United States
Environmental Protection
Agency

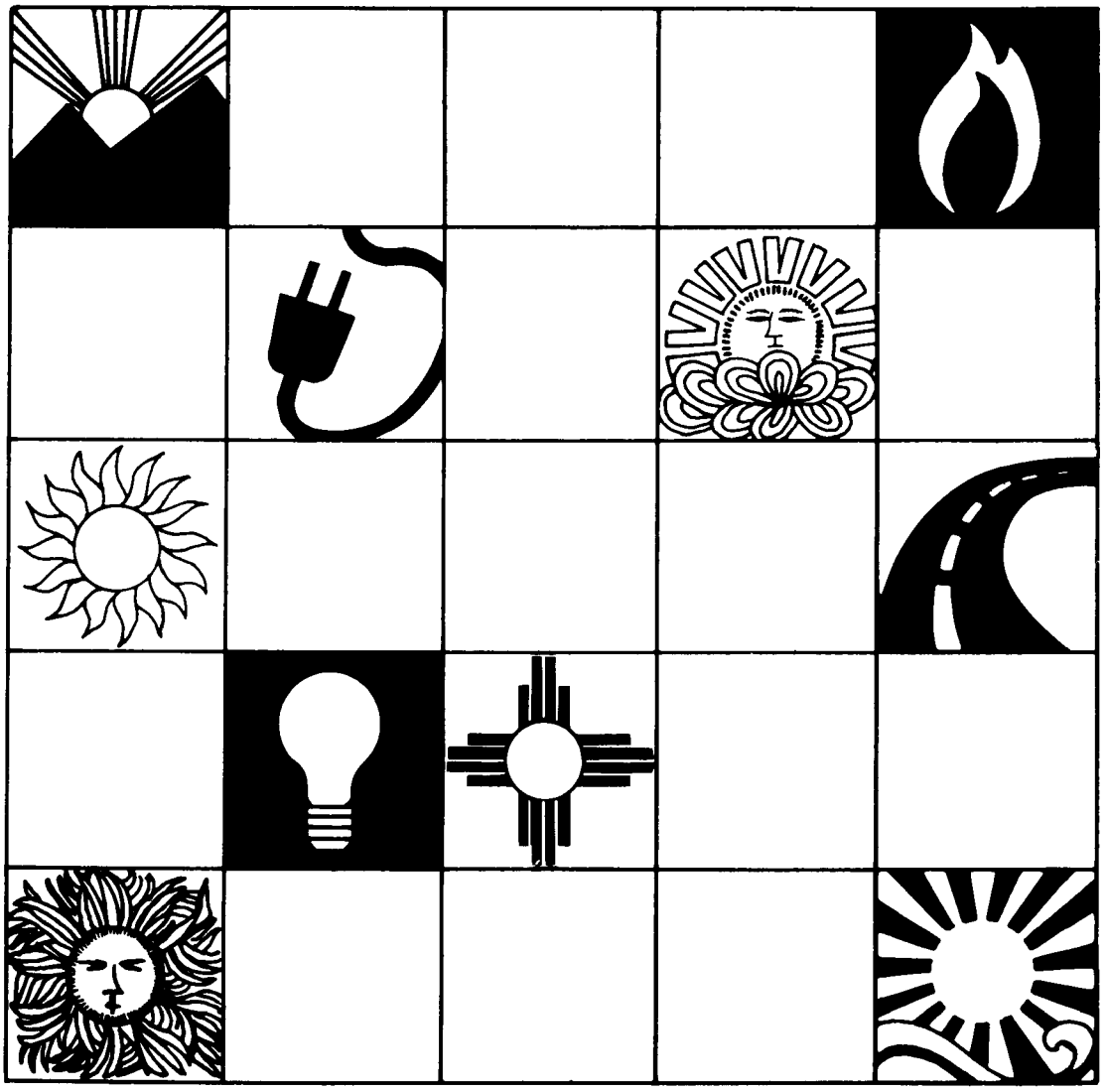
Office of Environmental
Engineering and Technology
Washington DC 20460

EPA-600/9-82-009a
May 1982

Research and Development

Federal Energy Conservation Programs

Perspectives from the Public and Private Sectors: Volume I



Public Law 93-577
93rd Congress, S. 1283
December 31, 1974

An Act

To establish a national program for research and development in nonnuclear energy sources.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

Federal Nonnuclear Energy Research and Development Act of 1974. 42 USC 5901 note. 88 STAT. 1878

SECTION 1. This Act may be cited as the "Federal Nonnuclear Energy Research and Development Act of 1974".

ENVIRONMENTAL EVALUATION

SEC. 11. (a) The Council on Environmental Quality is authorized and directed to carry out a continuing analysis of the effect of application of nonnuclear energy technologies to evaluate— 42 USC 5910.

(1) the adequacy of attention to energy conservation methods; and

(2) the adequacy of attention to environmental protection and the environmental consequences of the application of energy technologies.

(b) The Council on Environmental Quality, in carrying out the provisions of this section, may employ consultants or contractors and may by fund transfer employ the services of other Federal agencies for the conduct of studies and investigations.

(c) The Council on Environmental Quality shall hold annual public hearings on the conduct of energy research and development and the probable environmental consequences of trends in the development and application of energy technologies. The transcript of the hearings shall be published and made available to the public. Hearings. Transcript, availability.

(d) The Council on Environmental Quality shall make such reports to the President, the Administrator, and the Congress as it deems appropriate concerning the conduct of energy research and development. The President as a part of the annual Environmental Policy Report required by section 201 of the National Environmental Policy Act of 1969 (42 U.S.C. 4341) shall set forth the findings of the Council on Environmental Quality concerning the probable environmental consequences of trends in the development and application of energy technologies. Report to President, Administrator, and Congress.

EPA-600/9-82-009a
May 1982

Federal Energy Conservation Programs

Perspectives from the Public and Private Sectors
Volume I

Summary of a Public Hearing
July 14 and 15, 1981
Washington, D.C.

Program Manager
Gregory Ondich
Office of Environmental Engineering and Technology
Office of Research and Development
U.S. Environmental Protection Agency
Washington, D.C. 20460

Prepared by
REAP Associates, Inc.
Washington, D.C.

Subcontract under Prime Contract 68-02-3669

Office of Research and Development
U.S. Environmental Protection Agency
Washington, D.C. 20460

DISCLAIMER

This report has been reviewed by the Office of Research and Development, U.S. Environmental Protection Agency, and approved for publication. Approval does not signify that the contents necessarily reflect the views and policies of the U.S. Environmental Protection Agency, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Section 11 of the Federal Nonnuclear Research and Development Act (Public Law 93-577) authorized an annual public hearing on "... the adequacy of attention to energy conservation methods and environmental protection and the environmental consequences of the application of energy technologies." The Environmental Protection Agency's Office of Environmental Engineering and Technology has been responsible for conducting this hearing.

This report summarizes the views of 87 individuals and groups who delivered testimony at a public hearing on July 14 and 15, 1981 in Washington, D.C., or who submitted written testimony. A wide range of opinion is represented, including the views of utilities, trade associations, state and local governments, conservation businesses and advocacy groups. A complete transcript of oral and written testimony is available as Volume II of this Report.

Several major themes emerged during the hearing. On some issues, such as the need to assist low-income people in coping with escalating energy prices,there was considerable agreement. On other questions, such as the overall trends in energy policy and state energy conservation programs, there was significant disagreement. This report presents participants' perspectives on the following broad themes:

- energy policy. During the past year, energy policy has shifted toward greater reliance on market forces and a substantially reduced Federal role in energy conservation. Witness reaction ranged from strong support to equally strong opposition.

- benefits of conservation. A number of witnesses cited benefits of energy conservation, particularly in the areas of national security and the economy, as the basis for their testimony.

- State, local, and private sector conservation activities. Representatives of several agencies and firms described successful programs that their organizations had implemented. In many cases, witnesses stressed that these programs had been carried out without Federal assistance.

- successes and failures of federal programs. Many witnesses commented on Federal conservation programs. Testimony was generally positive about grants to state and local governments, particularly the Weatherization Assistance Program and Community Energy Program. Criticism focused largely on regulatory programs, such as the Residential Conservation Service, although some witnesses supported regulatory programs.

- barriers to conservation. Many witnesses agreed that market forces were spurring conservation investments; they also cited barriers that prevented these investments from occurring at an optimal rate. These included lack of information, artifically low prices for energy, high first-costs of some improvements and lack of access to credit and capital.

- a continuing federal role. As a result of these barriers, and other aspects of the energy market, several witnessess stressed the need for a continuing Federal role in energy conservation. Key areas cited include: low-income programs, state and local support, research and development, standards, financing and evaluation. Some witnesses also stated that energy conservation programs could be conducted without a Federal role.

I. BACKGROUND

A. The Section 11 Mandate

The Federal Nonnuclear Energy Research and Development Act (Public Law 93-577) was passed in December, 1974, as part of the national response to the impact of the 1973 Arab oil embargo. The legislation authorized a comprehensive national research, development and demonstration (RD&D) program for nonnuclear energy technologies, with a total Federal investment of at least $20 billion over 10 years. The law also required the development of the " ... technological capabilities to support the broadest range of energy policy options through conservation and the use of domestic resources by socially and environmentally acceptable means."

To ensure that this legislative intent is reflected in the nonnuclear RD&D program, Section 11 of PL 93-577 authorizes an annual public hearing on

> ". . . the adequacy of attention to energy conservation methods and environmental protection and the environmental consequences of the application of energy technologies."

Initially, the Council on Environmental Quality was responsible for the Section 11 overview. In 1977 the program was transferred to the Environmental Protection Agency (EPA). EPA's Office of Environmental Engineering and Technology within the Office of Research and Development conducts Section 11 research and outreach activities, and prepares relevant reports.

B. Past Years' Section 11 Programs

For the first two years, EPA emphasized environmental aspects of the Section 11 mandate. The 1978 activities focused on the allocation of resources among competing technologies within the Department of Energy. The 1979 program analyzed how environmental concerns have been incorporated into the DOE project management system.

During the past two years, EPA shifted the focus to energy conservation. The 1980 program explored the "adequacy of attention" to conservation in DOE policy formulation and program evaluation. It also examined the management of both the state and local grant programs and research, development and application activities. The results of these studies are contained in the 1979 and 1980 Report to the President and Congress.

C. Definition of Energy Conservation

There are at least four distinct meanings for conservation.

First, conservation means using energy more efficiently. A service can be supplied by substituting capital, labor or ingenuity for energy--frequently at a lower cost to the user. There is no diminution in comfort and no impact on life style. An example of conservation as efficiency would be insulating a house.

Second, conservation means ending energy waste. This form of conservation also has no impact on life style or comfort. It merely requires the discipline to turn off lights before leaving the house or shutting the engine off while sitting in the car.

Third, conservation means saving energy through modest life style changes. This form of conservation includes using public transit, vanpools or carpools to commute to work instead of driving a car. Another energy-saving life style change is installing a set back thermostat in the home to lower temperatures at night.

Finally, conservation means saving energy by curtailing activities. This form of conservation includes driving less and doing less, turning down the thermostat and feeling colder in the winter (or turning up the air conditioning thermostat and being warmer in the summer).

In most instances, witnesses at the Section 11 hearing were describing conservation through efficiency improvements, minor life style changes or ending energy waste.

II. 1981 SECTION 11 PROGRAM

A. The Context: New Directions in Energy Policy

President's Reagan's program, presented to Congress in February, 1981, marked a major turning point for Federal government energy efforts. The President's energy policy derives, in large measure, from his program for economic recovery. This program has four key elements:

> "(1) A budget reform program to cut the rate of growth in Federal spending,
>
> (2) a series of proposals to reduce personal income tax rates . . .and to create jobs by accelerating depreciation for business investment in plant and equipment,
>
> (3) a far-reaching program of regulatory relief, and
>
> (4) in cooperation with the Federal Reserve Board, a new commitment to a monetary policy that will restore a stable currency and healthy financial markets."
>
> (A Program for Economic Recovery: Presidential Message to Congress; February 18, 1981)

The new policy contains significant changes in the Federal government's approach to conservation and renewable resource programs. Market forces -- principally the pricing of energy at realistic levels -- are expected to induce significant conservation in each end-use sector. The decision to decontrol the price of domestic crude oil was a major step in this direction. Decontrol of natural gas prices, currently regulated under the Natural Gas Policy Act of 1978, is also being considered.

There is evidence that market forces are having a significant impact. Energy use in 1980 was about 2 percent less than in 1979. In the first 10 months of 1981, net U.S. imports were 5.7 million barrels/day. This marks a decline of approximately 40 percent from 1977 levels when imports were at their peak.

According to the President's program, greater reliance on market forces reduces the need for Federal involvement; consequently, a variety of Federal programs are being reduced, phased out or discontinued. The Federal role will focus on assisting market forces through the existing conservation and renewable tax credits. In addition, the government will support long-term, high-risk and potentially high-payoff research and development that the private sector is not likely to undertake.

B. The 1981 Section 11 Hearing

The 1981 Section 11 program examined how the private sector and state and local governments would adjust to new directions in energy policy. The major source of information for this report was the annual public hearing required by Section 11.

The 1981 hearing was held in the auditorium of the Office of Personnel Management in Washington, D.C. on July 14 and 15. Forty witnesses testified over a two-day period. In addition, 47 individuals and organizations, who were unable to attend the hearing, submitted written statements for the record.

Hearing panelists who questioned witnesses were selected from both the executive and legislative branches of government. They included representatives from the Department of Energy's Office of Conservation and Renewable Energy; the Office of Management and Budget; the House Committee on Science and Technology; and the House Committee on Energy and Commerce. The panel was chaired by Dr. Kurt W. Riegel, Associate Director and Gregory G. Ondich, Section 11 Program Manager of the Office of Environmental Engineering and Technology, Environmental Protection Agency.

Prior to the hearing, EPA sent an Issue Paper to all prospective witnesses. The Issue Paper suggested questions and topics for participants to address in the hearing.

General questions included:

- How are private firms, state governments, and local agencies preparing to assume their new responsibilities?
- Which activities will get priority from public and private organizations and what will be the consequences if some activities are discontinued?
- Have any new initiatives or opportunities been created as a result of the shift in Federal energy conservation programs?
- What is the Federal government's proper role in this period of transition?
- How should the Federal government evaluate and monitor the effects of its new energy policies and program changes?

These questions applied to any Federal energy conservation program --R&D, financial incentives, standards, grants, and so forth. Beyond these general questions, EPA sought additional information on state and local conservation activities, programs for low-income people, and program evaluation. There was considerable interest expressed in these topics during the 1980 Section 11 review, and it was useful to re-examine them in light of proposed changes in conservation programs.

Not all of the questions posed by EPA were addressed in the hearing. Further, witnesses did not entirely restrict themselves to the topics suggested in the Issue Paper.

A wide range of witnesses testified at the hearing or submitted statements for the record. The largest representation was drawn from state and local governments. Energy advocacy groups, research and professional organizations, public and private utilities, energy conservation businesses, low-income organizations and other businesses and trade assocations were also represented. Several witnesses who work for local governments spoke as individuals, not as representatives of their municipalities.

A complete breakdown of witnesses is as follows:

	Oral	Written	Total
State and Local Governments	10	12	22
Energy Advocacy Groups - national, state and local	8	5	13
Energy Conservation Businesses	6	8	14
Research/Professional	4	3	7
Low-Income Organization	6	4	10
Utilities	5	7	12
Other Businesses	-	4	4
Private Citizen	1	4	5
	40	47	87

There was significant interest at the hearing in the impact of the President's policies on state and local energy conservation programs. A large number of witnesses also focused attention on the problems that low-income people encountered in adjusting to increased energy prices. Most of the testimony emphasized conservation in the residential sector.

III. MAJOR THEMES.

Although witnesses addressed a broad range of topics in their testimony, several major themes emerged. The summary of testimony is organized around these major themes. The sections that follow highlight testimony concerning:

- new directions in energy policy;
- benefits of conservation;
- state, local, and private sector conservation activities;
- successes and failures of Federal programs;
- remaining barriers to conservation; and
- an appropriate Federal role.

Quotations from witnesses to illustrate specific points of view are included in each section.

A. Energy Policy

Witnesses were sharply divided in their opinions about current energy policy. In general, representatives of utilities, trade associations and other business groups tended to strongly support Administration programs. These organizations maintained that allowing the market to work is the best way to achieve optimal energy conservation.

> "MVMA is encouraged by the changes in government energy policy made by the administration thus far. We wholeheartedly support the Administration's drive to develop an energy policy focused on market realities ... Reliance on market forces and the decisions of individuals and business unencumbered by artificial government subsidies and regulatory controls will produce cost-effective improvements in energy usage."
>
> (V.J. Adduci, Motor Vehicle Manufacturers Association of the U.S., Inc.)

A point raised by many witnesses was that price controls have retarded energy conservation. Removal of price controls was thought to be an important step towards spurring conservation.

> "The involvement of the Federal government in energy conservation was an improper response to its previous erroneous policy of fuel price regulation. The imposition of price controls on natural gas and oil, which regulated the consumer costs of these fuels below their true market value, disrupted the cost-benefit balance between energy use and conservation."
>
> (Harry Wuertenbaecher, Union Electric Company)

Utilities were critical of Federal regulatory programs, particularly the Residential Conservation Service (RCS) and supported the President's emphasis on regulatory change. They have concluded that these regulations are not cost-effective and have frequently interfered with the utilities' own conservation programs.

> "The cost of the RCS program (some 4.9 billion dollars, according to DOE) does not justify the incremental energy savings that will result from the program. The electric utilities are already involved in programs that are locally cost justified and that meet a majority of the goals of RCS."
>
> (John Russell, Edison Electric Institute)

Energy conservation businesses also tended to generally support the new directions in energy policy. They expected expanded opportunities to result in the new climate.

> "My first clear impression is that the policy of using price as the incentive for energy conservation is working very well. The attendance at our meetings, the attentiveness of our audiences and the response to our recommendations. . . is driven by the cost of energy and little else."
>
> (Robert Naismith, Potomac Energy Group)

However, while approving of the new directions, some conservation businesses were also concerned that useful programs should be preserved.

> "The efforts of the Reagan Administration to reduce the cost and other negative aspects of unnecessary government regulation are applauded by our industry. The efforts to reduce Federal activities concerned with

> building construction could, however, do great harm, if needed national guidelines and low cost programs were swept out along with those whose costs are excessive or whose requirements are an unnecessary burden."
>
> (Sheldon Cady, Mineral Insulation Manufacturers' Association)

Professional associations and energy research organizations had mixed reactions to the President's program. By and large they approved of the Administration's action in decontrolling the price of crude oil. However, while acknowledging the inefficiencies in many Federal programs, these organizations were concerned about restricting the Federal role to long-term, high-risk research and development. Their testimony tended to emphasize the need to continue Federal support for some of the near-term applications that the private sector would be unable to finance.

> "The entire building industry is made up for the most part of small firms. Most architectural firms, for example, contain 9 or fewer members. These small firms will not be able to pick up the integrated research on a national scale that has characterized much of federal buildings research."
>
> (Randall Vosbeck, American Institute of Architects)

State and local governments also had mixed reactions to the President's program. Most representatives recognized the necessity of reducing Federal spending; they welcomed the President's emphasis on reducing the administrative requirements imposed on state and local governments as conditions for Federal grants.

However, most of the state and local governments testifying at the hearing opposed the magnitude of the cuts in the conservation programs. They were concerned that reductions in energy funding, combined with cuts in social service programs, would impose financial hardships on many state and local governments. These witnesses expected that energy conservation programs would fare poorly in the competition for limited resources. Consequently, state and local energy offices

thought it likely that they would have to reduce drastically or even discontinue their activities.

> "NGA conducted a survey this winter of the impact of proposed Federal budget cuts on state energy programs. The survey results indicate that the total withdrawal of Federal support for FY 82 as proposed in the Administration's budget will severely impact the states' ability to carry out conservation and emergency programs...there is a strong likelihood that many state energy offices could be closed if Federal funds are eliminated in FY 82."
>
> (Ned Helme, National Governors' Association)

Representatives of low-income organizations -- Community Action Agencies and state alliances of community action programs -- tended to oppose the President's energy policies. Their testimony focused on the negative impacts that rising energy prices were having on the poor and the elderly. In large measure their testimony represented a plea to mitigate the impacts of escalating prices by continuing to fund both the Weatherization Assistance Program and the Low Income Energy Assistance Program.

> "The major issues confronting all energy consumers today are partially the result of a government policy which promotes increased costs for energy in order to promote needed conservation and increased domestic production. In my opinion, another policy is essential, a policy which relieves low income and elderly of the immediate and intolerable burdens imposed by this policy of increased costs. Without such a policy, the health and safety -- even the lives -- of low income persons and especially the elderly will be jeopardized."
>
> (Anthony Maggiore, Milwaukee County Community Action Agency)

Most energy and environmental advocacy groups were strongly opposed to the President's energy policy. These organizations maintained that efficiency improvements were generally more cost effective and less environmentally damaging than expanding energy production. Consequently, they concluded that the Administration was mistaken to propose significant reductions in Federal funding for conservation, while it was requesting increases in the budget for supply technologies such as nuclear power.

"The Energy Conservation Coalition believes that current attention to energy conservation methods is woefully inadequate. The Administration has severely reduced federal energy conservation programs on the premise that rising energy costs will encourage all the conservation we need. This reflects a dangerous and unjustified complacency with the status quo."

(David Moulton, Energy Conservation Coalition)

Finally, a small number of witnesses took no position on the President's energy policy. Rather, they used their testimony to describe their energy conservation programs.

B. Benefits of Energy Conservation

Almost every witness remarked on the benefits of energy conservation to the national economy. Some of the benefits mentioned were:

-minimizing national vulnerability to a disruption in oil imports;

-reducing the cost of oil imports;

-decreasing the dollar outflow from local communities;

-postponing new generating capacity; and

-contributing to the health of the economy.

- Minimizing national vulnerability. Many witnesses were concerned about the continuing U.S. vulnerability to disruptions in the supply of imported oil. There was acknowledgement of the fact that imports had declined in the last two years. However, this was not interpreted as a signal that the problem had disappeared. Rather, witnesses maintained that, although conservation was working, the current level of oil imports still posed a significant danger to the nation's security.

"It is true that this is the lowest level of imports since 1975 and represents a considerable achievement relative to the most recent past.

> But more importantly, it is the same level that we were importing in 1973 when the Arab oil embargo hit our economy like a shock wave..."
>
> (David Moulton, Energy Conservation Coalition)

- Reducing the costs to the nation of imported oil. Witnesses repeatedly remarked that the real costs to the U.S. of oil imports far exceeded the market cost of $35.00 per barrel. Several studies, such as Energy Future by the energy project of the Harvard Business School, were cited in concluding that the "true costs" to the nation were 2-6 times the posted price.

- Decreasing the dollar outflow from local communities. It was repeatedly emphasized that conservation is a decentralized energy option that helps to promote local economic development. Witnesses were concerned that there is a significant "dollar drain" in many localities because of the rapid rise in energy prices. This dollar outflow is a problem for some communities, regardless of whether energy is imported from OPEC nations or other regions of the U.S.

> "The Minnesota Energy Agency has estimated that the net (positive) economic effect in the state of a $1 purchase of petroleum products is $.55 compared with $2.21 for home energy conservation."
>
> (John Armstrong, Minnesota Energy Agency)

- Postponing New Capacity. Witnesses from both investor-owned and publicly-owned electric utilities tended to focus on conservation as a strategy for deferring expansion of new generating capacity. High interest rates and regulatory uncertainties have significantly increased the costs for new capacity. As a result, many utilities have begun to promote energy conservation as an alternative to building new power plants.

Electric utilities are concerned not only about total energy demand, but also about load management. Therefore, energy conservation measures that tend to lower peak demand have the greatest value to utilities.

Gas utilities have a somewhat different perspective on energy conservation. As a whole, they are less concerned with capacity deferral and peaking problems. However, in some areas the demand for natural gas has exceeded the supply. This imbalance has sharply restricted the number of new customers who can be served by gas utilities. Conservation, in effect, increases the available supply. Thus, in a given locality, a gas utility can increase its new hookups. This can also be advantageous to the residential customer, since in almost every region of the country gas heat is cheaper than either fuel oil or electric resistance heat.

- Economic Potential of Conservation. A major theme of the hearing was the relative economic advantage of energy conservation compared to energy supply. Several witnesses cited the recent Solar Energy Research Institute (SERI) study which concluded that energy use can be reduced significantly from current levels, without diminishing economic growth or impairing life styles. The evidence was summarized by the Chairman of the Buildings section of the SERI report:

> "The first part was purely technical and analyzed the opportunities for cost-effective energy conservation, that is, improvements in energy efficiency. We found that if a least cost scenario was followed, energy consumption in 2000 A.D. would be half that predicted by the conventional forecasts of the Department of Energy's Energy Information Administration (DOE/EIA)."
>
> (Arthur Rosenfeld, Lawrence Berkeley Laboratory, University of California, Testimony before the Subcommittee on Energy Conservation and Power of the Committee on Energy and Commerce, U.S. House of Representatives, May 20, 1981).

The National Audubon Society submitted their own Energy Plan (the Audubon Energy Plan, Technical Report, April 1981) to illustrate the potential for both energy conservation and renewable resources. The Plan assumes that population will increase by 25 percent by the year 2000 and that real per-capita GNP will grow at 3 percent per annum. The Plan concludes that total energy use in the year 2000 could be no greater than today's consumption, even though population and economic growth

increase substantially. According to the Plan, renewable resources will supply up to 25 percent of the (hypothetical) 80 quadrillion Btus that will be consumed in 2000. By contrast, oil imports will be reduced to about 2 million barrels per day, a level that would not compromise national security or threaten economic growth.

The authors of this Plan underscore the relationship of enhanced energy efficiency and overall economic productivity. They maintain that investments in energy conservation are more cost-effective than corresponding expenditures for energy supply; therefore more capital will be available for investments in other sectors of the economy if conservation opportunities are emphasized.

Most of the testimony related to the potential for energy conservation in the residential/commercial sector. However, several witnesses discussed the potential for efficiency improvements in the industrial and transportation sectors. Examples were given of greater energy productivity in particular industries, such as paper manufacturing or automobile production. In addition, one witness explored the possibility of substantial energy savings in a variety of industries by increasing the amount of insulation on steam pipes.

> "The wasted energy that results from the uninsulated and underinsulated steam piping is 305,000 barrels of oil equivalent per day. . . The cost for this is . . . more than is used by the entire rubber and plastics industry and exceeds the combined total of textile and lumber industry use."
>
> (Robert Manahan, Thermal Insulation Manufacturers Association)

C. State, Local, and Private Sector Conservation Activities

A substantial portion of the testimony received at the Section 11 hearing described conservation programs of state and local governments or in the private sector. Some activities were supported by Federal funds or required by national legislation. Others were initiated with no prodding from the Federal government. In

some instances, Federal programs were modeled on the experiences of state government or private sector programs.

- State and Local Government Activities. Representatives from more than 20 state and local governments presented either oral or written statements at the Section 11 hearing. Testimony was received from all areas of the country. The greatest interest was shown by states that depend heavily on petroleum for both residential space heating and electricity generation. Witnesses presented only a sample of state conservation activities at the Section 11 hearing. A detailed survey of programs in all 50 states can be found in Ensuring Our Energy Futures: State Initiatives for the 80's, by the National Governors' Association.

Several states discussed the overall impact of state conservation programs. Rhode Island claimed that oil consumption has been reduced by 20 percent in the last few years. Arizona estimated that, as a result of the activities of the state energy office, 23 trillion BTUs were saved in the past few years. Translated into specifics:

> "-- This much energy in the form of gasoline would supply the fuel for a third of a million small cars for a full year.
>
> -- This much energy would supply all of the energy needs of 144,000 typical Arizona homes for a full year.
>
> -- This much energy is equivalent to 3.8 million barrels of oil or $159 million."
>
> (Margaret Walker, Arizona Energy Office)

Several state and local governments discussed changes that were instituted in their building codes to allow construction of more energy-efficient structures. In some areas, building codes are the principal obstacle to residential conservation. These codes prescribe use of materials and techniques that are now obsolete.

Colorado has adopted a building code program that has minimized this barrier to residential conservation. By 1980, the new code had been adopted by 87 percent of

the local jurisdictions in the state. Approximately 100,000 new homes have already been constructed under the provision of the new code.

A number of states commented on the use of renewable resources. Vermont noted that wood energy was rapidly becoming a principal energy source for residential space heating. Colorado estimated that more than 3,000 solar heated houses have been built in the state, and officials expected that number to double within two years. Several local governments described projects for generating heat and/or electricity from another renewable source -- municipal solid waste.

The State of Connecticut emphasized mid-range plans for reducing energy use in general and reliance on imported oil in particular. In Connecticut, the state legislature has mandated that several executive agencies develop a scenario "which shall be directed toward the highest feasible degree of energy self-sufficiency and the maximum feasible utilization of renewable fuel resources." (Special Public Act 80-53). The plan envisions at least a 3 percent decline in overall energy use by 1986 from current levels and a 12 percent reduction by the year 2000. It calls for petroleum consumption to be reduced to 40 percent of total energy use by the end of the century compared to a 72 percent dependence in 1980. By contrast, renewable energy sources are expected to supply about 13 percent of the state's requirements by the turn of the century; currently, these sources supply less than 2 percent.

Several states have conducted evaluations of their energy conservation programs. Michigan has concluded that its Energy Extension Service program has been very cost effective. In 1980 clients of the EES information service saved about nine dollars for every dollar the state invested in operating the program. In addition, about three-quarters of the patrons of the EES Clearinghouse claimed that the EES materials provided at least 80 percent of the information that they wanted.

Minnesota's review of its conservation programs has also yielded favorable results:

> "For example, an evaluation of our boiler efficiency workshops showed a payback on all workshop associated costs of 4 months. The average payback on all costs associated with the Institutional Buildings Grants Program in Minnesota has been 3.2 years with an annual savings to the state's taxpayers of $16 million."
>
> (John Armstrong, Minnesota Energy Agency)

Perhaps the most innovative program described at the Section 11 hearing was the Municipal Solar Utility (MSU) currently being considered by Carbondale, Illinois. The idea for the MSU was derived from a similar experience in Santa Clara, California. The Santa Clara MSU was designed to lease solar swimming pool heaters to residents of that community. However, both the physical and economic climate of Carbondale are markedly different from Santa Clara. Although the name was retained, the MSU concept was reformulated to suit Carbondale's needs.

The Carbondale MSU primarily emphasizes energy conservation. It provides four major services: an intensive audit, an energy education program, a loan fund to finance energy conserving improvements, and a production unit that will eventually produce energy from local fuels.

Financing for the MSU could come from two sources. First, the city could levy an Energy Consumption Tax (ECT). Unlike a gross receipts tax or sales tax, the ECT is based on the amount of energy used rather than the price of the commodity. A second potential source of funds for the MSU is the conventional utility system. MSU conservation efforts, if successful, will have a significant impact on the utility's load. A cooperative relationship between the MSU and the utility will be necessary in order for the utility to integrate the results of energy-saving improvements into its load planning and forecasting.

- Utility Conservation Programs. EPA received testimony from four utility trade associations and five utilities about their conservation programs. Three categories of information were presented: overall trends in energy use, specific conservation programs, and critiques of Federal regulatory actions, particularly the Residential Conservation Service.

Both gas and electric utilities have experienced significant declines in residential energy use, compared with pre-1973 experiences. A recent survey of gas utilities by the American Gas Association revealed that residential gas use had declined by 2.7 percent/year from 1973-79. Commercial use of natural gas fell by 2.2 percent/year during the same period.

The results of this national survey were mirrored in testimony given by individual utilities. The Public Service Company of Colorado reported that residential use of natural gas declined by 3.5 percent/year from 1973-79. Residential customers of the Long Island Lighting Company used 16 percent less natural gas per household in 1980 than in 1970.

Since 1973, the rate of growth for consumption of electricity in the residential sector has been cut in half. However, trends differed for individual utilities that testified at the Section 11 hearing.

Increased costs for new generating capacity and the comparatively lower cost of conservation have induced utilities to develop significant energy conservation programs. The Edison Electric Institute reports that 170 members are involved in its "National Energy Watch," aimed at improving energy efficiency in building construction. Utilities have significant impact on builders' decisions on construction standards. The AGA survey, previously cited, reports that more than half of the utilities responding had residential conservation programs. Fifty-two percent offered

energy audits and 28 percent sold attic insulation. The AGA survey also pointed out that all of the programs covered by the survey were developed by the utilities on their own initiative and not required by Federal, state or local legislation.

Several innovative programs were described by utilities at the Section 11 hearing. For example, Dallas Power and Light (DP&L) is aiming to reduce its peak requirements by 200 megawatts by 1985. In order to achieve that objective and to reduce energy demand generally, DP&L has instituted more than 30 conservation programs.

One of these programs -- Your Energy Shares (YES) -- is designed to encourage the purchase of high-efficiency heating and cooling equipment in the residental sector. DP&L offers grants to customers who install air conditioners with higher Seasonal Energy Efficiency Ratings (SEERs), heat pumps, or solar water heaters. For air conditioners and heat pumps, the size of the grant increases with the efficiency of the unit. For example, a central air conditioner with an efficiency rating of 8.5-10.49 receives a grant of $60/ton; a unit with an efficiency rating that exceeds 10.5 is eligible for a grant of $120/ton.

Customers who install solar systems or heat recovery apparatus for water heating receive $120/system. Once installation of the energy-saving system is verified, customers receive a YES credit that they can redeem for an equivalent amount of electric service.

The YES program has two principal effects. From the customer's standpoint, the payback period for energy efficient equipment is substantially decreased. At the same time, DP&L is able to reduce its peak load needs and thus reduce the need for new capacity.

> "... replacement of a 4 ton central cooling unit with a SEER of 6.0 in a typical home in Dallas which has gas heating with a similar sized heat

> pump with an EER of 8 will yield a net payback to the customer in less than 5 years at current energy costs ... At the same time this efficiency change-out occurs, DP&L's system peak. . . is reduced by 2 kilowatts. . ."
>
> (Carroll Benson, Dallas Power and Light Company)

The YES program was instituted in May, 1981. By August, 1981 DP&L planned to expand the program to pay the cost differential between low and high-efficiency fluorescent lamps.

The Long Island Lighting Company (LILCO) is also promoting the use of both high-efficiency heating equipment and solar systems. However, LILCO is taking a different approach from DP&L. The Long Island utiity has organized a non-regulated subsidiary to market equipment directly to residential and commercial customers. The funds for the subsidiary will be raised from LILCO's shareholders rather than ratepayers. Since LILCO Energy Systems is not regulated by the state PUC, the company maintains that it will be able to take advantage of changes in the market more rapidly than if its actions had to be reviewed by the PUC.

These are just two examples of innovative utility conservation programs. The impact of conservation on utilities may be far-reaching. One witness concluded that involvement in conservation programs and renewable resource development "...reveals that electric utilities are not just furnishing kilowatt hours anymore but, energy services planning."

- Other Private Sector Activities. EPA also received testimony from representatives of a variety of profit-making and not-for-profit organizations in the energy conservation field. These included energy conservation businesses, professional associations, and research institutes. Their activities are as diverse as the organizations they represent.

Energy conservation businesses mainly described two types of activities --

energy audits and conservation retrofits. One firm that specializes in commercial and industrial facilities studies the feasibility of various energy-saving measures, determines the approximate cost, and installs the measures that the client selects.

Another firm concentrates on the residential market. Initially, it only had planned to offer audits. However, operations quickly expanded to retrofits as well. In 1982, the firm will begin to expand into a nationwide franchise.

> "These small, efficient, privately owned and operated businesses will create jobs and opportunities for thousands who will, by their efforts, help to audit hundreds of thousands of homes and businesses in a relatively short time. The practical and actual result of these audits and resultant retrofits will be to reduce our dependence on foreign oil."
>
> (Richard Silva, Energy Detectives, Inc.)

One professional association has concentrated on improving the capabilities of its members to deal with energy conservation opportunities in buildings. The efforts were spurred by Federal programs. However, it is also investing its own resources in educational programs.

> "My own organization. . . has begun an unprecedented energy education program called the Energy Professional Development Program, and the AIA is spending about $1 out of every $12 of our membership dues on this program."
>
> (Randall Vosbeck, American Institute of Architects)

Another professional association is focusing its attention on a major public relations campaign to educate both government officials and the private sector about services it provides. This program includes activities by the national association as well as state and regional affiliates.

> "This program is designed to reach the energy conservation community from government officials to school and hospital administrators to corporation energy managers. Our point is that those who are serious about energy conservation and want professional technical assistance can get it. The members of ACEC are available and have the capabilities and expertise to provide it."
>
> (American Consulting Engineers Council)

The New Jersey Energy Research Institute described several of its energy conservation projects, which it terms "energy systems planning." These activities are largely funded by the private sector and/or local governments, with some Federal assistance for feasibility studies or program start-up. The types of projects include: urban cogeneration; redevelopment of the New Jersey waterfront; construction of a solid waste-to-energy facility; and a student educational project.

D. Successes and Failures of Federal Programs

In addition to describing the achievements of state, local, and private sector programs, many witnesses addressed the relative success of conservation programs initiated by the Federal government. Testimony was generally positive about Federal grants to state and local governments, particularly the Weatherization Assistance Program (WAP) and the Community Energy Program (CEP). Most of the unfavorable testimony focused on regulatory programs, especially the Residential Conservation Service (RCS).

Several witnesses cited the Community Energy Program (CEP) as a model for Federal conservation programs. CEP is sponsored by ACTION with funds provided by the Department of Energy. Communities participate in the program on a voluntary basis. There are no extensive rules and regulations; only minimal guidance is given by ACTION staff.

The objective of the CEP is to encourage communities to mobilize their own resources to conserve energy. The emphasis of the CEP is to involve a large number of citizens in conservation activities. The program is shaped by each community rather than by guidelines from a Federal agency. ACTION provides participating communities with a small grant -- no more than $5,000 -- to initiate the mobilization process. The grant is used to coordinate the activities of individuals and civic groups.

In most instances participating communities also receive funds from the DOE Weatherization Program for "Low-Cost, No-Cost" measures.

The DOE Weatherization Assistance Program (WAP) was defended by several witnesses. WAP was authorized by the Energy Conservation and Production Act of 1976. Initially lodged in the Community Services Administration, in 1979 the program was transferred to the Department of Energy. Witnesses acknowledged that there were deficiencies in the program in the early years of operation. However, there was agreement that the major failings have now been overcome. One witness traced the improved performance in her state.

> "While in 1978 only 4,000 homes were weatherized in New York State, 17,054 units were completed in FY '79 and 22, 000 in FY 1980. Clearly, the program is highly productive in helping the poor and the elderly cope with the energy crisis."
>
> (Randi Triant, New York State Alliance of Community Action Agencies)

Another issue receiving attention was the cost-effectiveness of the energy-conserving measures funded through WAP. One witness recently completed an extensive study which reviewed data on more than 6,000 homes retrofitted under WAP. He concluded that WAP compares favorably with private sector conservation efforts in terms of energy savings. It also has created other social and economic benefits for low-income people.

> "In the CECA study, we found that weatherization delivers energy at a cost between $15 and $40 per barrel of oil equivalent. This makes it a cheaper way to expand the nation's energy resources than any of the production options. In addition, the energy efficiency option exhibits an extremely high labor intensity, perhaps twice that of conventional fossil fuel production. Moreover, with the moderate skill levels that are required by energy conservation, the conservation option has a tremendous potential for reaching those who are most in need of employment."
>
> (Mark Cooper, Consumer Energy Council of America)

Witnesses presented considerable unfavorable testimony about regulatory programs such as the Residential Conservation Service (RCS). The RCS program was

authorized in the National Energy Conservation Policy Act of 1978 and extended in scope by the Energy Security Act of 1980. These acts required large gas and electric utilities through the RCS program to offer a range of conservation services to residential customers.

The utilities testifying at the Section 11 hearing cited a number of serious problems with the RCS. One major drawback, according to the utility industry, is that the program is not cost-effective. For example, the Los Angeles Department of Water and Power, the nation's largest municipal utility, calculated that energy saved by RCS will cost 13¢/kw-hr. Currently, LADWP customers are paying only 6¢/kw-hr for electricity.

The utility industry has concluded that the same results are to be expected nationwide.

> "The cost of the RCS program...does not justify the incremental energy savings that will result from the program. The electric utilities are already involved in programs that are locally cost justified, and that meet a majority of the goals of RCS. Therefore, any savings attributable to RCS are actually only the difference in savings (if any) between RCS and existing or planned utility programs."
>
> (John Russell, Edison Electric Institute)

Another major problem with RCS, in the view of utilities, is the relatively low response rate. New York State enacted a mandatory program similar to the RCS. However, less than 2 percent of the eligible households applied for an on-site audit. A recent survey by EEI concluded that only 3 percent of the households in the U.S. will request an RCS audit. The results of the survey contrast markedly with DOE's assumption that the response rate would be about 7 percent.

A further problem with the RCS according to the utility industry is the lack of flexibility in the program. Several examples were cited of effective conservation programs that would be illegal under RCS. In one instance, an audit program that

utilized insulation sales people -- prohibited by RCS regulations -- would have to be discontinued. In another case, the number of customers that could be reached in a given period of time would be substantially diminished.

> "The municipal electric utility of Knoxville, Tennessee, for example, has completed close to 20,000 audits since 1977, and they now perform about 6,000 audits a year. They plan to increase this to 64 audits a day by having 16 employees make four audits each. But under RCS the utility will need to send out eight teams of two auditors. Each team will be able to perform only two audits per day -- reducing the total number of audits from 64 to 16."
>
> (Karen Anderson, American Public Power Association)

As part of President's Reagan's regulatory reform program, DOE was revising the final rule for RCS. Several of the utilities testifying at the Section 11 hearing had already proposed changes in the RCS program to DOE officials.

> "The RCS program should be modified to reduce the burden on utilities. Items like the contractor lists, follow up inspections, arranging loans and installations and massive recordkeeping should be removed. Flexibility on a regional or state by state basis should be stressed."
>
> (David Davia, Public Service Company of Colorado)

However, even extensive modifications to such a regulatory program would not be satisfactory to some utilities. Union Electric Company wanted Congress to repeal the Residential Conservation Service and the Commercial and Apartment Conservation Service (CACS) Programs. The American Public Power Association advocated that CACS be voluntary rather than mandatory.

Although utilities were severely critical of the RCS, several witnesses remarked that the program was valuable and should be retained.

> "The Residential Conservation Service provides a nationwide mandate for energy conservation, while relying upon the private sector as the primary participant. Elimination of this program and the planned Commercial and Apartment Conservation Service will leave a gap that no city or state initiative can fill. The federal commitment to conservation that this program has illustrated has been essential to its widespread acceptance and success."
>
> (Roy Bishop, Boston Office of Energy Conservation)

Other witnesses were severely critical of utility conservation efforts in general regardless of whether the programs were voluntary or mandatory. Some criticized utility audit methods while other believed that utilities have a credibility problem in providing energy conservation services.

E. Barriers to Conservation

There was general agreement among witnesses that some increased conservation was occurring in response to higher prices. However, one of the major themes that was aired at the Section 11 hearing was that higher prices, in and of themselves, will not induce all conservation that is economically optimal. Witnesses identified opportunities for cost-effective efficiency investments that have not yet occurred and are not likely to be induced by higher prices.

One witness introduced the concept of "market lag" to help understand consumer response to price increases. The "market lag" is the amount of time that elapses before a given cost-effective measure is widely adopted by builders and consumers. The longer the market lag, the more consumers spend unnecessarily on wasted energy.

> "The difference between the actual homes and the economically optimum design is on the order of 30-40% in annual energy savings...The data show that the market, on average, is improving but so is the economic optimum. Even under the improbable assumption that real energy costs remain at their current levels and that no new energy-saving technologies are introduced, we now estimate the market lag in new homes at roughly 6 to 25 years. (The range depends on housing type and location). "
>
> (Arthur Rosenfeld and Jeffrey Harris, Lawrence Berkeley Laboratory)

Witnesses identified a series of market imperfections that inhibit consumers from responding quickly to rising prices. These can be classified into three categories:

- lack of credible information about energy-conserving improvements;

- conditions that maintain artificially low prices for conventional energy; and
- high first cost of energy-conserving improvements and the lack of access to credit and capital to meet those costs.

• Lack of credible information. Witnesses from state and local governments, energy conservation businesses, professional organizations and advocacy groups all pointed to lack of information as a principal obstacle to increased energy conservation. In some instances, consumers are unaware of the relative benefits of various energy conservation strategies.

> "A majority of Michigan citizens polled cited turning out lights as an important conservation action. A minority cited insulating and a very small minority cited weatherstripping as important conservation actions. Although all three actions will save energy, insulating and weatherstripping can save much more than turning out lights. But, because turning out lights is the most obvious way to save energy, this conservation measure is widely practiced, despite the fact that it will not significantly affect utility bills."
>
> (Amy Timmer, Michigan Energy Administration)

It is not sufficient for information to be available and accessible; the information also must be accurate and reliable. There was no consensus at the hearing about which institutions could provide the most credible information.

> "In those areas where information is available, there are often times no established criteria by which it can be evaluated. Thus, consumers are faced with good and bad products, but without any means to distinguish among them. This produces an enormous uncertainty among energy users about available energy efficiency opportunities, often resulting in a total lack of consumer action. This inactivity, in turn, impedes the timely development of the role of energy conservation in the marketplace."
>
> (Paul Danels, New York City Energy Office)

Variations in climate, energy prices and other factors, such as housing stock, underscore the need for information to be relevant to local conditions.

> "The information must be on a localized or regionalized basis. . . In general we find. . . information that's done on a national basis is either so general it's not useful or so filled with exceptions for locations...as to be confusing."
>
> (Robert Naismith, Potomac Energy Group)

Testimony was also presented on the value of information to architects and other building professionals.

> "Most building designers can show their clients the economic benefits of more efficient buildings. Many design professionals can now tell clients the payback periods for a variety of design options, and in turn, clients use this information when making their investment decisions."
>
> (Randall Vosbeck, American Institute of Architects)

- Pricing of Conventional Energy Sources A number of witnesses called attention to the fact that market imperfections and government policies keep the price of conventional energy sources artificially low. Consumers cannot compare the costs of conservation investments with the costs of new capacity. For example, electricity from central power stations under construction will cost 2-10 times more than electricity from plants that are already operating. However, the cost of the electricity from new plants will be "rolled-in" to the price of electricity generated by older and less expensive plants. Consequently, the consumer will not be able to compare the price of new electricity (marginal price) with that of energy-conserving improvements. Instead, conservation investments have to compete against the average price of electricity. In many instances conservation investments will still be less expensive on a life-cycle basis. However, the relative advantage will be significantly reduced.

The Federal government has been subsidizing energy production for at least 50 years. Witnesses maintained that these subsidies create artificially low prices and place conservation at a disadvantage.

> "A four year study by the Battelle Memorial Institute concluded that Federal energy incentives for oil, gas, coal, hydroelectricity and nuclear power amount to more than $217 billion...Merely eliminating current subsidies will not redress the effect of these sunk subsidies. An analysis of the Battelle data by Thomas Sparrow, a professor of economics and industrial engineering at Purdue University, estimates that past subsidies

represent 7%, 3%, 27% and 13% of the costs of nuclear power, coal, oil, and gas."

(Alan Miller, Natural Resources Defense Council)

The social and economic impacts of energy supply and production are not included in the price and also make the cost of energy artificially low. These costs include the health effects of energy-induced pollution, damage to the natural environment, and the economic and national security costs of dependence on foreign oil. This subject of "externalities" was not addressed in detail at the 1981 hearing. However, the desirability of applying an import premium in formulating government programs to reflect the true costs of foreign oil was discussed at length in the 1980 Section 11 Report to the President and Congress.

- High First Costs of Energy-Conserving Improvements. Energy-conserving improvements are frequently cost-effective over the life cycle of the investment. However, in the residential sector the builder, rather than the home buyer, usually determines the thermal integrity of the building envelope and the efficiency of major appliances. Builders are especially sensitive to the first costs; even a small price differential can make it difficult to sell a new home. These differentials are magnified by the recent interest rate increases that have caused a precipitous decline in purchases of new homes.

Builders do not pay the monthly fuel bill for space conditioning or the operating costs for major appliances. Consequently, they have little incentive to construct homes that minimize the life-cycle costs of energy use.

> "...recent data prepared by the Carrier Corporation indicates that from 1979-80, despite rapidly rising electricity prices, the efficiency of central air conditioners actually declined nationally after eliminating data on California sales (where mandatory state standards have been adopted). Central air-conditioners are purchased with little regard for the preference of individual consumers because they are usually 'contractor installed' before the consumer buys a house. The dominating

factor is the contractor's desire to minimize first cost, not to minimize the life-cycle cost."

(David Moulton, Energy Conservation Coalition)

A similar problem occurs in the rental sector. In general, the landlord has little incentive to improve the energy efficiency of either residential or commercial property. If a building is "master-metered", the landlord includes the costs of energy in the monthly rent. While the price of energy rises, the landlord passes the increase through to the tenant (unless prohibited by a local rent control ordinance.) If utilities are individually metered, the tenant assumes direct responsibility for the monthly bill. In either case, the landlord has nothing to gain from reducing energy use. Tenants are reluctant to undertake more than minimal energy-conserving improvements.

Lack of access to credit and capital is another major barrier to conservation investments. According to researchers at the Lawrence Berkeley Laboratory retrofits that will save 20-25 percent of a household's energy consumption will cost $1500-$2000/household. However, data collected in the Energy Information Administration's Residential Energy Consumption Survey indicates that the average household that is investing in energy-conserving improvements is spending less than $700 to save energy.

There are several reasons that consumers are unable or unwilling to finance relatively expensive energy-conserving improvements. First, they are wary of assuming further debts, particularly when interest rates are high. Second, loans are difficult to obtain. Financial institutions believe that conservation loans are risky or unprofitable.

Lack of access to capital is a major barrier to energy conservation for firms in the commercial sector as well as for residential customers. The commercial sector accounts for about 14 percent of U.S. energy consumption. However, energy is still a

relatively minor cost of doing business for these firms -- less that 5 percent of total costs. Small firms tend to pass energy price increases on to their customers rather than make energy-conserving improvements.

> "Large private firms such as IBM have already demonstrated an ability to reduce BTU consumption and expand simultaneously through more efficient utilization of energy. In our state the small and medium size firms without engineering staffs do not have similar track records in conservation. Commercial consumption of energy in South Carolina has increased much faster than industrial or residential in the last twenty years."
>
> (Bill Horne, Office of the Governor, State of South Carolina)

F. A Continuing Federal Role

The topic that received the most attention at the Section 11 hearing was the continuing Federal role in energy conservation. The discussion of a continuing Federal presence considered the following areas:

- low income programs
- state and local activities
- research and development
- standards
- financing
- information
- evaluation

A majority of the witnesses advocated a continuing Federal presence in one or more of these areas. However, other witnesses supported the President's position, maintaining that Federal spending for conservation was ineffective and that regulatory actions were counterproductive.

- Low-Income Programs. Several witnesses commented at the Section 11 hearing that the Federal government has a responsibility to assist low-income citizens with their energy needs, and that an energy assistance program should be an

integral part of the "social safety net." They maintained that the Federal government's responsibility in this area has enlarged as a result of the decision to decontrol domestic crude oil prices. Witnesses focused on two major themes relating to low-income citizens. The first was the need to maintain a program to weatherize low-income homes and apartments. The second was the desirability of linking a weatherization program with the Low Income Energy Assistance Program (LIEAP).

The President's program would transfer responsibility for weatherization from the Department of Energy to the Department of Housing and Urban Development (HUD). Communities would be eligible to utilize monies from HUD's Community Development Block Grant (CDBG) for weatherization. In addition, the President's program projected that CBDG funds would be reduced by 25 percent from the amount appropriated for FY-81.

Several witnesses concluded that weatherization was beginning to work well under DOE's auspices and were concerned that it would be difficult to recreate a new program in another agency.

> "If weatherization is chosen as an activity for the locality under CDBG funds, a whole new weatherization operation would need to be set up in each locality, smaller in scale and much less efficient than the existing delivery network. Trained personnel and managers, tools, equipment and materials would be idle. The weatherization program as it now operates would be dismantled, and momentum which has been built up by states, particularly in the past year, would be lost."
>
> (Keith Dorsey, National Black Caucus of State Legislators)

Another reason that witnesses offered for maintaining the current weatherization program intact was the nature of the CDBG program. They maintained that CDBG had been created for the purpose of spurring local economic development, not to assist low-income citizens. Consequently, witnesses were concerned that if weatherization were tied to CDBG, far less would be allocated for weatherization than the $182 million that had been appropriated in FY-81.

"The CDBG program is, by itself, a $4 billion program with strong competing interests for its funds at the local level. The considerably smaller weatherization program (FY-81 appropriation 182 million) would be lost in the midst of such a wide ranging program...since competing interests include streets and sewer projects, housing authorities, water projects, downtown development projects, neighborhood parks, etc. Since the other competing interests have considerably more political power than low income people, the poor would lose in such competition. In addition, if CDBG is restructured to allow more flexibility to local government, it is highly probable that such block grant monies will be utilized to offset fiscal pressures on the local tax dollar--further jeopardizing the continuation of the low income weatherization program at the local level."

(Anthony Maggiore, Milwaukee County Community Action Agency)

A third major reason that witnesses gave for continuing the DOE Weatherization Assistance Program is the difference between the constituencies served by CDBG and WAP. All HUD programs are designed for urban areas. However, the proportion of low-income people in rural areas is greater than it is in urban and suburban jurisdictions. The rural poor -- perhaps 25 percent of the low income population -- would be ineligible for assistance if weatherization is transferred to CDBG.

Most of the appeals for the continuation of the DOE Weatherization Assistance Program were presented by those who have a stake in the outcome -- directors of local weatherization programs, state energy officials, and representatives of community action agencies. However, support for continuation came from other sectors, including an investor-owned utility.

"The proposed change of tying weatherization in with the Community Development Block Grant funding could have serious detrimental effects. The effects would be felt because the Community Development Grant program has been an ongoing program with existing projects and programs. This fund by itself is being cut 25%. People will want to save the ongoing programs and possibly build them with the added weatherization monies -- not sacrifice their program for weatherization."

(Montana Power Company)

A related topic considered at the hearing was the desirability of linking the weatherization program with the Low Income Energy Assistance Program (LIEAP), which is administered by the Department of Health and Human Services. LIEAP was authorized in the Crude Oil Windfall Profits Tax Act of 1980 to help low income people pay their energy bills. The President has proposed to incorporate LIEAP into an Energy and Emergency Assistance Block Grant. This new block grant would give states the authority to utilize a limited portion of LIEAP funds for weatherization. WAP and LIEAP serve the same target population, although eligibility requirements for the two programs may not be identical in every state. Witnesses strongly supported the continuation of LIEAP and agreed that WAP and LIEAP should be coordinated. However, there was no consensus on the issue of using LIEAP funds for weatherization.

- State and Local Programs

Hearing testimony focused on the need to maintain a capability to continue state and local conservation programs. Most state and local officials agreed that the best approach would be for Congress to authorize an Energy Block Grant (EBG) for this purpose.

The proposed block grant would replace the four major state and local programs (Energy Extension Service, Weatherization Assistance Program, State Energy Conservation Program, and Institutional Buildings Grants Program). A block grant would give states the authority to use Federal funds to continue those programs, or to initiate other conservation activities. Rules, regulations and reporting requirements would be minimized. According to the proponents of the EBG, state and local governments would have greater flexibility then the current categorical programs allow.

Although the block grant proposal was favorably received, two potential drawbacks were noted at the hearing. First, representatives of Community Action Agencies were concerned that low-income weatherization would not receive adequate resources. These witnesses supported a proposal to require states to use a substantial portion of the EBG for low-income weatherization.

A second concern expressed about the block grant proposal was the competition likely to occur on the state and local level for these funds. In order to avoid confusion and inefficiencies, states would have to plan carefully for the transition from categorical programs to the EBG. States are concerned that they will not have adequate time for planning.

> "The states will rapidly become the focal point for a massive battle between programs and their support groups: administrators, legislators, consultants and clients. Unless that struggle is anticipated by state government and accommodated by some structure, final program decisions could be the outcome of a survival of the best-connected or most vocal, as opposed to any rational planning criteria."
>
> (Floyd Ciruli, Colorado Office of Energy Conservation)

- Research and Development. The President's program envisions a continuing but limited role for the Federal government in energy research and development. The emphasis of Federal programs would be placed on supporting activities that the private sector has no incentive to undertake. Generally, Federal funding would be available for long-term, high-risk projects; most demonstration projects, commercialization and market development would be the responsibility of the private sector.

Several witnesses thought that the emphasis on long-term, high-risk activities was unduly restrictive. Instead, they believed that DOE ought to look at the overall benefits of particular projects in its funding decisions.

> "As a designer, I am dismayed when I see that the high risk emphasis has eliminated many on-going research projects--many of which are close to

providing solutions to technical problems that the industry cannot solve itself."

(Randall Vosbeck, American Institute of Architects)

Two other witnesses outlined a detailed agenda for research, development and demonstration activities that they believed merit Federal support. The first category includes research on the energy performance of actual housing stock. An example of this kind of research is the Twin Rivers project, conducted by the Center for Energy and Environmental Studies at Princeton University. That study made careful measurements of the energy savings obtained with a series of retrofit measures. A second category of research recommended for Federal support was the development and evaluation of new techniques and processes for energy conservation in buildings.

Another witness suggested other areas in building energy science needing further research. For example, he believed research on topics such as indoor air quality are appropriate for Federal support, since the results of these efforts provide potential major public benefits, but are not likely to be profitable for any particular firm.

- Standards. Only a few witnesses commented on the need to continue a Federal presence in setting energy efficiency standards. The Energy Conservation and Production Act of 1976 required DOE to establish energy performance standards for new buildings (BEPS). An earlier act (The Energy Policy and Conservation Act) required promulgation of minimum efficiency standards for new appliances. Subsequent legislation has substantially limited the regulatory authority contained in BEPS. Likewise, DOE is not planning to issue final rules for appliance standards.

One witness maintained that DOE's BEPS research should be the basis for national thermal efficiency guidelines for new residential structures. He believed that if setting of standards was left to the states, considerable confusion and

inefficiency would result. He illustrated his concern with a recent experience of the insulation industry.

> "In enacting thermal efficiency legislation, individual states have required information each considers appropriate to be printed on packages of insulation. While some of this information is standard to all, several neighboring states have required additional and different information to be added to the bag label. The products of one manufacturing plant may be shipped into as many as a dozen different states. Shipment of different bags to each state is economically unfeasible and realistically impracticable. Supplying all of the varied information required by all states on one package would result in an assembly of information that would be overwhelming and unreadable. In either case the consumer loses. Similar expressions of individuality, multiplied by fifty, are an appalling prospect for industry to face."
>
> (Sheldon Cady, Mineral Insulation Manufacturers' Association)

Another witness suggested that the Federal government should assist states and utilities in developing a labelling program for building energy efficiency. A building labelling program, modeled on the appliance efficiency and auto fuel economy standards, would be designed to help increase consumer confidence in conservation improvements.

> "To show that states and utilities need some Federal help in formulating residential energy labels, we cite the fact that both Florida and California have labelling programs, yet neither state had enough information to include credit for low infiltration even though this is the single most cost effective measure and neither state has the resources to organize a field monitoring program to validate the labels."
>
> (Arthur Rosenfeld, Lawrence Berkeley Laboratory)

Hearing testimony touched only briefly on appliance efficiency standards. Witnesses who mentioned the topic generally agreed that mandatory standards were necessary to ensure continuing progress in upgrading the energy performance of major appliances.

- Financing One theme that arose throughout the hearing was the need for the Federal government to provide direct assistance to individuals and businesses for

financing energy-conserving improvements. Many witnesses supported increased Federal tax credits for conservation; others suggested the need to supplement tax credits with low-interest loans or loan subsidies.

The National Energy Tax Act of 1978 established both residential and business tax credits for energy-conserving improvments. Under the provisions of the Act, individuals are allowed to claim a 15 percent tax credit on up to $2,000 of qualifying expenditures. Businesses can claim a 10 percent energy credit, on certain conservation investments, in addition to the regular 10 percent investment tax credit, for a total credit of 20 percent.

Witnesses advocated raising the residential credit substantially. Support was also expressed for extending the expiration date of the conservation credit and allowing that credit to be applied to multi-family dwellings.

Several witnesses advocated an increase in the business tax credit for energy conserving investments to 30 percent. They expressed support for S.750 -- The Industrial Energy Efficiency and Fuel Conversion Tax Incentive Act of 1980 --which would mandate a 10 percent increase. There was also support for extending the applicability of the tax credit to include equipment leased by business.

One witness noted that support for energy-conserving tax credits seems to contradict his general agreement with the President's energy program. He explained his stance as follows:

> "MCAA recognizes that this program calls for government involvement, including financial incentives, at a time when the Administration and the country are calling for less government, less federal spending and no inflation. MCAA strongly endorses those worthy objectives and believes that our proposals in the long run will aid in their achievement through increased employment, decreased balance of payments and reduced dependence on foreign oil."
>
> (John Harkins, Mechanical Contractors Association of America)

- Information. A number of witnesses discussed the need for a continuing Federal role in generating and disseminating information to businesses, residential consumers, architects and builders, and others. These witnesses emphasized that the market could not provide the objective broad-based information that the government could; yet rational consumer response to market price signals will require that such information be available.

> "We believe that the merit and need for these (information) programs has been amply demonstrated by several success stories, particularly the energy analysis and diagnostic centers which provided basic audit information for small businesses. More than 50 percent of the time industrial users took the advice of the auditors and the savings were ten times greater than the cost of the program."
>
> (Alan Miller, Natural Resources Defense Council)

Other witnesses discussed the Federal government's role in information transfer. Randall Vosbeck, President of the American Institute of Architects, and others stressed the need for dissemination of innovative building designs and criteria.

> "We view the proper role of government as a facilitator and information exchange medium for new and innovative initiatives. . . We need an unbiased information exchange regarding what is being done, how, and where it is being done. . . "
>
> (Carroll Benson, Dallas Power and Light Company)

- Evaluation. Witnesses who addressed the subject of evaluation maintained that it was important to assess the effectiveness of Federal, state and private sector programs.

One witness proposed criteria that should be applied to all programs.

> "One, each program should have multiplier effects built in--when something works in one community, the approach and results should be spread to many places. Two, programs should be designed to use Federal funds optimally. Too much public monies subsidize bureaucracy...Three, the governments should be willing to operate small programs that encourage individual and institutional creativity... Four, programs should be

designed to be incentives and to motivate rather than 'purchase' the end result...Five, programs must acknowledge the difficulty the poor and near poor face...Six, coordination among programs should be an absolute priority...."

(Howard Brown, Middletown, Connecticut, Energy Advisor)

• Summary. Although most witnesses agreed that conservation was an important factor in our energy future, they did not agree on how best to encourage conservation. Witnesses described programs supported by state and local governments, utilities, professional associations, and private companies that they viewed as effective. Various research and evaluation projects were also cited. However, with the exception of continued support for low-income programs, witnesses did not agree on an appropriate Federal role in energy conservation.

☆USGPO: 1982 — 559-092/3397