The Weatherization Program is Working

The justifications for the elimination of the weatherization program are that it has performed poorly since its inception in 1976, and that it has been forced upon states, many of whom would rather not have it. It is indeed true that the program got off to a poor start. However, in the past year, with such changes as allowing contract labor to complete weatherization work and making adjustments for the increasing cost of weatherization materials, many of the problems plaguing the program have been solved. Between May and December of 1980, most of the funds that had become backlogged were spent. As for states not wanting the program, they have become increasingly strong supporters of the program as many of the problems have been solved. There still are difficulties—federal regulations tend to restrict state flexibility in meeting local needs—but as the inability of states' poor to pay their energy bills has grown, the weatherization program has come to be seen as the best choice around.

Of course, the Reagan Administration claims it has not eliminated low-income weatherization—it is still an option to which cities may apply their Community Development Block Grants, but with no additional funding over and above what is now there. Unfortunately, besides stretching the existing CDBG funding to include low-income weatherization, the Administration has also included in the block grant program other HUD rehabilitation programs which were previously funded separately. Thus, for the same size pie, states must now support a larger number of programs, many of which have already had CDBG money committed to them. In such a scramble for funding, low-income weatherization cannot help but come out the loser because it is viewed as a new program in the CDBG “pot.”

The other problem with transferring low-income weatherization into CDBG is that the infrastructure to deliver the program is completely changed in the process. It has taken four years to fine-tune the present infrastructure so that it will adequately deliver weatherization. Starting the learning process all over again with a different structure would be needlessly expensive both for this country and, more importantly, for the poor who are to benefit from the program.

In summary, then, with the decontrol of oil and the anticipated deregulation of natural gas, it is extremely important that the federal government address the issue of mitigating the effect of these policies on the poor. While it is important to subsidize the fuel costs of these individuals, it is even more important to subsidize the retrofit of their residences to reduce their fuel consumption, their fuel bills, and, in the end, the associated bills of the federal government. □

## ENERGY INFORMATION

In the proposed budget cuts, the Energy Information Administration (EIA) is slated for significant reductions in funding, particularly in certain crucial programs. The overall proposed cut in 1982 is 33 percent. However, special programs, to collect new survey information and gather more state-level data and to validate existing data, are being cut nearly to zero.

The targeted cuts are ill-conceived. While reliable, comprehensive, accessible energy information is needed to ensure the success of any energy policy, such information is especially important to the success of the market-oriented strategy professed by the present Administration, which requires that market decisions at all levels be based on good information.

If, as is proposed, energy responsibilities are shifted from federal to state agencies, a still broader base of energy information will be essential to enable states to manage their energy problems. States will need detailed data for several purposes: crisis management; the targeting of opportunities for conservation investments; monitoring the effectiveness of energy conservation efforts; and assessing the need for new energy facilities. In order to meet future demand without making expensive mistakes, a detailed monitoring of trends in energy demand within each state is required, as well as an understanding of how

the national supply picture affects the state.

Considering its high value, energy information is relatively cheap. EIA can be sustained at the current funding level of little more than \$100 million, which is only a fraction (10 percent) of the cost of one new coal or nuclear power plant.

Which programs in EIA answer the energy information needs of the new Administration's policy? One program is the National Energy Information System (NEIS), which was mandated by the 1976 Energy Conservation and Production Act. NEIS has performed the crucial function of organizing and documenting the nation's records on petroleum supplies into coordinated reporting systems, and its next planned step is to expand to state-level data. Another important program is in the Office of the Consumption Data System, which has made steady progress in filling the critical gap in energy consumption information, broken down by end use. A third critical program is the Emergency Energy Management Information System (EEMIS), which has developed a data system that will make timely information immediately available in an energy emergency. The activities of all of these systems have greatly benefited from those of another program, that of Data Validation. Through extensive validation spanning several years, this program has increased the accuracy of many EIA data bases and resolved inconsistencies among them.

In its short history, EIA has made great strides forward in producing accurate data of direct value in monitoring supply and consumption patterns and in aiding crisis management. The proposed budget cuts in energy information should be approached with caution to avoid the risk of being penny-wise and pound-foolish. □

*(Continued from Page 8)*

also be killed or placed on stringent budgets. Targeted R&D programs have also fared poorly. Transportation's Cooperative Automotive Research Program has been cut altogether. Energy conservation's scientists at Princeton, Oak Ridge, and Lawrence Berkeley labs have been told to expect at least 1/3 of their funding to be cut. The National Oceanic and Atmospheric Administration's (NOAA) satellite system has been indefinitely “deferred.”

Even where no one argues industry will invest, the Reagan budget cuts federal investment in science. Despite repeated studies highlighting problems in science and engineering education, serious cuts in aid for students and teaching institutes are proposed in the National Health Service Corps, health training subsidies, the National Institutes of Health's National Research Service Awards, NOAA's Sea Grant Colleges program, science education programs at NSF, the Guaranteed Student Loan Program, and the National Institute of Education. Although most basic research is conducted at universities, the NSF budget would eliminate the long-delayed university lab equipment program, destroy any meaningful funding for the social, economic, behavioral, and neural sciences, and cut back on much natural and engineering work. Finally, deep cuts in the “hard” sciences are proposed to be made in the mission agencies, such as NASA, Energy, Transportation, and Commerce. □

## THE REAGAN SCIENCE BUDGET

The Administration's ability to strengthen defense posture and revitalize the economy requires a significant contribution from American scientists. Yet, the Reagan White House has not yet developed a coherent, thought-out federal science policy to ensure that contribution, because it has apparently assumed that general supply-side economics will enable the market's "unseen hand" to operate in science as well.

This approach first surfaced in its transition task force in science. To quote task force member Edward David, president of Exxon Research and Engineering Co., on science policy: "Money should be given in a more general way so that industries can decide for themselves how to use it. The best thing is to make more cash available and at the same time cut government programs." That is what they have done. The Reagan budget keeps federal investment in R&D and science education well below even its own optimistic estimates of the inflation rate. Also, the Administration's tax package is devoid of any targeted incentives for increased industrial R&D or increased private sector contributions to universities.

There is concern among both scientists and businessmen that the Reagan package for science is selling the country short. During a recent hearing, industrial spokesmen repeatedly told a subcommittee of the Senate Budget Committee that it is naive to expect a rush of business investment in R&D and science education in a time of severe capital shortages, even though they recognize that the long-term health of the economy and country at large would otherwise suffer.

### Scientists Left Out of Budget Process

The concerns surfacing about the science budget are understandable. The Administration did not seek suggestions from the scientific community. The National Science Board was never consulted. Simon Ramo, co-chairman of the transition task force in science, has declared he was not involved in any way. The Office of Science and Technology Policy (OSTP) was frozen out altogether. Ac-

## PROPOSED RESEARCH BUDGET

Budget Authority (in billions of dollars)

	FY '80	FY '81	FY '82	% Change 80-82	
				Reagan	Carter
Energy	5.76	5.75	5.65	-1.8	28.4
NASA	5.24	5.52	6.12	16.8	28.3
Health and Human Services	3.81	3.95	4.19	10.1	12.3
(National Institutes of Health)	(3.21)	(3.34)	(3.58)	(11.8)	(12.4)
National Science Foundation	.92	.94	1.02	10.8	36.2
Agriculture	.71	.82	.92	28.1	26.2
Interior	.45	.44	.44	-2.01	13.0
Other	2.14	2.09	1.99	-7.0	27.1
SUBTOTAL	19.03	19.51	20.33	6.8	24.6
Department of Defense	14.02	17.31	22.01	57.0	46.7
TOTAL	33.05	36.82	42.34	28.1	40.0

\*Figures best estimates 3/24/81. Compiled as part of the initial step of the AAAS Budget Project.

cording to a White House aide, the very fact that there is still no presidential science advisor highlights the low priority the White House has given to science. Indeed, the OSTP is slated to be cut from 24 to 12 permanent staff, from 30 to 10 consultants, and to be moved out of the Executive Office Building. Things are no better elsewhere in the executive branch. Throughout all departments and agencies, information collection and analysis programs will be hit hard.

The closer one looks at the proposed science budget, the more confusing it becomes. If the concern is to maximize the short-term benefits science can offer the country, one would expect the Administration to favor programs designed either to reduce the 20 year lead-time between the development of a scientific idea and its commercialization or to increase the utility of basic and applied research. Yet Commerce's Cooperative Generic Technology Program, mandated by last year's Stevenson-Wydler Act, will be eliminated; and related programs in the National Science Foundation's (NSF) industrial technology subactivity will

(Continued on Page 7)

### FAS PUBLIC INTEREST REPORT (202) 546-3300

307 Mass. Ave., N.E., Washington, D.C. 20002

Return Postage Guaranteed

April 1981, Vol. 34, No. 4

Second Class Postage  
Paid at  
Washington, D.C.

- I wish to renew membership for the calendar year 1981.
- I wish to join FAS and receive the newsletter as a full member.

Enclosed is my check for 1981 calendar year dues. (I am not a natural or social scientist, lawyer, doctor or engineer, but wish to become a non-voting associate member.)

- \$25 Member
- \$50 Supporting
- \$100 Patron
- \$500 Life
- \$12.50 Under \$12,000

Subscription only: I do not wish to become a member but would like a subscription to:

- FAS Public Interest Report — \$25 for calendar year

- Enclosed is my tax deductible contribution of \_\_\_\_\_ to the FAS Fund.

NAME AND TITLE \_\_\_\_\_  
Please Print

ADDRESS \_\_\_\_\_

CITY AND STATE \_\_\_\_\_

PRIMARY PROFESSIONAL DISCIPLINE \_\_\_\_\_ Zip \_\_\_\_\_