

NATIONAL ENERGY CONSERVATION POLICY ACT

HEARINGS BEFORE THE COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS UNITED STATES SENATE

NINETY-FIFTH CONGRESS

FIRST SESSION

ON

TITLE I, PART A

OF

S. 1469

A BILL TO ESTABLISH A COMPREHENSIVE ENERGY POLICY

JUNE 27, 28, AND 29, 1977

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NATIONAL ENERGY CONSERVATION POLICY ACT

MONDAY, JUNE 27, 1977

U.S. SENATE,
COMMITTEE ON BANKING, HOUSING AND URBAN AFFAIRS,
Washington, D.C.

The committee met at 10:15 a.m., in room 5302, Dirksen Senate Office Building, Senator William Proxmire, chairman of the committee, presiding.

Present: Senators Proxmire, Sparkman, Morgan, Brooke, Lugar and Schmitt.

OPENING STATEMENT OF CHAIRMAN PROXMIRE

The CHAIRMAN. The committee will come to order.

This morning, the Committee on Banking, Housing and Urban Affairs begins 3 days of hearings on the subject of energy conservation programs for existing residential buildings and other energy conservation programs of concern to the committee.

We shall, particularly, be concerned with the administration's proposal in part A of S. 1469, the National Energy Act, introduced by Senator Jackson at the request of the administration.

The bill has been referred to the Committee on Energy and Natural Resources. Senator Jackson has indicated his interest in receiving the views of this committee regarding the provisions of part A. Accordingly, I anticipate that the committee, after hearing testimony this week, will consider in markup the recommendations it wishes to make to the Committee on Energy and Natural Resources early next month.

We will also consider eight other energy related bills referred to this committee during this period, including S. 1304 offered by Senator Brooke.

The administration's proposals affect many aspects of housing. The proposals would affect homeowners and homebuyers. They would affect builders and rehabilitators of housing. They would affect the industries which produce insulation materials and energy conserving equipment, and the industries which provide utilities and financing for residential construction and rehabilitation.

The proposals raise questions about the projected demand for and supply of insulation materials, the effect that Federal tax credits, loans and grants will have on conservation activities, the future role of the electric and gas utility companies in financing and installing energy improvements, consumer protection, and the expansion of the role of secondary market institutions for energy conservation purposes.

We have invited a number of experts to testify on these matters during the next 3 days. Before I present the initial witnesses I'm going to call on Senator Brooke who I understand has a statement.

OPENING STATEMENT OF SENATOR BROOKE

Senator BROOKE. Thank you, Mr. Chairman.

Mr. Chairman, the matter of establishing a general system of incentives to spare residential energy conservation has long been of special concern to me. The portions of the President's energy package and my alternative proposal, S. 1304, to which you referred which we are considering today cover only one aspect of this important issue.

The administration's utility program is apparently predicated on two assumptions. One is that an adequate residential retrofit market will not arise purely from the energy price incentives and the tax credits that are established under other sections of the national energy plan. The utility program therefore establishes a system under which homeowners will have access to packaged services. Energy evaluations, ready financing, and contractor services would be identifiable and obtainable through the utilities. The administration has also made a second assumption, namely, that a strategy for freeing new capital for such home improvements is essential.

The proposed opening of secondary markets to loans for energy conservation so as to increase the amount of available capital, to even out the flow of such funds among the various regions, and to create new lenders in the utilities is aimed at removing any private market restrictions existing or anticipated on these funds.

I have been engaged in debate over these issues since last winter when FEA Assistant Administrator, William Rosenberg, initially proposed a program of utility finance and installation of residential insulation and retrofit. I felt then as I do now, that, even if indeed new marketing strategies are necessary to persuade the American people to conserve residential energy, these utility proposals were the wrong such strategy to pursue. I worked on this matter for more than a half a year and I have yet to see any convincing evidence that the dangers of allowing regulated monopolies to move into the business of consumer credit and home improvement financing are in any way offset by an overwhelming need to replace the combination of our traditional enterprises and the new conservation programs that Congress has enacted in the past 2 years.

I seriously question whether utilities would hold conservation retrofit costs down. I fear they would weaken competition in the markets for contractor services, materials and credits. I suspect some might well be involved in the kind of consumer credit abuses this committee has been working so hard to reduce and I see no reason utilities should try to duplicate the programs for performing energy audits and consultations with which the Congress has lately entrusted the new States energy offices.

In addition, Mr. Chairman, I'm sure that utilities do not want nor are they prepared to get into this field.

My bill, the Energy Conservation Investment Act of 1977, would establish an alternative system for carrying out the purposes of the utility program in the administration bill. The primary responsibilities for a program to make energy evaluations to buildings and for package home energy conservation services and financing would rest with the Governors' energy officers which are already developing such services according to the new State energy conservation plans mandated by the Energy Policy and Conservation Act.

Where new capital is needed to supplement resources available for existing financial institutions, HUD may supply capital from a new revolving fund through the States to financial institutions designated by the governments. Utilities could be included in each phase of this program if the Governors should so decide.

My proposal is designed to remedy the elements of the administration's plan I consider to be glaring weaknesses, but very candidly I think the committee should be using these hearings not only to look at the impact on the specific program the President has proposed, but also to reexamine the fundamental assumptions upon which all of this legislation is based.

Before any further set of plans and regulations is mandated, we must first of all determine whether or not we need to provide more than the projected increase in energy prices, the tax credits for home owners and the winterization program for low-income households in order to maximize residential conservation efforts. We must ask whether the difficulty of obtaining an accurate assessment of building energy consumption is a serious disincentive to action. We must look for any hard evidence available to show that the home owner really needs the offer of a comprehensive package of material and services, and of special interest to this committee is the matter of whether there are truly capital shortages or imbalances impeding the availability of credit for these conservation investments. If so, we still have to carefully consider whether the radical alterations in our financing programs proposed by the President are in fact warranted by any difficulties we may uncover. To be perfectly frank, I have followed the hearings on these issues in two committees of the House and the Senate Energy Committee and I'm not at all satisfied that there's a need for these programs in addition to the tax and price incentives that are in the national energy plan. I look forward to questioning the witnesses we have invited as well as soliciting the views of some others whom I feel should have a similar opportunity to be heard. There's no question that this committee's findings will be shared by the Energy and Natural Resources Committee, will have important implications for the Senate. We are going to have to assess whether or not a wide variety of new regulations, incentives and sanctions must be added to the fundamental pricing and taxing provisions of our new energy legislation in order to achieve significant conservation improvements. If the answer is yes, our work is cut out for us in determining what is the simplest, most economic and most equitable package of incentives that will fund the attainment of our national goal of drastically reducing our energy use.

I thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Brooke. Senator Schmitt.

OPENING STATEMENT OF SENATOR SCHMITT

Senator SCHMITT. Thank you, Mr. Chairman.

I think this is an extremely important set of hearings that we will have today, as all of the hearings in the Congress relative to the national energy policy proposed by the administration. I'm afraid my greatest concern is that the Congress has been diverted from the real issues of energy policy by discussion of tax rebate and regulation and other so-called incentives or disincentives to conserve or to use energy respectively. It's unfortunate that in the context of various conservation programs and tax programs that we are not also considering very positive programs that this country is capable of implementing that will mean that in addition to sacrifice with the moral equivalent of war that we will also have the promise of victory some time early in the next century for our children and eventually their children.

Conservation is an extremely important part of any energy policy. I think that is admitted by all, no matter what side of other issues they may fall upon. However, we must remember that with conservation comes certain problems. If we conserve too much without clearly defining where that conservation should occur, we can in fact trigger additional unemployment and the possibility of recession. At the same time, we must have our sights set on the future where our use of energy is decoupled from our economic growth to some degree. It will never be completely decoupled, but I think that's a fact that will be admitted by all. We also must remember in our conservation discussions that there really basically are two types of conservation—operational conservation which is just how do you use the equipment and the facilities and the housing that you have today, and there's modification conservation or capital-intensive conservation which in many cases will in a short-term result in an increased use of energy in order to provide the materials necessary for such conservation. Those two types of conservation have to be balanced. We have to be aware that at any time we are still extremely vulnerable to a restriction of imports of petroleum from abroad and that at a particular time raise our dependency on that could cause other international and national difficulties.

Energy must also be available to the housing industry which is the focus of much of our attention today, not only in construction of homes but in the use of those homes by consumers. And so at any time we talk about conservation we must simultaneously talk about production and insuring that energy is available to the people that will eventually use it or are able to, those who are already using energy in their homes. I think it's important that the Department of Housing and Urban Development and ERDA and NASA have been working together for some time on the solar heating and cooling demonstration program, one which I understand is moving quite well considering the status of the technology that exists today and that existed when that program began. I hope that this effort will continue so that this conservative energy source, which is the Sun, can continue to be made available in an increasing amount to the people of this country for their homes and for their business enterprises.

Finally, Mr. Chairman, I think it's important that this committee keep in the back of its mind the economic assumptions that underlie much of the President's energy policy. As you may recall, on another occasion in this committee and in the other committees considering this legislation it has come to light that the administration is anticipating a sustained growth rate of 5.2 percent in the economy over the next decade or so. At the same time, they are hoping to cut the use of energy to an annual growth of 2 percent. Well, again, as I mentioned earlier, these two growth rates, our national economic growth and our energy growth rates, have been very closely coupled ever since World War II, and it's going to be an extremely difficult job, not necessarily completely impossible, but very difficult to decouple those and I think this committee must spend some time discussing that issue either today or at some other point in the future.

The free market has been grossly distorted by our energy policies of the past. I think one of our goals must be to gradually remove those distortions understanding that in the process it will take a great deal of effort by Government to insure that there are no inequities and there's no great unnecessary sacrifice by people who would suffer if the distortions were removed instantly.

A case in point is the decontrol of natural gas. I think that most observers, at least outside the Congress, would say that it's necessary for a decontrol of new natural gas. Simultaneously, however, there are people dependent on cheap natural gas and we must insure that those people and those industries dependent on that gas are not adversely affected by such a decontrol operation.

So finally, Mr. Chairman, I wish to compliment you for holding these hearings and for the list of witnesses that we have and I'm looking forward to their testimony.

The CHAIRMAN. Thank you, Senator Schmitt. I understand the other Senators do not have an opening statement.

Our first witness is Hon. David J. Bardin, Deputy Administrator, Federal Energy Administration. Mr. Bardin, we are glad to have you. Go right ahead. Incidentally, if you would like to abbreviate your statement in any way we will be happy to have it printed in full in the record.

**STATEMENT OF DAVID J. BARDIN, DEPUTY ADMINISTRATOR,
FEDERAL ENERGY ADMINISTRATION, ACCOMPANIED BY ROBERT
HEMPHILL, DIRECTOR OF CONSERVATION POLICY**

Mr. BARDIN. If I may, it's lengthy statement.

The CHAIRMAN. It's a 19- or 20-page statement, so you go right ahead.

Mr. BARDIN, I'll be happy to highlight it.

The CHAIRMAN. And the attachments will be printed in the record, too.

Mr. BARDIN. I am accompanied, Mr. Chairman, by Mr. Robert Hemphill, the Director of Conservation Policy in the Federal Energy Administration and I want to introduce him to the committee.

We appreciate the committee's attention to the very serious issues before you today as outlined in your opening statement, Mr. Chairman, and the other opening statements.

Conservation is the cornerstone of the national energy plan. President Carter's conservation proposals would implement a program repeatedly called for by the Congress in recent years and builds on the foundation laid by the Congress in recent enactments. The proposals before you today, together with the tax proposals in S. 1472 that will be considered by the Committee on Finance, are expected to save a fuel equivalent estimated at 920,000 barrels of oil per day by 1985. That's close to a million barrels of oil fuel equivalent per day by 1985 and to give you a frame of reference, last year we consumed approximately 17 million barrels of oil a day of which over 7 million barrels a day was imported. So we are discussing programs aimed to achieve substantial results by 1985 and in the years thereafter.

The tax credit programs are twofold. One is a residential tax credit to consist of 25 percent of the first \$800 and 15 percent of the next \$1,400 invested in retrofitting existing buildings. That tax credit program which is now before the Finance Committee would be available from April 20 of this year through January 1, 1985. The second is a business-investment tax credit of 20 percent for investments starting April 20 of this year through January 1, 1983, which would be available to, among others, the owners of multiple dwelling units.

The proposals immediately before you in the legislation referred to this committee include the utility conservation program under which utilities would participate in informing their customers of effective energy conservation retrofit measures, would offer to install the retrofit materials, usually through subcontractors, and as an alternative to the customer dealing directly with contractors or doing the installation himself, and also would offer a source of alternative financing. The proposals before you also include a weatherization program for low income homeowners whom a tax credit will not benefit, and mechanisms for additional financing of home improvements.

Let me turn if I may first to the utility conservation program and some of the issues that have been raised with regard to that program.

Under the administration proposal, by January 1980, every homeowner will have been contacted and informed about available conservation measures and offered the most convenient set of services available to make his home energy efficient. The contact would be the electric utility and/or the gas utility serving that area. There might be two contacts by each utility. These services might also be offered voluntarily by the homeowner's fuel oil dealer. There might be a selling in addition independent contractors will likely offer to install retrofit materials directly. But the bill before you would mandate as to the electric and natural gas utilities an obligation, a duty, to contact the homeowner to provide him or her with information, offer insulation installation services and offer financing services.

At present, the homeowner faces a bewildering array of information sources, of separate contractors, and of lenders, who must each be contacted individually in trying to put together a complete conser-

vation package. Developing one central source of information and service is an essential element in achieving serious conservation goals within a reasonable time frame.

Surveying the possible organizations to do that job, we have selected public utilities. Public utilities are located throughout the country. They have well established relations with virtually every homeowner. A public utility is a permanent member of the community. There's no way in which a utility, any more than local government, can simply pack up its business and move out of town. Generally utilities are subject to careful regulation and control by state agencies. Our proposal gives people the choice to use the utility service. They don't have to use it but the utility would have to offer it.

Several progressive utilities have already undertaken such conservation programs. We don't dream this up in 1977 out of whole cloth. Attached to my prepared testimony is a list of gas distribution utilities, almost three dozen around the country, that have already undertaken one or another part of our program. None of them—or virtually none of them have actually undertaken all of it. It seems to us there ought to be a framework set by Congress imposing an obligation on the utilities in the country and defining their responsibility to help the people of America conserve fuel.

I want to emphasize that we don't seek to carve up the residential market among the utilities by heating fuel type, for example. Instead, the administration proposal seeks to stimulate multiple and competing offers to the American homeowner. Ideally American householders will be offered information and services by electric utilities, by gas utilities, by fuel oil dealers and by independent contractors, each competing to get a message across and offering competing services. The conservation packages offered by utilities will vary by location and building types.

The Federal Trade Commission has proposed a number of modifications to guarantee adequate competition in the utility program and to strengthen our product quality proposals. We agree with some. We agree with the Federal Trade Commission that utilities ought to be subject to the requirements of the Truth-in-Lending Act. We also agree that the Federal Energy Administration ought to consult with the Federal Trade Commission in developing the specific implementing regulations to carry out the utility program so as to assure competition at that level and also to deal at the subcontractor level with the danger of fraud inherent in this kind of very large business outreach to many householders.

We strongly oppose, however, the Federal Trade Commission's proposals to narrow the requirement that utilities offer to install insulation. In light of the urgent need to save energy, we believe utilities must be mandated to offer both the installation and the financing services proposed. As I understand it, the Federal Trade Commission's concerns are limited only to the installation services. The Federal Trade Commission is understandably anxious to preserve a maximum choice, a competitive choice, for each homeowner. We share their concern, but we urge the committee to look carefully at

the picture that some would paint to you of predatory utilities who will take unfair advantage of this program, moving from the patriotism of conservation to seizing control of the conservation retrofit market or even of using the occasion to convince homeowners to switch from their present home fuel to a fuel that the utility is anxious to push.

More specifically, the solution advocated by the Federal Trade Commission in addressing the hypothetical, the alleged problem of the predatory utility is simply unrealistic, even schizophrenic, because the solution is to make the program voluntary to allow those utilities already doing this program, to promote conservation and installation of retrofit and financing of retrofit if they so elect.

Now if there is a predatory utility out there, it certainly is going to elect to take advantage of this opportunity. What we want to do is to enlist the good services of all the utilities with the managerial capability to reach the public to get a job done in a reasonable number of years, a job which will take a great deal of know-how and organization if it is to be accomplished.

We have considered which intermediate agency at the State level is best capable of coordinating the program and in the administration bill it's the regulatory agency, the State public utility commission, that would work with the regulated utilities to accomplish that program. Again, we do not concoct that model out of whole cloth in 1977. We have experience in states where, as we see it, the best solution is have an aggressive State energy office performing an advocacy role, turning to the regulatory agency and advocating the development of this kind of conservation program by the utilities with the program actually implemented by the utility regulatory commission.

After all, it is not the Governor or the State energy office which generally has regulatory responsibility over the electric and gas utilities of the country. It is typically the public utility commissions of the States. For example, in California and in my home State of New Jersey, we have seen that kind of system in which the State energy office turns to the PUC advocating a utility conservation retrofit program. We would certainly write into the program a requirement for coordination with the Governor and the Governor's State energy office in order to achieve a tight, well-managed organization at the State level.

Concern has also been expressed about the possibility of shortages and price increases for weatherization materials. We have examined the capacity of the various industries which produce the materials to be installed in homes and have concluded that if the program is spread out over the 9-year period which we propose there will be adequate incentives for manufacturers of all types to provide insulation to meet the increased demand.

We have a recently completed study of the insulation industry which I would like to make available to the committee today which describes the supply that would be available to meet residential insulation retrofit demand. This is a study prepared just this month. An additional study is underway by the Department of Commerce and ought to be ready in July.

We recognize that followup by the appropriate Federal agencies as well as nongovernmental bodies is certainly going to be desirable

to help us limit the risk of an overheating of insulation prices. The program seeks to develop a secondary market for home improvement conservation loans and would allow the utilities to become eligible lenders under the HUD title I loan program.

A number of alternatives were considered as we prepared the plan for energy conservation in residences. Some of these would have imposed mandatory requirements on the individual homeowner. We decided, instead, to rely on a voluntary conservation program as far as the individual homeowner was concerned. The expectation of the administration proposal is that the public response will be sufficient to meet our goals of achieving adequate insulation in 90 percent of the single and two-family homes by 1985. If it becomes apparent in subsequent years that we are not making adequate progress toward that 90-percent goal, then we will have to consider proposing legislation designed to guarantee achievement of that goal.

Moreover, any substantial reduction in the package of voluntary proposals that has been submitted to the Congress, such as changes proposed in the other body circumscribing the role of the utilities in the conservation program, will of course make the need for mandatory measures as to the individual homeowner all the more likely in the future.

I'd like to focus if I may on several new provisions that were added by the House Committee on Banking, Finance and Urban Affairs for the information of this committee.

The House committee would require the Department of HUD to revise and strengthen its minimum property standards. The administration supports such action.

The House committee would establish a \$25 million weatherization program for rural low income residences to be run by the Farmers Home Administration. This program would duplicate and we think complicate the FEA weatherization program which I shall describe.

Under the FEA grant program States receiving the grants are authorized to provide weatherization assistance in both rural and urban areas. We don't think that under these circumstance, a case has been made for the additional \$25 million authorization earmarked for the rural areas.

The House committee would provide for \$10 million a year for the Department of HUD to weatherize existing stock of public housing. The administration does not believe that new legislation is needed to authorize that program. We believe that HUD already has that authority but we believe that implementing that authority is long overdue and the administration strongly supports action to weatherize the existing HUD-owned public housing stock.

Finally, the House bill provides a subsidized loan program at low interest rates. Subject to two caveats, the administration supports the addition of new authority for a loan program. The caveats are, first, that the individual homeowner has an option but he would have to choose between the tax credit and the loan. There should not be a double dipping here or any other aspect of the program. So the administration would propose carefully worded authority to the administrator to assure by regulation that there is no overlap. Second, it is our intention to defer any decision on whether to implement the

loan program and, if so, on when to implement that program until the entire package has been developed and we have had a chance to consult with the congressional committees on the net result of the entire package, and also until we have an opportunity to test the conditions of the insulation manufacturers and insulation market as to the whole question of the ability to respond to increased demand.

Turning to the low-income weatherization program which was established by the Energy Conservation and Production Act, the administration proposes to increase the authorization from the present \$200 million for grants to the States for the weatherization of low income housing to \$585 million.

The House Committee on Banking, Finance and Urban Affairs has voted to increase the income eligibility level for the program from 100 percent of the poverty line to 125 percent of the poverty line. We understand the advantages and agree with the desirability of this change so long as flexibility be provided to the administrator of FEA to insure, again, that there be no overlap, that there be no double dipping. We do not want to provide both the tax credit and the weatherization grant to the same homeowner. We are concerned that the overall cost of this program be carefully controlled. At the 125 percent of the poverty guidelines eligibility level, over 14 million households would be eligible, whereas at the 100-percent level, 8.6 million households would qualify. The advantage under the 125-percent-eligibility level is that 99 percent of American households would be covered under one or the other program. This would eliminate a serious gap in our original program, but there are dollar implications, long-term budgetary implications, which are of great concern to us.

The House committee has proposed a number of other changes in the bill as to the spending limit per household and the retrofit activities to be covered, and we do not believe that the additional changes which would expand the program would be either budgetarily prudent or entirely cost-effective.

We urge you to authorize the \$585 million level through 1980 which is proposed in the President's bill for weatherization and we will of course consider further authorization requests for a period thereafter based on the effectiveness of the program and actual experience.

The final aspect of the program has to do with the standards for new buildings to be set by the Secretary of HUD. The President has directed the Secretary to accelerate that program by 1 year. It will take additional funding, particularly for the State implementation of programs for training personnel which Mr. Simons will deal with.

In conclusion, we believe the proposals for voluntary residential conservation must be viewed as a package aimed at assuring that we get as good a crack as possible at getting to that goal of 90-percent retrofit, 90 percent of adequate insulation for American homes by 1985. We have relied on a combination of Federal financial incentives, easily accessible information, and readily available installation and financing services to achieve this goal. The alternative of a detailed mandatory program would require cumbersome administrative mech-

anisms by some level of government and would appear to many people to be inequitable. We believe we can avoid such a requirement but only by timely enactment of a voluntary program which is comprehensive.

We look forward to working with this committee in that effort. I would be happy to answer any questions you may have.

[Complete statement follows:]

STATEMENT OF DAVID J. BARDIN, DEPUTY ADMINISTRATOR, FEDERAL ENERGY ADMINISTRATION

Mr. Chairman and members of the subcommittee, I am David Bardin, Deputy Administrator of the Federal Energy Administration. I am here this morning to present the views of the Administration on the residential conservation provisions of President Carter's proposed National Energy Act contained in Part A of S. 1469. This Part includes proposals for utility conservation programs, low-income weatherization, adequate conservation financing, and accelerated development of new building standards.

Conservation is the cornerstone of the National Energy Plan. Conservation means more efficient and tempered use of our energy resources. Conservation cuts down the risk of curtailment and saves resources so that Americans can protect our real standard of living. Conservation can lead to a higher quality of life.

Congress has repeatedly called for the development and implementation of conservation programs. Section 5 (b) (7) of the Federal Energy Administration Act of 1974 provides that the Administrator shall "develop and oversee the implementation of equitable voluntary and mandatory energy conservation programs and promote efficiencies in the use of energy resources." The proposals before you today build on prior Congressional initiatives expressed in the Energy Policy and Conservation Act of 1975 (EPCA), and the Energy Conservation and Production Act of 1976 (ECPA). In some areas we now propose to accelerate and expand existing programs. In others we propose similar or related new programs that will stimulate conservation activities. The proposals before you today, together with related tax credit proposals in S. 1472, to be considered by the Senate Finance Committee, will save fuel equivalent to an estimated 920,000 barrels of oil per day by 1985.

My testimony today will address these proposals, as well as discussing the major issues that have been raised about them, and the impact of actions taken by the House of Representatives to date.

EXISTING RESIDENCES

Seventy-four million households in the United States consume 23 percent of our Nation's energy, or the equivalent of 8.3 million barrels per day. Fully three-quarters of this 23 percent goes to water heating and space heating and cooling. The goal of our residential energy conservation proposals is to bring 90 percent of all American households up to minimum Federal insulation standards by 1985.

We have made five proposals which together address this goal. Two of them, the residential energy tax credit and the business tax credit, are contained in S. 1472 and are to be considered by the Committee on Finance. The remaining three before you today are the utility conservation programs, the provisions to assure adequate financing, and the increases in the low-income Weatherization program.

We all know how much household budgets have been hurt during winter months by rising home heating fuel costs. This past winter average bills across the country increased dramatically over the preceding year, reflecting higher energy costs as well as the extreme cold. Though savings will vary by climate and by the initial condition of the house, households which participate in the residential conservation program and improve their energy efficiency will save about 35 percent of their energy consumption for heating and cooling or fully 20 percent of their total home energy use.

The total energy savings potential through conservation investments in existing residences exceeds the equivalent of 500,000 barrels of oil per day.

Greater attention by home dwellers to their own energy use would result in further savings. Temperature settings, equipment maintenance, and actions as simple as opening and closing windows at appropriate times each substantially affect energy consumption.

UTILITY CONSERVATION PROGRAM

Part A, Subpart 1 of S. 1469 would establish a utility energy savings program, as a vital element of the total residential energy conservation proposals in the bill. The utility program will require the Nation's public utilities to provide a "turnkey" conservation service, including identification, installation, and financing of conservation items. It is an information and service program, of virtually no cost to the Federal Government, designed to overcome one of the more significant human diseases, lethargy. If this program is enacted as we suggest, by January 1, 1980, every homeowner will have been contacted, informed about available conservation measures, and offered the most convenient set of services available to make his home energy efficient.

Each gas or electric utility will be required to offer its customers a conservation program which meets several Federal requirements. By January 1, 1980, utilities will offer three services:

To inspect upon request the residence of each customer and provide energy conservation costs and savings information;

To arrange to install certain specified conservation measures at the customer's request (normally through subcontractors), while also providing a list of all other businesses in the area who could do the work; and

To arrange financing for these investments through additions to utility bills, if desired by the customer, and provide him or her with a list of all competing qualified lenders in the area.

Owners and renters of one and two family residences would be included in this coverage, and would also be eligible for financing and for tax credits.

To carry out the program, FEA would develop guidelines for utility conservation programs within 120 days of the passage of the Act. Utility commissions would be asked to submit plans for directing the utilities they regulate to carry out adequate conservation programs, as described above. If a regulatory commission did not submit an adequate plan, the FEA would itself direct utilities to undertake conservation programs. Nonregulated utilities, such as municipal utilities or cooperatives, would submit plans for conservation programs directly to FEA for approval. Utilities with sales below 750 million kwh or 10 billion cubic feet (for electricity and natural gas respectively) would be exempted from this requirement of the Act. We would thus require action by about 380 of the Nation's over 3000 municipal, cooperative, and privately owned utilities.

Certain other exemptions would be allowed. Any utility with inadequate resources to finance conservation, or an inability to arrange financing from another source, would be exempted from the requirements to offer financing. Utilities could also propose to implement alternative programs which do not meet the specific requirements of the Act if they could demonstrate that their alternative program would be equally effective.

At present, a homeowner faces a bewildering array of information sources, of separate contractors, and of lenders, who must each be contacted individually in trying to put together a complete conservation package. Developing one central source of information and service is an essential element in the achievement of our goals. We have selected public utilities to serve this function since they are located in every part of the country, and already have well-established relations with virtually every household in the Nation. Moreover, utilities are permanent members of the community they serve and are generally carefully regulated and controlled. Our proposal gives people the choice to use the utility service or not.

Several progressive utilities have already undertaken conservation programs offering part of the services we have proposed to make mandatory. I have attached a list of such utilities. The great majority are not offering all the services which we believe must be available from one source, but their experiences to date have laid a base for future programs. Many fuel oil dealers have also offered conservation services to their customers, often as part of normal annual servicing contracts. We have proposed to let the fuel oil dealers themselves decide to offer conservation services, rather than establishing some new mechanisms to require participation.

We do not seek to carve up the residential market by heating fuel type for the purposes of conservation programs. Instead we seek to stimulate multiple, competing offers to American households. A home served by a participating electric utility but buying natural gas for heat would receive offers from both utilities for conservation services. Similarly, homes with oil heat and electric service would receive an offer of conservation services from the electric utility, but could also receive such an offer from their oil dealer. In each instance, contractors not connected with fuel oil or utility businesses could also compete. To the extent American households have practical opportunities, we expect them to select and go forward with appropriate conservation packages.

The conservation packages offered by the utilities will vary by location and may include ceiling, wall, floor, and water heater insulation, storm windows, clock or automatic thermostats, caulking and weatherstripping, and three specific furnace modifications. Our regulations will define the measures appropriate to various buildings and parts of the country according to climate and type of construction. For example, it does not pay to try to insulate certain types of homes or to add storm windows in certain parts of the country. We have chosen the specific measures for consideration because we believe the number of homes in which they are cost-justified to be large, though we do not deprecate private choices to use other measures. We chose to exclude other measures, such as storm doors and reflective glass, because we believe the number of homes where they are cost-effective to be small.

We have proposed two efforts to limit the possibility of fraud in the production, sale, and installation of such materials. First, the proposed legislation would allow FEA to promulgate standards for the manufacture and installation of materials. We would rely on ERDA and NBS for technical support in the development of these standards. Information gathered from HUD and GSA will also be useful, and we would work with knowledgeable private organizations. Secondly, State regulatory agencies will be required to develop programs for preventing unfair or deceptive activities in connection with utility home conservation programs.

The Federal Trade Commission has proposed a number of modifications to guarantee adequate competition in the utility program and to strengthen our product quality proposals. We agree with the FTC that utilities ought to be subject to the requirements of the Truth in Lending Act with respect to the expanded role in conservation financing. We also agree that FEA ought to consult with FTC in the development of the standards and fraud prevention guidelines I described a moment ago. We strongly oppose the FTC proposals to narrow the requirement that utilities offer to install insulation. In light of our Nation's urgent needs to save energy, utilities must be mandated to offer the installation and financing services proposed. FTC's concerns are limited to installation services, being anxious to preserve a maximum choice for each household.

Both the House Banking, Finance and Urban Affairs Committee, and the Energy and Power Subcommittee of the House Interstate and Foreign Commerce Committee have limited the utility role in installation. We feel that this seriously cripples the potential impact of the program, destroying the "one-stop shopping" appeal of our proposals and requiring little more of utilities than that they send out a bit of energy conservation advice along with fuel bills, sometime before 1980. We share the strong concern, also expressed in the House, that utilities be prevented from dominating local insulation markets. But supervision by both FEA and State regulatory agencies in consultation with the appropriate antitrust agencies, under the requirements promoting competition which are found in the bill, will protect the public's interest in competition.

Concern has been expressed about the possibility of shortages and price increases for weatherization materials. We have examined the capacity of the various industries which produce the materials to be installed in homes. We have concluded that if a program to insulate homes is spread over the 9-year period we are proposing, there will be adequate incentives for manufacturers of all types of insulation to build new facilities to meet increased demand. A recently completed study of the insulation industry, which I am today making available to the Committee, supports our earlier conclusions about the future

supplies of insulation. We look forward to the further analysis of this issue which will be completed by the Department of Commerce in July.

The House Committee on Banking has shifted management responsibility for utility programs from State regulatory agencies to the Governors. We have chosen State regulatory bodies to manage the conservation program because they already possess substantial authority over public utilities, and thus utility programs can be initiated without major changes in State laws. In addition, State regulatory bodies already have substantial experience and expertise in monitoring and regulating the activities of utilities. Few Governors have this experience or currently have the authority to direct utility activities. Under our approach, the Governors would have a role, since we intend to require co-ordination of utility programs with other State activities as part of our regulations. Several State energy offices have, in fact, already moved aggressively in this area.

The Administration has found it difficult to design incentives for voluntary retrofit of multi-family buildings. Many owners who pay fuel bills hold buildings for appreciation rather than for operating profits. And renters who pay fuel bills are not willing to invest in measures with useful lives longer than their tenancy.

Three of our proposals address conservation in multi-unit buildings. All tenants will be eligible for the residential tax credit for whatever expenses they might incur in buying materials on our list of eligible measures. Moreover, owners will be eligible for the business tax credit, and buildings occupied by low-income families may be featherized with Federal funds.

PROVISIONS TO ASSURE ADEQUATE FINANCING

Sections 110-114 of S. 1469 are designed to help assure that interest rates to homeowners are reasonable and that as few utilities as possible are exempted from the financing provisions described above. Utilities would become eligible lenders under the HUD Title I Loan Program. These loans could be grouped into packages of loans of equal term and interest rates, and then sold to such secondary market organizations as Fannie Mae and Freddie Mac. Other institutions now dealing in packaged home mortgages on the secondary market may then be more likely to purchase these packages as well. We recognize that there are nonfederal administrative decisions and agreements which need to be made in order for an active secondary market in home improvement loans to begin. However, with a large enough volume of these loans, and with co-operation from utilities and lenders, we consider it likely that such a market can be created.

As you may be aware, a number of alternatives were considered as we prepared this plan for conservation in residences. Some of these would have imposed mandatory requirements on individual homeowners to insulate their homes. We have decided instead to rely on a voluntary program of conservation services through utilities and Federal financial incentives with the expectation that public response will more than meet our goals. If it becomes apparent in subsequent years that adequate progress is not being made towards the President's goal of insulating 90 percent of American homes, we will consider proposing legislation designed to guarantee achievement of this target. Any substantial reduction in the package of voluntary proposals we have submitted, such as the changes proposed by the House circumscribing the role of the utilities in the conservation program, will of course make the need for mandatory measures in the future all the more likely.

The bill reported out by the House Banking, Finance and Urban Affairs Committee contains several new provisions. For example:

The Committee bill would require HUD to revise and strengthen its minimum Property Standards, and we support such action.

A \$25 million weatherization for rural low-income residents run by the Farmer's Home Administration is established. This program would duplicate and complicate FEA's Weatherization Program. Under the FEA grant program, States are authorized to provide weatherization assistance in both rural and urban areas.

\$10 million/year in contracting authority is authorized to weatherize existing HUD-owned public housing. Such a program is long overdue, and we strongly support it.

LOW-INCOME WEATHERIZATION

We have proposed to augment the Weatherization Program for low-income Americans authorized by Title IV of the Energy Conservation and Production Act. Title IV authorizes \$200 million in grants over a 3-year period (fiscal years, 1977-1979) to pay for materials such as ceiling insulation, storm windows, weatherstripping and caulking to be used to weatherize low-income homes. The President has proposed expanding Title IV to authorize additional grants amounting to \$385 million through fiscal 1980 (\$65 M in 1978, \$120 M in 1979, and \$200 M in 1980).

The costs of installing the materials will be borne out of Comprehensive Employment and Training Act (CETA) funds, as well as other alternative approaches that a State or local government may choose, including voluntary labor. Arrangements are now being made with the Department of Labor to facilitate the use of CETA labor for this purpose.

A few words about the Weatherization Program to date. This program was authorized in August of 1976, and in April of this year Congress appropriated \$27.5 million to FEA to begin implementation. Anticipating this appropriation, FEA issued a set of proposed regulations on April 1. Public hearings were held in 12 cities, including the 10 cities of the FEA regions and the final set of regulations was published on June 1. States have 90 days to apply for fiscal year 77 funds, which we expect to disburse by September 30.

The House Committee on Banking, Finance, and Urban Affairs has voted to increase the income eligibility level for this program from 100 percent of the OMB poverty guidelines to 125 percent. We understand the advantages and agree with the desirability of this change if flexibility is provided to the Administrator of the FEA to ensure that both the tax credit and weatherization are not provided to the same individual. However, we are concerned that the overall cost of this program be carefully controlled in view of the fact that such a change would greatly increase the number of eligible participants. At 125 percent of poverty guidelines, 14.1 million households would be eligible; at 100 percent, 8.6 million qualify.

This increase will mean that 99 percent of the households in the country can take full advantage of either Weatherization Assistance or the tax credit, as modified by the House Ways and Means Committee. If the credit is available through 1984, as we have proposed, the gap between the two programs would be eliminated.

The House Banking Committee has also voted to increase the spending limit per house from \$400 to \$800 and to expand the materials and other categories for which Federal funds could be expended. We estimate that these changes will raise the average cost of retrofitting the typical low-income house from somewhat over \$200 to about \$500. In combination with the increase in the income criterion, these changes would increase the total Federal cost of retrofitting all eligible low-income homes from about \$1.8 billion to about \$5.5 billion. This increase will pay for storm doors, reflective glass, clock thermostats, furnace modifications, supervisory labor, and up to \$100 per house for structural modifications needed to make the insulating materials effective. This is a substantial potential increase in Federal spending which could cause major budget problems. We do not believe these changes will be either budgetarily prudent or entirely cost-effective. Spending more money per home to purchase reflective glass, for example, will result in less energy saved than using the same money to put adequate ceiling insulation in more homes. The \$585 million which President Carter has proposed to authorize for this program through 1980 would, using the measures in the House bill, insulate only about 1.1 million homes instead of about 2.5 million. We will consider further authorization requests after 1980 based on the program's effectiveness, but we feel strongly that the \$585 million we have requested through 1980 is the maximum that can constructively be spent on this program during the next 3 years.

NEW BUILDING STANDARDS

Today's hearings also address Section 131 of the National Energy Act. This Section would increase the authorization of funds to the Secretary of HUD for grants to the States to help accelerate the implementation of performance standards for energy efficiency in new buildings.

There are currently two provisions in law which promote the implementation of new building standards. Under the Energy Policy and Conservation

Act of 1975, the Administrator of the FEA was authorized to establish a program of grants to the States for energy conservation programs. Five particular programs were required as a condition of eligibility for funds. One of the five programs requires a State to commit itself to adopt and implement by January 1, 1978, a standard for energy efficiency in new buildings at least as effective as either the relevant sections of the HUD Minimum Property Standards, or Standard 90-75, of ASHRAE, the engineering society. \$23 million has been appropriated for fiscal year 1977 for the State conservation program, and \$50 million has been requested for fiscal year 1978. Some of these funds will be spent on adopting and implementing conservation standards. FEA is now reviewing plans which States have submitted, and as of June 24 has made grants to 9 States.

Title III of the Energy Conservation and Production Act of 1976 upon which this Committee worked during much of the 94th Congress also bears upon energy efficiency standards. This Title directs the Secretary of HUD to develop performance standards for new buildings no later than August 1979. These standards are to become effective at the State level no later than February 1981.

The President has emphasized the importance of improving the efficiency of energy use in both new and existing housing. He has directed the Secretary of HUD to accelerate the schedule for development and implementation of the new building performance standards by 1 year to February 1980. We have requested in section 313 an authorization of \$10 million for each of fiscal year 78 and 79 to make grants to the States to help meet the stringent requirements of this schedule. These grants will be used principally for analysis of the performance standards, for development of training materials relevant to the State, and for actual training of those officials responsible for reviewing building plans and enforcing building codes. These funds will ease the burden on the States of our accelerated schedule and make the achievement of our goal substantially more likely.

CONCLUSION

In summary, Mr. Chairman, we believe that the proposals for voluntary residential conservation contained in President Carter's National Energy Act must be viewed as a package whose total effect will be to achieve our goal of assuring that 90 percent of the homes in America are insulated by 1985. We have relied on Federal financial incentives, in combination with easily accessible information, installation, and financing services, to reach this goal. A mandatory program would require cumbersome administrative mechanisms, and would appear to many people to be inequitable. We believe we can avoid such a requirement, but only by the timely enactment of a voluntary program which is comprehensive. We look forward to working with you in that effort.

I will be happy to answer any questions you may have.

GAS COMPANIES MARKETING ATTIC INSULATION

1977

NEW ENGLAND

Bay State Gas Co., Springfield, Mass.
 The Berkshire Gas Co., Pittsfield, Mass.
 Cape Cod Gas Co., Hyannis, Mass.
 Gas Service, Inc., Nashua, N.H.
 Fall River Gas Co., Fall River, Mass.
 Valley Gas Co., Cumberland, R.I.

MIDDLE ATLANTIC

The Brooklyn Union Gas Co., Brooklyn, N.Y.
 Corning Natural Gas Corp., Corning, N.Y.
 Elizabethtown Gas Co., Elizabeth, N.J.
 Equitable Gas Co., Pittsburgh, Pa.
 National Fuel Gas Dist. Corp., Buffalo, N.Y.
 Philadelphia Electric Co., Philadelphia, Pa.
 UGI Corp., Valley Forge, Pa.

EAST NORTH CENTRAL

Consumer's Power Co., Jackson, Mich.
 Michigan Consolidated Gas Co., Detroit, Mich.
 Michigan Gas Utilities Co., Monroe, Mich.
 Northern Illinois Gas Co., Aurora, Ill.

WEST NORTH CENTRAL

Minnesota Gas Co., Minneapolis, Minn.
 Peoples Natural Gas, Division of Northern Natural Gas Co., Omaha, Nebr.

SOUTH ATLANTIC

Central Florida Gas Corp., Winter Haven, Fla.
 Commonwealth Gas Distribution Co., Petersburg, Va.
 North Carolina Natural Gas Corp., Fayetteville, N.C.
 Washington Gas Light Co., Washington, D.C.

EAST SOUTH CENTRAL

United Cities Gas Co., Nashville, Tenn.

MOUNTAIN

Cheyenne Light, Fuel & Power Co., Cheyenne, Wyo.
 Cut Bank Gas Co., Cut Bank, Mont.
 Great Falls Gas Co., Great Falls, Mont.
 Mountain Fuel Supply Co., Salt Lake City, Utah
 Public Service Co. of Colorado, Denver, Colo.

PACIFIC

Alaska Gas and Service Co., Anchorage, Alaska
 Northwest Natural Gas Co., Portland, Oreg.
 San Diego Gas & Electric Co., San Diego, Calif.
 Southern California Gas Co., Los Angeles, Calif.
 Washington Natural Gas Co., Seattle, Wash.

The CHAIRMAN. Thank you very much. Mr. Bardin. Before we go to questions I'm going to call on Assistant Secretary Simons who's also FHA Commissioner. We're happy to have you, Mr. Simons.

STATEMENT OF LAWRENCE P. SIMONS, ASSISTANT SECRETARY FOR HOUSING AND FHA COMMISSIONER, DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT, ACCOMPANIED BY HARRY K. SCHWARTZ, ASSISTANT SECRETARY FOR LEGISLATION

Mr. SIMONS. Thank you, Mr. Chairman.

Mr. Chairman, and members of this distinguished committee, I am very pleased to appear before you today to discuss portions of the President's National Energy Plan which will affect energy consumption in housing and the operation of several of our existing HUD programs. I am accompanied today by Harry Schwartz, our Assistant Secretary for Legislation.

[Complete statement follows:]

STATEMENT OF LAWRENCE P. SIMONS, ASSISTANT SECRETARY FOR HOUSING AND FHA COMMISSIONER, DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Mr. Chairman and members of this distinguished committee, I am very pleased to appear before you today to discuss portions of the President's National Energy Plan, and sections of the National Energy Act, S. 1469, which will affect energy consumption in housing and the operation of several of

existing HUD programs. I am accompanied today by Mr. Milton Francis, Acting Director of the Office of Technical Support in the Office of Housing, and Mr. Joseph Sherman, Director of the Division of Energy, Building Technology and Standards, in the Office of Policy Development and Research.

As you know, the overall goal of the President's proposals for energy conservation in the residential sector is to achieve insulation of 90 percent of all American homes and all new buildings by 1985. (Approximately 23 percent of our Nation's energy use, the equivalent of 8.3 million barrels of oil per day, occurs in the residential sector.)

In turn, three-quarters of this energy is used in space heating and cooling, and in the heating of domestic hot water. We believe that improving the energy efficiency of existing residences alone could save more than 500,000 barrels of oil per day, and that these savings can and should be realized through prudent investment in energy conservation measures. Further savings can, of course, be achieved through adopting a sensible approach to energy use in the operation of commercial buildings.

To encourage investment in residential energy conservation measures the President has proposed both subsidies and financing programs. Three forms of subsidies are to be offered.

First, for any individual or family paying taxes, a tax credit would cover 25 percent of the first \$800 spent and 15 percent of the next \$1,400, for a maximum credit of \$410. Any measures installed after April 20, 1977 and before the end of 1984 would be eligible, providing the home was in existence on April 20, and that it is the taxpayer's principal residence. Eligible conservation measures are identified in the legislation, and the Secretary of the Treasury may qualify other items through regulation.

Second, owners of residential buildings will be eligible for a ten percent business energy conservation tax credit which will ease the burden of making energy saving investments. This credit will also apply to commercial and industrial users.

Third, the existing low-income weatherization assistance program authorized in the Energy Conservation and Production Act, will be expanded. Grants under this program cover the full cost of insulation materials. Grantees under the Department of Labor's Comprehensive Employment and Training Act (CETA) will be encouraged to provide labor to install these materials.

These incentives will be supplemented by several financing programs. One of these, the utility program proposed in Title 1, Part A, subpart 1 of this bill, which will be administered by the FEA (Federal Energy Administration).

I would like briefly to address two items in Section 101, which sets forth the definitions which apply to the program.

First, "residential building" is defined as any building developed for residential occupancy, the construction of which commenced prior to one year after the date of enactment of this subpart, which has a mechanical or electrical system for heating or cooling or both, and which contains no more than two dwelling units.

Larger buildings, including multifamily structures, have been excluded from the utilities financing program. The factors to be considered in retrofitting larger buildings differ significantly from those that pertain to one and two family residences. I would add that technically speaking, there is comparatively less need for energy conservation measures in multifamily buildings than in the smaller single-family units. Multifamily buildings tend to use more efficient equipment by virtue of their size, have less wall area exposed to the exterior environment per dwelling unit, and are often built with more massive materials which better retain energy. Furthermore, three quarters of the Nation's residential energy use occurs in single family dwellings.

Second, the definition of "residential energy conservation measure" specifies several types of improvements—that can be made to increase the efficiency of residential energy use in existing buildings. We believe these specified measures are easy to accomplish, and that the payoff in energy savings will be rapid in comparison to other measures and techniques. The enumeration of these special items—caulking, weatherstripping, clock thermostats and the others—establishes a basic set of measures for which utilities must lend or provide financing, although utilities may offer financing for other weatherization measures which they believe are appropriate to their areas.

Let me turn now to the financing program.

Subpart 2 of Part A of S.1469 proposes a Financing Program to assist residential property owners in carrying out energy conserving measures. These provisions build on existing residential financing authorities, specifically HUD's program of FHA-insured Title I property improvement loans and the secondary market operations of the Federal National Mortgage Association and the Federal Home Loan Mortgage Corporation.

Section 110 provides authority for public utilities to be considered eligible lenders for purposes of making energy conserving improvement loans with Title I insurance. There have been instances in the past when certain public utilities did in fact become approved Title I lenders for purposes of making improvement loans. The proposed amendment, however, provides clear authority for wide scale participation by utilities in making the energy conserving loans contemplated in the President's program. The Bill provides that utilities must offer their customers' financing for specified residential energy conservation improvements to be repaid through monthly utility bills. Since utilities will have the obligation to make loans or arrange financing for these improvements, we expect this expansion of Title I to be an important facet of their efforts.

Section 111 adds clarifying language in Section 2 of the National Housing Act concerning the terms "energy conserving improvements" and "solar energy system." These were included as eligible Title I activities by the Housing and Community Act of 1974. The proposed amendment simply requires HUD consultation with the Federal Energy Administration with regard to standards and criteria for acceptable energy conserving improvements and solar energy systems.

Section 112 directs the Secretary of HUD to establish actuarially sound loan insurance premiums for the energy conservation component of the Title I program. This would be based on an actuarial study to be completed by HUD within two years of approval of the legislation. Our FHA actuarial staff see no problems in complying with this requirement, and we welcome the opportunity to continue the tradition of actuarial soundness in our Title I property improvement operations.

Section 113 and 114 of the bill propose a major innovation in the way private property improvement lending is conducted and are intended to help assure that funds will be available to homeowners from private lending institutions. The secondary market facilities of the Federal Home Loan Mortgage Corporation and the Federal National Mortgage Association could be extended to those consumer loans which finance energy conserving improvements, including both our expanded Title I insured loan program and conventional uninsured property improvement loans. I would add parenthetically that we believe statutory authority already exists for GNMA secondary market support for Title I energy loans.

Creation of a secondary market mechanism has the potential of broadening geographic coverage and intensifying the use of the bank and utility financed improvements, including both Title I and conventional loans acceptable to permanent investors. The secondary market can open up energy retrofit to a wider variety of lenders and facilitate a flow of credit from areas of surplus to areas in need of funds.

Section 131 of the Bill increases the authorization for the HUD Secretary to make grants to States and units of general purpose local government to assist them in meeting the costs of adopting and implementing energy conservation performance standards.

Ten million dollars per year would be authorized for this purpose for Fiscal Years 1978 and 1979, in addition to the \$5 million presently authorized for Fiscal Year 1977. These funds would provide for:

- Implementation planning at the State and local level;

- Demonstration of administrative approaches that would allow for effective adoption of the performance standards, when they become available; and

- Education and training of State energy and building officials, to assure rapid adoption and implementation of the new performance standards.

As this committee knows well, the adoption of new standards and codes for building construction can be a protracted and controversial process. The authorization could help to accelerate that process for the energy performance standards.

Mr. Chairman, this concludes my prepared remarks. We look forward to working with you on the complex task that lies before us and we would be pleased to answer any questions which the committee might have.

The CHAIRMAN. Thank you very much, Mr. Simons and Mr. Bardin, for two very fine and thoughtful and hard-hitting statements.

You know, this whole field I think appeals to many because it should be the easiest area to get conservation, compared to the very tough problem we have in proposing taxes on gasoline and all these other things that are so enormously controversial and difficult. After all, the person who takes advantage of this is going to be way out ahead. He's going to gain. We know that. So I hope we can get a vigorous effective program.

Incidentally, we are going to hear from the Federal Trade Commission and the probono groups tomorrow and Wednesday and they of course have a somewhat different viewpoint than Mr. Bardin expressed.

Mr. Bardin, I want to start off by seeing if I can place in clear contrast your position and that of Congressman Ashley, I understand he's the chairman of the committee in the House and he has a somewhat different view.

The heart of your program is you would require utility companies to offer to inspect, install insulation, and lend to residents. No. 2, you would authorize HUD to insure energy loans made by utilities and, No. 3, you would authorize FNMA and FHLMC to buy those loans. Now whereas you would require all utilities as you say to get into the act and you say this is the effective way to do it, not voluntary—you would require them—the Ashley bill would actually prohibit as I understand utility companies from installing or lending for insulation of houses unless the State and FEA approves. They would provide GNMA financing and subsidies to moderate income households. They would expand low-income weatherization grants. They would provide FHA insurance for apartment conservation improvement loans but they obviously seem to take a different position—a startlingly different position than you do. Is that right?

Mr. BARDIN. That is correct, Mr. Chairman. On the inspection, as was implicit in your very accurate recitation, the position of Chairman Ashley and his subcommittee is basically the same position that I'm advocating. They don't have any difficulty with the utilities providing the information but they do have difficulty with the utilities providing the installation service or providing the financing. I might add, if I may anticipate, Mr. Chairman, that another committee of the House, the Committee on Interstate and Foreign Commerce, Subcommittee on Energy and Power, under Chairman Dingell, has also reviewed the program and in their case they had difficulty with the utilities being involved in the installation but they didn't have problems either with the the audit and information stage before the installation, or the financing stage after the installation. So we have, in effect, three points of view—the administration's, the Ashley committee's, and the Dingell committee's.

The CHAIRMAN. What projections can you give us concerning the numbers and types of units and the cost, both Federal and private, not only the Federal Government costs but the cost to the private

sector, that will be involved in carrying out the administration's energy conservation program for existing houses. If you don't have that, could you provide that for the record?

Mr. BARDIN. Just to give you the order of magnitude, the cost per household we're looking for is on the order of \$500 to \$1,000 of work per household. Of course, it will vary considerably in different parts of the country because of weather. It will also vary considerably in terms of building types.

The CHAIRMAN. Can you translate that into the total cost, if you can, if you have the number of households that will be affected?

Mr. BARDIN. Let us provide it in detail, but it's a good many billions of dollars of effort to be undertaken over a period of years. It should be in the neighborhood of \$20 billion.

[The FEA supplied the following information for the record:]

<We have estimated that the President's goal of insulating 90 percent of American homes will require \$22 billion in private expenditures, in constant 1977 dollars. The Treasury Department has estimated that the total reduction in tax receipts because of this expenditure would be \$5.4 billion, also in 1977 dollars. Since the program will be spread out over several years, the totals in current dollars would be \$30.5 billion in expenditures and \$6.9 billion in revenue losses.>

The CHAIRMAN. Questions have been raised concerning the adequacy of supply of insulation materials and whether or not this could be a very inflationary program. It's a fine idea. The objective is good, but the argument is if you go this fast that you can enormously increase the price. The home builders in Rockwell Industry predict shortages of insulation in storm doors and windows. There are fears that an active Federal program will result in high prices in the near future. What is your estimate? What measures would you introduce in order to assure the demand doesn't outprice supply?

Mr. BARDIN. The first measure, Mr. Chairman, is phasing in the program. We don't propose everything be done in 1978. We want a gradual program. For example, the utilities will have a responsibility to get the word out by the 1st of January, 1980. Thereafter, there will be time in which to implement the actual steps. It won't happen overnight.

Second, we have investigated the insulation market—again, I refer to the ICF report which I'm leaving with you—and we have determined as best we can that in one of the critical areas, the fiberglass insulation market where there are only three major manufacturers, there is substantial increase in supply capacity already planned. The time span for actually building a new line or entirely new plant to manufacture fiberglass insulation is on the order of 18 months to a maximum of 3 years, depending on whom you talk to. So in the 9-year time frame that we're talking about, even for a relatively capital-intensive activity like manufacturing fiberglass, there is time for major expansion of the productive capacity.

In the case of cellulose for which there are over 200 manufacturers, supply capacity ought to expand more flexibly and in shorter time frames. The estimate we get is 6 to 9 months to increase capacity in an existing facility. These are matters, however, that ought to be monitored carefully by the agencies of Government who specialize in protecting the consumer from overcharges, fraud or anticompetitive

matters, and we would certainly welcome their initiative and your working with them and with ourselves to make sure the needed initiatives are taken.

Now, as to some of the other programs, we have tried to trim down the list of activities mandated to those which we are convinced are going to be cost effective generally around the country. I want to make clear we are not deprecating the utility of other measures for appropriate places in the country or particular building types. For example, the judgment of our professionals was that storm doors are not generally going to turn out to be a top priority measure in most building types, most places in the country. Therefore, we left them out of our list, although there is a proposal by one of the House committees to add them back into the list.

The CHAIRMAN. Let me ask you a series of questions. How specific have you been able to get in your judgment as to this proposal: First, how much will a utility inspection cost; who will pay for it; and who will do it?

Mr. BARDIN. The estimate we have, on the basis of work that utilities have done already, is that a single inspection will probably cost between \$20 and \$40. It will be paid for by the householder. It will not be paid for generally through the whole class of consumers.

The CHAIRMAN. And who would do it?

Mr. BARDIN. The utility personnel, people hired by the utility to do the job. They could subcontract it out or they could do it in-house as the utility saw fit.

The CHAIRMAN. How will you assure that the utility company inspectors don't bias the selection of the contractor?

Mr. BARDIN. The proposal in the bill is to require the utility to maintain not only its own list of subcontractors who would do the work if the householder wants to go to the utility, but to have an additional list that they make available of independent contractors in that area. There will be regulations developed, as I said before, that should be done in consultation with the Federal Trade Commission and Better Business Bureau and the rest, to guide the utilities. But in the administration bill as now written it's basically the responsibility of the utility, as a good citizen in that community, to prepare an accurate, comprehensive list of other independent contractors that the householder might prefer to deal with on his own.

The CHAIRMAN. Who will be responsible for assuring that conservation improvements are adequately performed and be responsible for taking care of grievances?

Mr. BARDIN. If the utility is engaged in the financing, then utility inspection would follow through to make sure that they are adequately performed. If the householder elects to have purely independent contracting and financing, we do not have a mechanism—a Better Business Bureau mechanism or the like written into our bill. I know the National Home Improvement Council and perhaps others have indicated interest in trying to protect the householder-consumer against unethical abuses.

The CHAIRMAN. Who will be responsible for making sure that frauds are minimized?

Mr. BARDIN. The Federal Trade Commission will, I suspect, be the lead Federal agency and then we would require that the State public

utility commission, the State regulatory agency, provide that kind of protection to the extent that the utilities are involved in the activity. To the extent that the actual activity is conducted not by utilities but by private contractors or others, I would assume that the State attorney general, the State consumer fraud bureaus and the better business bureaus would be the ones that people would turn to.

The CHAIRMAN. Do you envision a utility being able to include in their charges for gas and electric costs the cost of operating a conservation program? What problems do you see in permitting these costs to be absorbed?

Mr. BARDIN. Let me answer that in two steps, Mr. Chairman. The program that would be mandatory to the utilities as written in the bill does not provide for or allow for charging the generality of consumers for these costs. To the contrary, it would be a separately accounted for, separately charged for service. On the other hand, the program does have flexibility. If the State utility regulatory agency wants to come to the Federal Government and say, "We would like to have an alternative program that is run differently from the national one," they could propose to put that into the general cost of the service or even the rate base leading up to the cost of service.

The CHAIRMAN. How would you assure that savings in multifamily buildings assisted with weatherization grants be passed on to the tenants and not be made a matter of profit to the landlord?

Mr. BARDIN. We don't have a better answer, Mr. Chairman, than providing in regulations that the States do it. I might say, if I might go beyond your question, one of the areas which our program does not cover ideally is the multifamily resident tenant occupied building. We have struggled with the problem and have come up with somewhat partial answers. In this regard I have already described how the business tax credit works. But these answers are not nearly as good as the answers we have come up with for the private home, the single- or two-family home.

From the standpoint of strict energy conservation, you get your Btu's where you can. In terms of our goal of equity, if the committee were able to come up with an additional solution which we haven't thought of, this certainly is an area crying out for some creative application in the legislative process.

The CHAIRMAN. I just have one question I'd like to ask Mr. Simons.

Mr. Simons, the U.S. League of Savings Associations has very serious reservations as you know about making utility companies eligible under title I of the National Housing Act. They say the utilities are not accustomed to the financing function, are not familiar with the legal and regulatory requirements which apply to credit granting institutions, and are not familiar with underwriting procedures used to determine creditworthiness. What do you say about that?

Mr. SIMONS. As I said in my testimony, we have had some experience in the past where utility companies have qualified as title I lenders. We feel that the title I program, with the monitoring and educational impact which we could have with it, would be a viable tool for the utility companies to become qualified title I lenders. The use of title I would also obviate some of the problems raised by the

FTC because in our opinion under title I they must comply with truth in lending which would eliminate the problem.

Title I would also give us an opportunity to create a viable secondary market for insured loans and with our title I experience and with its excellent history, we are able to have actuarially sound lending and monitor effectively any company that wants to enter the field.

The CHAIRMAN. My time is up but I certainly want to find out from the other witnesses how they feel about letting utilities get into the banking business.

Mr. SIMONS. May I make one comment, Mr. Chairman? The practice of financing such improvements as home improvements is one which is not classically done by the mortgage concept. Most of the financing of home improvements today is done through commercial banks and the sources of financing are commercial funding. They are treated as a small loan, like an automobile loan. In many cases, and especially in home improvement, the material suppliers actually act as a conduit for lending, for providing the capital needed to perform these services, or the installers themselves are more responsible for arranging the lines of credit and financing. So the route is not an unusual route. It's one that's being followed today.

Mr. BARDIN. May I make a further observation? The bill does not require the utility to become a banker. There is no reason under the bill why a utility that is involved in financing couldn't do that through an established lending organization.

In fact, I would assume that that would be the normal way utilities would carry out the measure.

The CHAIRMAN. They could, but it doesn't require them to?

Mr. BARDIN. That is quite true.

Senator BROOKE. They could be in the banking business, very clearly the utility could actually do the financing. This would be acting in the role of a financial institution.

Secretary Simons, before we leave title I, last year we tried to get FHA to carry out the legislative mandate to increase the proportion of title I home improvement loans used for conservation investment. What has been done?

Mr. SIMONS. Are you referring to the \$200 million appropriation?

Senator BROOKE. Yes.

Mr. SIMONS. Actually, in light of the program which the President is now putting forth, we felt that it was best to delay the implementation of that, and to fold that program into the new energy program we are now taking up.

Senator BROOKE. What about the conventional FHA Home Improvement Loan program?

Mr. SIMONS. I really don't understand the question.

Senator BROOKE. Your title I conventional program, you had some money there. What proportion of these loans have been used for the purposes for which they were intended under the mandate the Congress gave HUD to make loans for energy conservation purposes?

Mr. SIMONS. My information is a very small amount.

Senator BROOKE. Do you have any figures for us?

Mr. SIMONS. I will be glad to supply the figures.

Senator BROOKE. Why are the figures so low? Why is such a small amount used?

Mr. SIMONS. I could not give that answer. I will try to get one and supply it for the record.

[The following information was received from the Department:]

The amount of money lent for items which can be characterized as conservation-related was significant.

With regard to the use of property improvement loans, and particularly for insulation and other weatherization improvements, our records indicate we insured 292,011 loans for \$953,918,847 in calendar year 1976. Of this total, 45 percent, or 131,402 loans, and 37.1 percent, or \$353,903,886, were used for conservation-related improvements.

A breakdown is as follows.

Improvement	Number of loans	Percent	Amount	Percent
Insulation.....	10,804	3.7	\$19,078,376	2.0
Heating.....	27,449	9.4	65,820,399	6.9
Exterior finish.....	51,977	17.8	174,567,147	18.3
Plumbing.....	18,104	6.2	38,156,753	4.0
Roofing.....	23,068	7.9	56,281,211	5.9

Senator BROOKE. Will you do that, because I understood it was a small amount as well, and I would just like to know why you haven't been using the money.

Mr. SIMONS. Maybe there is an inherent resistance to using the money for those purposes.

Senator BROOKE. If that is the reason, I would like to know. Does HUD have evidence of shortages of capital for these energy conservation measures?

Mr. SIMONS. I think as we look at the program, which Mr. Bardin was discussing, we will most likely double the use of energy conservation, as far as the units; we must face the question of being sure that the capital will be available for these. Right now under the present demand, there is no shortage of capital. But if we double what we are going to do, as far as retrofitting, as far as energy standards in new construction, I think it is incumbent upon us to make preparation and be sure capital is available.

Senator BROOKE. At the present time you have no shortage?

Mr. SIMONS. No.

Senator BROOKE. Does HUD have an estimate of the nature and dollar value of energy conservation improvements needed in public housing projects?

Mr. SIMONS. We feel that \$100 million capital improvements for energy conservation will do approximately 200,000 units. Now if we break that out, it is about \$500 per unit, the average cost which we are using.

Senator BROOKE. Why doesn't the administration give special priority and support for some emergency energy modernization programs?

Mr. SIMONS. We are prepared to support the House bill. In fact, when I testified before the House committee on this, we discussed one of the areas where the bill at that time was deficient, in the multi-family field, and working with the committee we have suggested

perhaps that they look at the public housing and modernization which is now in place, the legislative authority is in place; what is needed is the additional money.

As you well know, we are doing modernization, we have about \$35 million per year available for modernization, which we are trying to get out and use for just general modernization purposes, which would include energy retrofitting whenever possible.

Senator BROOKE. You are using some of that modernization money for energy retrofitting?

Mr. SIMONS. Yes, sir.

Senator BROOKE. How much, do you know?

Mr. SIMONS. I could give you the answer.

Senator BROOKE. Will you supply that for the record?

Mr. SIMONS. I will try to. I don't know if that answer is available as directly as we would like it, because as we go into modernization of public housing, there are many things that we do that have an effect on energy consumption. Changing the windows would have an effect on energy consumption.

[The following was received for the record:]

The Department is very concerned about the entire issue of energy conservation. While insulation is important, other measures are also needed. For instance, energy savings can also be realized by upgrading old or deteriorating heating plants, installing storm windows and doors, and by programs conducted by PHAs to educate residents on the importance of energy conservation.

With respect to utilities, in many public housing projects the residents are given an allowance for estimated utility consumption. If this amount is exceeded, there is no way of telling how much extra utilities were used, by dwelling unit, unless individual check meters are installed. With check meters, the tenants are much more likely to conserve energy, since any excess usage would be billed directly to the responsible tenant. The Department published in the Federal Register, dated May 17, 1976, a Final Rule requiring Public Housing Agencies to provide for individual utility metering to the extent practical. Exceptions may be those projects for which such conversion would not be cost-effective, or where the cost would exceed available funds.

At present we do not see any need for additional legislation in this area. All the measures cited above as examples, including insulation, are eligible expenditures under the Modernization Program and energy conservation is one of four priority categories established by HUD with report to the allocation of modernization funds.

While data on how modernization funds are spent is maintained, it is done so on the basis of broad areas, such as dwelling equipment, site improvements, non-dwelling equipment, and the like. We regret that specific figures are not available on how much funds have been expended for the purpose of purchasing and installing insulation; the accounts that have been developed are such that it is not possible to identify those items related to energy conservation. To obtain this information, each PHA in the country which received Modernization funds would have to be contacted. If the committee desires, a sampling could be undertaken which would provide the basis for making an estimate as to the portion of Modernization funds so expended.

Senator BROOKE. That money was not intended for energy conservation retrofitting?

Mr. SIMONS. It is not being used for the purpose of energy conservation retrofitting, but as you modernize buildings, you have by the very nature of the modernization you have energy conservation taking place.

Senator BROOKE. I am equally concerned—

The CHAIRMAN. Mr. Schwartz, did you want to say something?

Mr. SCHWARTZ. Senator Brooke, the House bill provides for an additional \$10 million a year for modernization, earmarked for energy conservation. That would be on top of the present modernization funds.

Senator BROOKE. Are you using that money for retrofitting?

Mr. SCHWARTZ. We haven't gotten it yet, it is in the House bill.

Senator BROOKE. Will you be using some of the modernization money for retrofitting?

Mr. SIMONS. If you would define retrofitting as solely bringing the project to energy standards, the answer would be no. But in doing modernization, you are performing certain improvements which result in better energy consumption, and savings, so the answer is yes.

Senator BROOKE. All I am saying, Mr. Secretary, is we started this modernization program before we got the energy retrofit. I just wanted to know if you were using modernization money for energy retrofitting. The answer is yes, and you will tell us how much, if you can.

Now I am equally concerned about the management costs imposed by energy inefficiencies in federally assisted low and moderate income housing. Troubled projects in many areas are a special concern of this committee. How will the administration deal with this aspect of the special needs of these units? We hope for a request for conservation funds for these cases.

Mr. SIMONS. Well, we are dealing with these units and the question of bringing them up to standard, and whenever money is made available for bringing them up to standards, the energy consumption and characteristics of the building are studied and improved at the same time.

Senator BROOKE. We talked about public housing. Now I am talking about 221(d)(3) and 236.

Mr. SIMONS. I understand.

Senator BROOKE. We have the same problems there. Will you be doing anything as far as retrofitting is concerned there?

Mr. SIMONS. There is no special program for retrofitting these.

Senator BROOKE. You have no money available for that?

Mr. SIMONS. No.

Senator BROOKE. And you have no energy conservation for 236 or 221(d)(3)?

Mr. BARDIN. Senator Brooke, may I amplify on that answer? I mentioned the low income modernization program. Congress has appropriated \$27 million to FEA for that program this year, and that is the one the President is proposing be expanded by \$385 million up to a total of \$585 million. We proposed regulations in April and published them just the first of this month, under which the State and local public housing, multiple housing, is eligible for weatherization assistance. That is a program where FEA makes the grant to the State and the State subdivides the funds.

Senator BROOKE. But that doesn't cover 236 and 221(d)(3)?

Mr. SIMONS. I understand what the Senator is saying. The answer is no, there are no funds available.

Senator BROOKE. Thank you. Mr. Bardin, what kind of analysis does FEA have available of the impact and effectiveness of the con-

servation improvement programs, some of which are being run voluntarily, as you said in your statement?

Mr. BARDIN. Could we supply the answer for the record?

Senator BROOKE. Yes, if you would.

Do you know what proportion of customers took advantage of these offers, or what the typical size of the loan was?

Mr. BARDIN. I don't have that information. We would be happy to survey some of the utilities and supply that for the record.

Senator BROOKE. What is the typical cost of interest on these loans?

Mr. BARDIN. We will be happy to supply that also.

[The following was received for the record:]

Based on material supplied by individual utilities and by utility trade associations, only 20-30 percent of the participants in the utility program finance their retrofitting. The size of the loan generally ranges from \$150 to \$800. Annual interest rates range from 9 percent to 18 percent with most rates around 12 percent. The repayment period is up to 36 months.

ERDA and FEA are compiling under contract a summary of insulation programs run by utilities and a more detailed study of the operation of four or five of these programs. This information will be available in two phases, the first in August and the second later this year. Information available now has been supplied by the American Gas Association (AGA) and through conversations with individual utilities. We have attached (1) material developed in 1976 for an FEA utility conservation program; and (2) a three page summary of a survey conducted in March of this year by AGA.

As this material shows, utility programs vary greatly with respect to audits, financing, and installation. Some utilities offer free home inspections; others merely send out information. Some utilities have established their own profit-oriented insulation subsidies; others merely refer customers to other contractors. Nearly all utilities with a program will finance installation of insulation, most offering up to 3-year payback terms. Interest rates vary from 9-18 percent per year and are typically 12 percent.

For most utilities, a retrofit program is a fairly long term project. Since no one utility has the manpower to retrofit every home at once, announcements are usually rotated with billing cycles in various geographical areas.

Homeowners are motivated to respond to utility programs through bill stuffers and radio/TV spots. Roughly 3-7 percent of the people who receive a bill stuffer offering insulation services will respond. Others respond as a result of media advertisements, conversations with neighbors who have participated, etc. It is difficult to estimate the percentage of homes insulated as a result of the utility programs since it depends on many variables, including how long the program has been ongoing and how many times customers receive the bill stuffers. Public Service of Colorado, for instance, estimates that they have insulated 3 percent or 22,000 homes in their service area. Consumers Power of Michigan has insulated 8 percent or 74,000 of their customers, while Washington Natural Gas has insulated 2 percent or 10,000. These percentages appear to be typical of utilities who have strong, ongoing programs.

In addition to these, the utilities estimate that the number of people who either insulate themselves or call their own contractor after receiving information from the utilities is at least as much.

UTILITY FINANCE PLAN

Company : Consolidated Edison Co. of New York.

Territory : City of New York and Westchester County, N.Y.

Contact : Richard Arcari, Mgr. Commercial Services, Robert Stevens, Executive Director, Com'l. Services (212) 460-5221.

Status : Begun in September 1976; projection of 20,000 to 30,000 impacted homes for first year (Of 2.9 million customers).

Utility role and motivation : Energy Conservation, Direct mail and employee incentive promotions, Contractors field leads, provide estimates and take orders including Con. Ed. financing. Available to gas.

Source of funds : Internal.

Credit approval and collection: Internal; Separate Installment Billing Delinquent Payment Charge \$5.

Loan limit: \$150 to \$800; 3 year limit.

Average loan: \$500.

Interest rate: 1% per month on Unpaid Balance.

Products: Ceiling insulation, Automatic thermostats, attic fans.

Contractors or installers: Participating contractors. Each lead given three contractors for competitive bids.

Certification and inspection: Company will inspect within five days all jobs at first, then will go on a sampling basis.

Regulatory Commission: Company filed a plan, a formal docket was established and a formal ruling was made by N.Y.P.S.C. approving.

State Banking Commission: Filed and received certificate—Arcari is "Loan Officer."

Oil heat customers: No.

(Source: FEA conversations with utility.)

UTILITY FINANCE PLAN

Company: Brooklyn Union Gas Co.

Territory: Part or all of three boroughs in New York City.

Contact: Al Jennings, Energy Conservation program leader (212) 643-3884.

Status: Active program, which grew out of the continuing marketing programs of the past 25 years.

Utility role and motivation: Direct inspection of insulation needs and a grant, or subsidy, provide to the homeowner who installs insulation. Grant equals up to 25 percent of total installation cost, but does not exceed \$100 per home.

Source of funds: N.A.

Credit approval and collection: Arranged by Homeowner.

Loan limit: N.A.

Average loan: N.A.

Interest rate: N.A.

Products: Insulation only.

Contractors or installers: Arranged by Homeowner.

Certification and inspection: None.

Regulatory Commission: No formal role.

State Banking Commission: N.A.

(Source: FEA conversation; with utility.)

UTILITY FINANCE PLAN

Company: Washington Natural Gas Co.

Territory: Western Washington.

Contact: Don Navarre, V.P., Rod Nelson, Staff Asst. to Don Navarre, (206) 622-6767.

Status: Extension of long standing merchandise finance plant to include energy conserving products; 2500 to 3000 jobs have been completed.

Utility role and motivation: Internal sales force.

Source of funds: Internal.

Credit approval and collection: Internal; Installments Billed Separately.

Loan limit: Minimum Payment \$5/month; Maximum Period 5 years.

Average loan: \$185-\$385.

Interest rate: 12% annual rate on unpaid balance.

Products: Insulation, Storm Door and Window, Thermostats, Electric Ignition replacing pilots of furnaces, furnaces replacing oversized and inefficient furnaces.

Contractors or installers: Certified installer—contractor program.

Certification and inspection: Quality control program with random inspection.

Regulatory Commission: No control over merchandising and financing.

State Banking Commission: No involvement.

(Source: FEA conversation; with utility.)

UTILITY FINANCE PLAN

Company: Pacific Gas and Electric Co.

Territory: Northern and Central California.

Contact: Joseph DeYoung, Vice President—Commercial Oper. (415) 781-4211.

Status: Planning Stage, Targeted to Start January 1, 1977.

Utility role and motivation: Financing, media advertising, training, some direct selling, liaison with the trade. Desire to increase annual home insulations from 52,000 in 1975 and 65,000 in 1976 with lower cost financing.

Source of funds: Internal.

Credit approval billing and collection: Internal Credit—Separate Bills from gas and electricity.

Loan limit: \$800 Maximum.

Average loan: \$300.

Interest rate: Prime rate +2% (or less).

Products: Ceiling insulation and caulking (storm windows and doors not used in California) (includes do-it-yourself materials).

Contractors or installers: Members of Insulation Division of Electric and Gas Industry Association of Northern and Central California who subscribe to their code of ethics. Includes Manufacturers, Wholesalers, Retailers, Contractors, Installers and the Utility.

Certification and inspection: Installers certified by the Association and Inspection will be by P. G. & E. on a spot or sampling basis.

Regulatory Commission: No formal role, but are pleased with the program.

State Banking Commission: No regulation other than legislated maximum finance charges.

(Source: FEA conversations with utility.)

UTILITY FINANCE PLAN

Company: Southern California Edison Co.

Territory: Southern California except City of Los Angeles.

Contact: Robert Robertson, Conservation Manager (213) 572-1212.

Status: N.A. Inactive finance subsidiary may originate a Finance Plan for Solar in 1977.

Utility role: Small insulation installation program since April 1976. No financing, as such.

Source of funds: N.A.

Credit approval and collection: N.A.

Loan limit: N.A.

Average loan: N.A.

Interest rate: 90 day Interest-Free Program, also. Bank Americard and Mastercharge.

Products: Insulation—Only areas where no Southern California Gas Co. Solar Equipment Late in '76 or Early '77.

Contractors: Company takes orders, subcontracts to state licensed contractors.

Certification and inspection: Final Inspection—Spot Checks only.

Regulatory Commission: P.S.C. had strongly urged insulation program. Watches progress.

State Banking Commission: N.A.

(Source: FEA conversations with utility.)

UTILITY FINANCE PLAN

Company: Southern California Gas Co.

Territory: Southern California.

Contact: Messrs. Andre, McMurray and Nemick.

Status: In force for 18 months; 19,000 homes affect to date (of 3 million residential customers).

Utility role: Utility field forces determine insulation needs, provide contractor list for customer selection.

Source of funds: Internal.

Credit approval: Internal—Billed separately from gas service.

Loan limit: No maximum.

Average loan: \$300.

Interest rate: 1½% per month on unpaid balance.

Products: Insulation.

Contractors or installers: Certified or approved contractor list. Retailer stock equipment for do-it-yourself.

Certification and inspection: Company inspects all completed work.

Regulatory Commission : Approved the Program.

State Banking Commission : No regulation—Banks were disinterested.

(Source : FEA conversations with utility.)

1977 THERMAL RETROFIT SURVEY

(PERCENT OF 130 RESPONSES)

1. Do you sell and subcontract any of the following retrofit services? 23 percent, Yes; 77 percent, No.

If yes, please check those that apply. If no, go to question 9.

100 percent, Attic insulation.

53 percent, Wall insulation.

13 percent, Storm doors and windows.

10 percent, Caulking and weatherstripping.

63 percent, Clock thermostats.

2. Are these retrofit services offered to (check one) : 40 percent, Your customers only? 60 percent, All homeowners in your service area?

3. Do you arrange for financing or finance such work checked in (1) above? 73 percent, Yes; 27 percent, No.

4. Do you guarantee the subcontractor work checked in (1) above? 82 percent, Yes; 18 percent, No.

5. Is your retrofit marketing service organized (check one) : 67 percent for profit (outside of rate base) ? 33 percent for non-profit?

6. Do you maintain a sales force? 90 percent, Yes; 10 percent, No. If yes, how many? Average 13.5 people—Range 1-90.

7. Is your sales force trained to estimate the cost of installing (check those that apply) :

87 percent, Attic Insulation.

53 percent, Wall Insulation.

13 percent, Storm Door and Windows.

7 percent, Caulking and Weatherstripping.

43 percent, Clock Thermostats.

27 percent, Others as noted in (1).

8. What communications media do you use to reach prospective retrofit homeowners (check those that apply) ?

87 percent, Bill stuffer.

14 percent, Truck poster.

70 percent, Newspaper ads.

50 percent, Radio.

23 percent, TV.

33 percent, Other.

9. Is your company planning to sell and subcontract retrofit services during the remainder of this year or during 1978? (Base 130 companies) 43 percent, Yes; 57 percent, No.

If yes, what retrofit services are you planning to sell and subcontract?

100 percent, Attic insulation.

46 percent, Wall insulation.

22 percent, Storm doors and windows.

22 percent, Caulking and weatherstripping.

65 percent, Clock thermostats.

32 percent, Other.

10. If your state regulatory entity or energy office urging utilities to become involved in (check those that apply) : (Base 130 companies) :

Marketing insulation—34 percent.

Financing insulation—33 percent.

Other —18 percent.

11. If you are currently selling retrofit services or are interested in this business, would you send a representative(s) to a two day, A.G.A. sponsored seminar on utility retrofit services in Chicago during May 1977? (Base 130 companies) 53 percent, Yes.

If yes, how many? 69 companies.

If yes, what subjects would you like to have covered (check those that apply) ? (Base 69 companies) :

45 percent, Marketing attic insulation.

34 percent, Marketing wall insulation.

- 27 percent Marketing storm doors and windows.
- 33 percent, Marketing other energy conserving products.
- 22 percent, Sales training.
- 25 percent, Financing.
- 36 percent, Products available to improve thermal efficiency.
- 42 percent, Products available to reduce energy consumption.
- 32 percent, NBS or ERDA research on insulation.
- 34 percent, Review of FEA's "full service" retrofit manual for contractors.
- 1 percent, Other.

12. In your current conservation communitons, are you urging customers to install: (Check those that apply) (Base 130 companies) :

- 94 Percent, attic insulation.
- 79 Percent, wall insulation.
- 80 Percent, storm doors and windows.
- 84 Percent, caulking and weatherstripping.
- 15 Percent, other.
- 53 Percent, clock thermostat.
- 31 Percent, attic ventilators.
- 19 Percent, sun shades and awnings.
- 38 Percent humidifiers.
- 22 Percent water restrictors.

Do you provide names of subcontractors on request? (Base 130 companies)
39 percent, yes ; 61 percent, no.

Senator BROOKE. How did the utilities try to promote competition among insulating and heating contractors?

Mr. BARDIN. To the best of our ability we will supply an answer for the record.

Senator BROOKE. Are any of the utilities we are discussing subject to fair credit reporting practices, such as those required of conventional financing institutions?

Mr. BARDIN. We think they should be so subject; we are not certain that they are now. I gather from Secretary Simons that the title I status would subject utilities to fair credit reporting practices. In one way or another, that should be an item on the legislative agenda.

Senator BROOKE. Will you check into that, please?

Mr. BARDIN. We will check into it.

Senator BROOKE. What administrative costs which presumably go in the general rate base were experienced by utilities as a result of these programs?

Mr. BARDIN. Under the President's proposal, that would not be provided for. I would be glad to check, in the voluntary program that some of the utilities have undertaken, how that has been handled and supply it for the record.

[The following information was received for the record:]

We have not conducted an extensive review of current utility lending practices for consumer purchases of conservation materials. The Federal Trade Commission has stated that the Truth in Lending Act is ambiguous with respect to such lending by utilities. Evidently most lending by utilities is specifically exempted by that act, but consumer conservation lending was not contemplated at the time of its passage. The FTC has proposed, and we agree, that utilities should be subject to the same consumer protection requirements as conventional lenders. We will incorporate such a requirement into our program regulations governing utility conservation programs, after consultation with the FTC.

As mentioned in answer to an earlier question, ERDA and FEA are conducting a survey and detailed study of insulation programs currently run by utilities. The American Gas Association reports, and our conversations with a gas utility confirm, that most programs are operated for profit by the utility. That is, none of the administrative costs are paid by the rate-payers in general, and the

profits or losses accrue to the stockholders. The program run by the Michigan Consolidated Gas Co. is an important exception. That company provides only information and contractor referrals to its customers, and does not sell insulation directly. Their annual administrative costs have varied from \$40,000 to \$50,000 since the program started in 1973.

Senator BROOKE. As you know, Mr. Bardin, I am skeptical about the need for a massive national program of this nature. I guess you gathered that.

Mr. BARDIN. I caught the drift of your skepticism, Senator Brooke.

Senator BROOKE. Both from the statement and from the questioning, I am sure. But I would like to see what evidence you have of an overwhelming need for new capital for this strategy of marketing services and equipment by convenient packaging which can override the anticompetitive concerns faced by the Federal Trade Commission and the consumer groups and committees of Congress who are worried about the protection from consumer credit abuses. Your own example of voluntary cooperation between State offices and utilities in some states seems to me to argue for a more flexible strategy.

Mr. BARDIN. I would certainly agree with you to the extent of favoring flexibility and an opportunity for variations from State to State. There are constitutional reasons, climatic reasons, experience reasons, policy reasons for it.

Also let me say I welcome your skepticism. I think that is a wholesome aspect of our constitutional system of government. But what we see is the following: We have gone through the turmoil and trauma of a very substantial increase in fuel costs in this country in the last few years. I can document that to you, but I don't have to, you know it from your own home State. It is obviously in the interest of people, as the chairman accurately said, to retrofit their homes, if only they know exactly how, what measures to take, and where to get the front-end money, because in the long run it is money that will be returned in the form of lower fuel bills.

But we haven't seen that vast retrofitting which people might want. I talk to people in my neighborhood, that is the best evidence for me, and I talk to my own wife, and I ask them why they have done things or not done them. There are many people who are basically home improvement types who will go out and find out the answers themselves. But there are many others who are just incapacitated, elderly, limited in their use of tools, or just not the type to do retrofitting themselves and who are looking for guidance.

I ask my wife how about getting a contractor, and her reaction is basically in favor of Public Service Electric & Gas, our utility, and the man in the uniform, whom she trusts. If he comes, she will let him in the house and trust him, where otherwise she might have questions. I think that is pretty suggestive of the answer to your question Senator Brooke.

But there is no substitute for experimenting, and I think the answers to some of the other questions about those utilities who have tried it out, promoted it, and how far they have gotten, are important. If you were to agree with me that we ought to enlist the talents, the organizations and the presence of utilities in all of the cities and towns around the country, then please consider the following: We

are asking the private business company, a specialized kind of company, to go out and convince their customers to consume less of their product. It is a very hard thing for companies to do, beyond a certain point, beyond the point where it enables them to attract new customers.

I think that has to be mandatory.

Senator BROOKE. I can't ask you any further questions, my time is up. I know what you are saying, we are all agreed on the need for it, it is just a question of how it is accomplished.

I just don't think the vehicle is proper. I just don't think you will get utility companies equipped to do the evaluation, the energy evaluation, equipped to give the contractor services, equipped to do the financing. I just think you chose the wrong vehicle for it. I think that private enterprise can do it. I think the financial institutions can do the financing and will do the financing. I think the homebuilders and the contractors can do the packaging of contractor services. I think they can also do the energy evaluation. I just don't think the utilities are the proper vehicle to use, and if you will look at the questions that I have asked you and try to ascertain the answers to them, even in those areas where you say they have been experimenting, I think you will find they just can't do the job, and I don't think they want to do the job.

I yield, Mr. Chairman.

The CHAIRMAN. Senator Sparkman.

Senator SPARKMAN. I have enjoyed this testimony very much. I think it has been quite helpful. I have a few questions I would like to ask.

I am not sure I understood clearly whether or not this is applicable to multihousing units a person may own.

Mr. BARDIN. The utility program, Senator Sparkman, is not addressed to the multiple dwelling units; only the business tax credit would go to that. But the answer is no, the proposed utility program does not reach the multiple dwelling situations you are concerned about.

Senator SPARKMAN. But the tax credit program does?

Mr. BARDIN. There is a business tax credit, which is a 20-percent investment tax credit before the Committee on Finance, that would be available for the owners of multiple dwelling units. So would the residential credit be available for the condominium owners.

Senator SPARKMAN. Suppose a person—take a member of Congress. Suppose he owns a home here in Washington and he owns a home also in his home city. What is the situation there?

Mr. BARDIN. The proposal goes only to the principal resident, Senator.

Senator SPARKMAN. I own a home here, and I own a home in Huntsville. Each one is a principal residence. When Congress is out, I am in Alabama. When it is not out, I am here. I own a home in each place. Where would I be?

Mr. BARDIN. I remember, Senator Sparkman, from law school, a famous case about the estate of the founder of the Campbell soup fortune, who lived both in New Jersey and Pennsylvania, and the

final conclusion after years and years of litigation was that each State could tax him. He seemed to be a resident of each of the States.

Senator SPARKMAN. They do tax me both places.

Mr. BARDIN. Under our bill, the Secretary of the Treasury would have to prescribe regulations defining that situation of the principal residence, and what the bill means by principal residence.

Senator SPARKMAN. When I first came in, Senator Schmitt was discussing solar energy. I did not get the full import of what he had to say or what you said. But I am greatly interested in solar energy. As it happens, a great deal of work being done on that is being done in my home town, by NASA. I have visited there, I have seen their display, I have seen how it works.

To what extent do you subscribe to the use of solar energy?

Mr. BARDIN. The administration is strongly committed to exploiting and expanding the solar energy development in this country. We have shifted funds in the fiscal 1978 budget toward solar and we are now beginning the fiscal year 1979 budget cycle. One of the major issues in the administration planning for the next budget cycle is the one you raise about solar.

Our impression overall is that solar hot water heating is in many cases an appropriate solution today; that solar space heating and cooling is coming right up, but on the cost-effective balance, it is not as far advanced as solar hot water. Other solar technologies, including the photocell conversion process and the high intensity solar conversion processes, are seen basically to be in the research and development stage, rather than the commercial stage, although that is a matter under intensive discussion and debate.

I think the fiscal year 1979 budget cycle process will probably be the vehicle by which the administration determines how fast we can go, and how far, in introducing solar technologies. But we are certainly going to want to continue the research effort on that score.

Mr. SIMONS. If I might add, Senator, the Department has an experimental program for solar hot water heating, which has just been implemented and is operating in approximately 5,000 dwelling units, and we believe it is ready today. Within the framework of the existing legislation, solar heating devices are eligible for title I loans and are being encouraged.

Mr. BARDIN. It is not the subject of today's hearing, but solar units would be eligible for tax credits, and in our program for retrofitting the Federal building stock of the Department of Defense, GSA, and all other agencies, solar is one of the technologies which would be authorized. I have testified on that subject before another committee and our estimate was if the Congress approved and funded our total program for the Federal building stock, so Uncle Sam would be practicing what he preaches to others, we might in the near term be providing something like a 20-percent increase in the market for solar facilities, the near term being the next fiscal year.

Senator SPARKMAN. Well, let me move on to something else. With reference to handling loans on these projects, some request was made apparently of the Federal Home Loan Mortgage Corporation as to their ability to handle them, and I just will read certain excerpts

from a reply from the Home Loan Mortgage Corporation to Mr. Ashley of the House Committee. The letter was written by Jack Carter, who is the Vice President of the Corporation.

We see several potentially prohibitive aspects of this program from the Corporation's point of view. First, while it is difficult to provide an assessment of any operational or programmatic difficulties the Corporation would encounter in implementing Section 113, that could be substantial. The Corporation's staff has absolutely no prior experience in purchasing of home improvement loans and unsecured loans.

The a little further on: "A credible assessment of our ability to purchase such loans, in what amounts, and in what time frame can not even be made at this time."

Is that going to create some difficulty?

Mr. BARDIN. I know, Senator, that the Administration carefully consulted with the Corporation in drafting the legislation. Obviously once legislation is passed, its implementation takes work and training of people all up and down the line, in making sure it gets done by people who know what they are doing.

Mr. SIMONS. One of the features of the Administration program is the phasing of the requirements for the capital that will be needed for it. The other aspect is that as banks seek broader and broader powers, they will be looking more and more to this type of lending. Some of the institutions do some of this lending now. Is it not something that cannot be learned through a training program. Title I lenders has been doing this extensively. So we are only talking now about the conventional portion of this lending, which would be the uninsured.

[The following letters were ordered inserted in the record at this point:]

FEDERAL HOME LOAN MORTGAGE CORPORATION,
Washington D.C., June 27, 1977.

Mr. BOB MALAKOFF,
Staff Director, Subcommittee on Housing and Urban Affairs, Senate Committee
on Banking, Housing and Urban Affairs, Washington, D.C.

DEAR BOB: In response to your phone call of June 24th, I am attaching for your consideration a copy of a letter dated June 1, 1977 to Congressman Thomas L. Ashley and signed by Chairman Garth Marston of the Federal Home Loan Bank Board. The Marston letter was written at Mr. Ashley's request and presents the comments of The Mortgage Corporation and the Board on Section 113 of the House bill H.R. 6831. As you know, Section 113 of S.1469 is identical to Section 113 of the House bill and the comments on the House bill would be the same as those on the Senate bill.

I believe that the June 1st letter will be more than adequate to meet the terms of your request. If there is anything else we can do to assist I will be happy to do so.

Sincerely,

JACK CARTER.

FEDERAL HOME LOAN BANK BOARD,
Washington, D.C., June 1, 1977.

Hon. THOMAS L. ASHLEY,
Chairman,
Chairman, Subcommittee on Housing and Community Development, Committee
on Banking, Currency and Housing, House of Representatives, Washington,
D.C.

DEAR MR. CHAIRMAN: This is in response to the oral request of your staff to the Federal Home Loan Mortgage Corporation to comment upon Section 113 of H.R. 6831, a bill to establish a comprehensive national equity policy.

Section 113 would amend Section 302(h) of the Federal Home Loan Mortgage Corporation Act (12 U.S.C. §1451(h)) to add a new sentence expanding the definition of residential mortgage. The operational effect of this expansion is to permit The Mortgage Corporation to make a secondary market in energy conserving home improvement loans pursuant to the corporation's mortgage operations authority under Section 305 of The Mortgage Corporation Charter Act. The expanded definition would cover both secured and unsecured loans which are insured under Title I of the National Housing Act or which are not so insured. The expanded definition is limited to loans "whose original proceeds are applied for in order to finance energy conserving improvements to residential real estate."

A technical review of the text of proposed Section 113 indicates that it is legally sufficient to accomplish its purposes. We can think of no drafting changes which we would make to improve the text of the section. A brief review of the statutory authority of eligible sellers to the corporation indicates that they have authority to originate home improvement loans. However, we do not know the extent to which these loans will be originated by primary lenders nor to what extent they may be offered for sale in the secondary market. Assuming that these loans can be originated by primary lenders on attractive terms, there may be incentives for primary lenders to hold the loans in their own portfolios. Absent adequate incentives the original lenders may make such loans only if they are assured that they can divest themselves immediately, i.e., sell them, becoming mere brokers generating volumes of loans to pass on to any institution which will buy them.

Assuming such loans are made and offered to The Mortgage Corporation, however, we see several potentially prohibitive aspects of this program from the corporation's point of view. First, while it is difficult to provide a confident assessment of any operational or programmatic difficulties the corporation would encounter in implementing Section 113, they could be substantial. The corporation's staff has had absolutely no prior experience in the purchasing of home improvement loans and unsecured loans. At this point, we do not know whether uniform loan documentation will need to be developed, together with underwriting standards, how extensive the changes in our operating procedures might be, or what type of additional employee expertise we may have to acquire to prudently manage such a program. Indeed, it is not yet clear what type of Title I insurance program will be developed by the Department of Housing and Urban Development for these energy conserving improvement loans. A credible assessment of our ability to purchase such loans, in what amounts, and in what time frame, cannot even be made now.

Second, it is envisioned that these loans will be of short maturities (perhaps no more than five years on the average) and in small amounts (perhaps between \$800 and \$1,500). Both administrative costs for packaging very large numbers of small, short-maturity loans and subsequent servicing costs probably will be expensive. We must recognize that these costs are reflected in the price at which these loans are purchased and ultimately in the loan itself. The Mortgage Corporation's experience has been that such secondary market expenditures are cost effective when spread over an extended period of time (30 years) and for relatively large principal amounts (\$30,000), but for shorter maturities and smaller loan amounts we are not sure that the program would be economically viable.

Third, at this time, the resources of the corporation, both financial and personnel, are extended to near capacity. Additional responsibilities will require additional resources in terms of both personnel and capital.

Fourth, the corporation funds its current purchase programs through aggregating the mortgages it buys into large pools and selling interests in these pools to interested investors. The creation of investor interest in this type of investment security has taken years to establish. There is no corresponding investor market for home improvement loans and it would be necessary to find or develop investors willing and ready to accept the yield and risk, etc., peculiar to these loans. The orderly development of such a market may take years, if it could be developed at all. In the meantime, the corporation's level of purchases of these loans would have to remain small to be commensurate with the level of sales.

As you can see, a number of questions remain to be answered before we can determine how the corporation could actually purchase and whether we can

resell the home improvement loans to which reference is made in Section 113. However, the corporation stands ready, within the proper scope of its functions, to assist in alleviating our national energy problems, and from that standpoint, would promptly attempt to develop all necessary mechanisms to implement Section 113. We will be glad to provide any further information that you may desire.

Sincerely,

GARTH MARSTON.

FEDERAL NATIONAL MORTGAGE ASSOCIATION,
Washington, D.C., June 27, 1977.

HON. WILLIAM PROXMIRE,
Chairman, Committee on Banking, Housing and Urban Affairs,
U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: Your staff has asked for our comments on the proposed National Weatherization Act as embodied in H.R. 7893, which is now pending in the other body.

The only provision of the bill directly affecting the Federal National Mortgage Association is contained in section 407, which would amend the FNMA Charter Act to authorize the corporation to purchase title I FHA loans made for energy-conserving improvements and solar energy systems, and similar conventional loans. The corporation already has authorization to purchase any loan insured by FHA, so the effect of this provision would be to authorize the purchase of conventional loans that are similar to title I loans and that are made for the narrow purposes stated. We recognize the fact that the bill deals almost exclusively with aspects of the energy crisis, and while we have no objection to section 407 as written, we would prefer that our legislative authorizations not be drawn so narrowly. We would, therefore, suggest that the bill be amended by striking out lines 3, 4 and 5 of page 46 and inserting in lieu thereof "in loans or advances of credit made for the purposes described in section 2(a) of the National".

Section 403(b) of the bill would amend the National Housing Act to increase the insurable amount, under section 203, of mortgages of property where solar energy systems have been installed. This paragraph has two sets of limitations, one based upon the number of families for which a dwelling is designed, the other stated in terms of percentage of the value of the mortgaged property. An increase of 20 percent in the percent limitations would in many cases authorize insurance of loans in excess of the value of the property; this provision should, therefore, affect only the first set of limitations. We would suggest that the quoted language to be added to section 203(b) (2) be amended to read, "In case of a mortgage of property in or upon which a solar energy system (as defined in section 2(a)) has been installed, the applicable dollar limitation based upon the number of families for which the dwelling was designed is increased by the lesser of (A) 20 per centum (B) the cost of such installation."

Sincerely,

LESTER C. CONDON,
(For OAKLEY HUNTER).

Senator SPARKMAN. Thank you. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Senator Sparkman. Senator Schmitt.

Senator SCHMITT. Thank you, Mr. Chairman. I share Senator Brooke's skepticism, as you are probably aware by now. I have considerable skepticism about the entire national energy policy as proposed by the administration. I don't think the overall plan will work, I am not even convinced that the administration thinks it will work. The resource, economic and philosophical assumptions in many cases, are ridiculous. Labor needs jobs, and I don't think the program deals with that. Industry needs capital and I don't think your program deals with that problem. But more importantly, above all, the

homeowners need gas, oil and electricity so they can operate their homes and automobiles, while we talk about conservation. None of these things seem to be emphasized in the plan enough.

Your statement that if the conservation plan doesn't work in the area discussed today, then more stringent controls will be necessary to make it work disturbs me. Do you mean that you are beginning to work on plans that would establish mandatory standards for homeowners?

Mr. BARDIN. The background, Senator Schmitt, is that in preparing this program, the administration carefully considered and rejected a more stringent proposal, which would be mandatory as to the homeowners, and the administration proposal is today voluntary, as originally presented on April 20.

On the other hand, the House Subcommittee on Energy chaired by Mr. Dingell has marked up our bill and changed it to put in a compulsory feature, so that homes transferred after 1982 would, if there is a mortgage involved from an institution that enjoys Federal support, subsidy, insurance or other, have to comply with standards of insulation and energy conservation. This covers just about every mortgage in the country.

So we do have in the other body a very concrete proposal which at this time has been approved by one of the subcommittees and has a far more mandatory feature than the administration is proposing to you at this time.

Senator SCHMITT. Do you think that is fair? That a loan received under one set of circumstances should be tied now to a new set of circumstances?

Mr. BARDIN. I may have misspoken. That is not the issue in the Dingell committee proposal. It would deal with new mortgages in the future. It doesn't deal with any existing mortgages.

As to the wisdom of the House proposal of course our hope is that we achieve through the congressional process a piece of legislation which has a good chance of accomplishing the objectives of the bill before you, without going the mandatory route. What we are trying to do is to get a result without any unnecessary governmental intervention. We have a big complex complicated country and whatever side of the aisle or political spectrum we may happen to work from, I think we all sense the difficulty of making changes. You referred to that in your opening statement in another context, and it is true here, too. We are optimistic. We think we have a patriotic people which will respond to the combination of the patriotic call to conserve and will be interested in conserving on their fuel bills.

We do think, however, that many of our fellow citizens want the convenience of being able to go to one place, one organization, and get reasonable answers to the whole bundle of questions, rather than having to do the home handyman job or the negotiating job of working it all out.

Senator SCHMITT. Mr. Bardin, do you think the President would veto any bill with mandatory standards imposed on the homeowners?

Mr. BARDIN. I don't think it is my province, Senator, to speculate on that score.

Senator SCHMITT. How firm is your position?

Mr. BARDIN. I think the position is that we have a very serious problem that has to be addressed and one of the areas in which to address it to get cheap Btu's. We have to conserve more and we ought to do it in a reasonable time frame.

One way of accomplishing these goals is the package we have before you, with which I am very pleased. Not having been the architect of the package, but having joined the administration since that time, I am honored to present it to you. If the Congress can achieve the same results by another combination of proposals, so be it. But I think we have a responsibility to get a job done in the most efficient and cost-effective way with the least disruption to the institutions of our political and economic life.

Senator SCHMITT. You say these Btu's that will be saved through the program under consideration today will be relatively cheap. Have you analyzed the energy cost of the program, what it costs to produce the insulation and other materials required in the program?

Mr. BARDIN. Senator Schmitt, we believe it is relatively minor, even taking account of the energy that is consumed in manufacturing such goods as fiber glass.

Senator SCHMITT. Could you supply for the record an estimate of that energy cost?

Mr. BARDIN. Certainly.

[The following was received for the record:]

Mineral wool (the generic name for fiberglass and rock wool) is made from molten glass, furnace slag, or rock. The molten mineral is subjected to a strong blast of air which forms long, fine fibers or threads which are "spun" into a wool-like material. The key process materials and steps are:

Fiberglass

Sand and Soda Ash.
Melting Furnace.
Spinner.
Phenol Binder.
Drying Oven.
Vapor Barrier Backing.

Rock Wool

Slag.
Melting Furnace.
Cupola.
Spinner.
Phenol Binder.
Drying Oven.
Paper Backing.

This production process is energy-intensive. However, for each Btu used in the production process, 16-20 Btu's are saved per year in each home that installs insulation depending on whether or not the home has air conditioning. Assuming 50 percent of the homes have air-conditioning and an insulation life of 30 years, 1 Btu consumed in manufacturing insulation saves about 540 Btu's over the life of the insulation.

Cellulosic insulation is made by shredding and milling paper products—primarily used newsprint—or wood pulp and treating the resulting fluffy materials with fire-retardant chemicals. These chemicals—principally have acid but also ammonium sulfate, calcium sulfate, aluminum sulfate and sodium carbonate—add approximately 20 percent in weight to the pulverized paper.

Although the manufacture of paper is energy-intensive, the paper used in the production of cellulose is excess (waste) and would have been manufactured regardless of the demand for cellulose as an insulating material. Although energy is consumed in the mining of borax, it is felt that the production of cellulose is much less energy intensive than the production of fiberglass and negligible over all.

All in all, the use of insulation saves much more energy than expended during the production process.

Senator SCHMITT. Have you considered the capital costs of the program?

Mr. BARDIN. Yes, we have.

Senator SCHMITT. Have you related that capital cost to other competing demands for capital in the total energy policy proposed by the administration?

Mr. BARDIN. Yes, the national energy plan actually comes out with dollars per barrel equivalent which range from \$2 to \$7 per barrel saved, as contrasted with a world price today of \$13.50 for a barrel of oil imported. That is the price of an incremental barrel. If we consume more in this country, we do it by importing an extra barrel of oil. That is the incentive price the administration program would offer to the oil company that goes out and explores and finds new oil in this country. It is the highest incentive price that anybody is being offered in the world today. We retain more of a price per barrel under our plan than in many other countries in the world, where the Government has expropriated or takes a bigger Government share.

I have never heard anybody from the oil industry or otherwise say that \$13.50 as proposed by the President for new discovery of oil in this country is not an adequate incentive. But compare the \$13.50 with a saving on the order of \$7 or less, and I say it is much cheaper to accomplish that increment in supply by cost effective conservation, all other things equal, than by the new supply initiatives, which are also needed and also are part of the national energy plan.

Senator SCHMITT. We could get into another discussion about the incentives for the production of oil and gas. But my questions has to do with the capital for this particular program.

Have you estimated the capital requirements for this particular program and how those capital requirements will compete with other requirements within the financial structure of this country?

Mr. BARDIN. We would be happy to provide you with a calculation. [The information follows:]

We have estimated that the President's goal of insulating 90 percent of American homes will require \$22 billion in private expenditures, in constant 1977 dollars. The Treasury Department has estimated that the total reduction in tax receipts because of this expenditure would be \$5.4 billion, also in 1977 dollars. Since the program will be spread out over several years, the totals in current dollars would be \$30.5 billion in expenditures and \$6.9 billion in revenue losses.

Senator SCHMITT. You mentioned earlier that you figured the cost of each visit by the utilities to provide services in estimating what could be done on an individual home in terms of the implementation of this program at \$20 to \$40. Where did you get those costs?

Mr. BARDIN. From the experience of utilities which are running such programs now.

Senator SCHMITT. That seems extraordinarily low considering the complexity of the average home in terms of heat losses and insulation requirements, the cost of visits to the home, labor costs, and so forth.

Mr. BARDIN. I don't think so, because, Senator Schmitt, we are not proposing an engineering study of the individual home. We are proposing a quick kind of study.

When I lived in Washington the last time, I did this to my own house myself. This was before the energy crisis shot up. I inspected the house, saw what kind of insulation I had, I went and talked to the people at one of the big private supply stores in town and I concluded I needed more insulation. It took me about 2 hours worth of inspecting, talking, telephoning and deciding and then I bought the insulation and I installed it.

When you talk about clock thermostats, it may take a little more evaluation.

One of the points that Secretary Simons made I think is very important. Under our proposal there would be a limited list with no catch-all at the end. It would be a relatively simple program to over administer.

It is true that we might miss an additional measure which is useful in one particular building in one part of the country. But at least it gets you a relatively quick answer to your question. Having come here from State government service, where I administered one of your major programs, the water pollution facilities program, I can't overemphasize to you my personal conviction that clear cut guidelines by the Federal Government, save us so much in terms of the administrative friction of getting the job done. I hope that continues as a feature of the legislation that is finally approved.

Senator SCHMITT. Could you provide the committee a more detailed breakdown of that \$20 to \$40 cost?

Mr. BARDIN. Yes.

Senator SCHMITT. I think it would be of interest to us.

My time is up. Mr. Chairman, I don't know whether you have sensed the number of areas where we are going to be getting information for the record, but to me that continues to indicate how little thought has gone into some of the proposals that the administration is putting before us. I hope it is a signal to them to start putting that thought in, in addition to trying to sell this program to us here on the Hill.

Thank you.

[The FEA submitted the following information:]

Section 103(a)(2)(A) of S. 1469 would require the utility to offer "to inspect the residential building to determine and apprise the residential customer of the estimated cost of purchasing and installing each suggested measure." Section 102 (368-d-3) of H.R. 7893 would require the utility to offer a service "to inspect the residential building for purposes of conducting an energy audit and determining and apprising the residential customer of the estimated cost and savings of purchasing and installing appropriate approved energy conservation measures."

Energy inspection costs will vary substantially with the degree of sophistication and amount of information provided by the utility. Washington Gas Light provides home inspections for ceiling insulation to its customers at no charge. The company has no direct accounting of inspection costs, but stated that their inspectors average three to five audits per day. Resource Conservation Engineers, a home energy conservation firm located in Cambridge, Massachusetts, estimated for us that the type of inspection contemplated in the National Energy Act would cost between \$35-\$50, without accounting for the economies of scale likely from a large-scale inspection program. In 1976, the Mayor's Energy Office of Jacksonville, Florida, reported to the FEA that a home energy inspection program run in conjunction with a CETA training program cost the city \$15 per audit in salaries and travel.

The National Energy Act proposes an audit which would involve cost estimates for up to ten home conservation measures, along with less specific savings estimates. We believe that an inspection service whose goal was to inspect a large fraction of customer's homes over a 3 to 5-year period would produce significant economies of scale over existing utility or private inspection services as a result of reduced travel expenses and increased experience with similar homes.

Further information about existing audit programs will come from a survey of utility conservation programs now being conducted for ERDA and FEA. Preliminary results of this survey will be available in August.

The CHAIRMAN. Senator Morgan.

Senator MORGAN. Mr. Bardin, if I understand the administration's proposal correctly, you would require that each utility company provide inspection services, is that correct?

Mr. BARDIN. That is correct.

Senator MORGAN. They would also have to provide installation service?

Mr. BARDIN. If the customer desired it, that is correct.

Senator MORGAN. And therefore in all likelihood some customers would desire it, so it would put every utility in the country in the installation of insulation business, wouldn't it?

Mr. BARDIN. It would probably put utilities into the business of selecting a subcontractor or several subcontractors to do the installation.

Senator MORGAN. Either doing that or doing it themselves.

Mr. BARDIN. That is correct.

Senator MORGAN. Also your third requirement is that they provide financing for installation?

Mr. BARDIN. If the customer so desires, yes.

Senator MORGAN. The thing that bothers me, Mr. Bardin, is first of all I have no choice in the utility that is going to furnish me the electricity or gas or oil. With oil I do, but with gas or electricity, I don't. If you are going to put them in a position where they are going to be involved in the insulation business and financing business, then they have a decided advantage over everyone else, because they have access to me and my home, because I can't buy electricity or gas from anyone else.

Isn't this going to do a lot to create monopolies or drive independent businessmen out of business? I am out in an area, and the utility has its service and they send their inspector around, as mandated and he has got to provide me with information and urge me to do it. This gives him access to me. Then if he is going to get in the insulation business, which he has got to do, because some of his customers will demand it, he will want to make a profit on it, and if he has got to get into the financing business, I would think his stockholders would demand he make a profit out of it.

It seems to me it puts them in an unfair position with regard to other suppliers and contractors. I think we ought to take another look at it.

Mr. BARDIN. Well, obviously there is room to debate this issue. We have conscientiously looked at that question. Our conclusion is that the energy problem is great and the need for conservation is immediate. People also need to be able to get answers in one place, and

this need is such that we ought to be willing to supervise a program, building in important safeguards, in order to respond to it.

Let's keep in mind that people are likely to be approached by their gas utility and by their electric utility, and if they are buying fuel oil, they will also be approached by the fuel oil dealer, if he wants to get into it as several of the fuel oil dealers in the country have. There is no reason why individual contractors and home improvement companies shouldn't be approaching people or even set up a statewide organization to approach people.

Senator MORGAN. When the Federal law mandates they approach the people, it seems to me you are blanketing the area so as to eliminate competition.

You mentioned the fact that you are a lawyer. I am sure you are aware of a statement we always say, a bad set of facts makes bad law. We have got a bad crisis in energy, but if we adopt a remedy that will drive out competition in the insulation and building business, we may end up worse off.

Mr. BARDIN. We certainly would not want to drive out competition and I think we would be more than sensitive to any suggestions the Congress comes up with, or that you, Senator, based on your legal experience and State service experience, would come up with to tell us what ought to be written in as a safeguard into this program.

Our objective is the opposite of stifling competition. We do not want to carve up the territory between the gas and electric companies. We want a multiplicity of offers to the homeowner so he can choose among them.

Senator MORGAN. He is going to have a multiplicity of about two or three, the gas company and the electric company, or the gas company and the oil company.

Mr. BARDIN. I think—I see on my list, for example, the North Carolina Gas Corp. is one of the pioneering companies.

Senator MORGAN. That is right. They are doing it voluntarily.

Mr. BARDIN. Yes. I would be interested to see how these things work in your particular State. But I don't see why we should have a smothering of competition because the utility's major interest is not going to be home improvement business.

Senator MORGAN. But you are going to require them to talk to them, so they have to do that. Then they just happen to have the capital to install it, and then finance it. And the convenience of that to the homeowners in my opinion will drive the independent people out of business.

Let's go to another question. Which is a better insulation material, fiberglass or cellulose?

Mr. BARDIN. Well, each has its advantages and disadvantages.

Senator MORGAN. Which is the most used?

Mr. BARDIN. For new homes, fiberglass is overwhelmingly more popular.

Senator MORGAN. There are only three companies in the United States that manufacture it.

Mr. BARDIN. Three companies dominate that market.

Senator MORGAN. Are there any other companies abroad? Do we import fiberglass insulation?

Mr. BARDIN. I doubt it, it is very bulky, and the transportation costs would be large.

Senator MORGAN. Are we doing anything about looking at ways of providing more competition in the supplying of this kind of insulation?

Mr. BARDIN. Yes, Senator, we have projects underway with the other agencies of the Federal Government. We are interested in promoting the appropriate use of cellulose material with proper fire retardation qualities. That is a major opportunity which is much less capital intensive and there are no problems with patents.

There are well over 200 companies in the cellulose business now. So we are definitely looking into it and intend to step up that effort. It is a very serious possibility.

Senator MORGAN. What are the three companies that manufacture fiberglass?

Mr. BARDIN. Owens-Corning Fiberglass, Johns-Manville, and Certain-Teed.

Senator MORGAN. Probably all three of those are in the top 200 corporations in the country, aren't they?

Mr. BARDIN. I don't know.

Senator MORGAN. Just this past week I met with some home builders, and there are about five roofing manufacturers in the whole country that really dominate the market. There are about five plywood manufacturers, and I have about decided if we put wage and price controls on the top 200 corporations in this country, we might do something to stop inflation. In the home building business, there is not competition in suppliers. I think this is something HUD ought to look at and not wait for the FTC. During the recession the price of these things didn't come down. Until we do something about making a free market, we are not going to reduce the cost of housing.

Mr. SIMONS. Senator, I think one of the primary causes of the problem of supply has been the severe fluctuations the industry has been subject to in the past. Due to that, there has been lack of incentive to make major capital investments because of these cycles. This industry is definitely undersupplied, the facilities for supplying it are not there. One of the things incumbent upon us, which the Department realizes, is to take every step possible to even out the production of housing, so the manufacturers and investors will realize they can make an investment and know the facilities will be used.

Senator MORGAN. I think you made a key point. You have a peak, and then the housing starts stop and they all go bankrupt.

Mr. SIMONS. I have been a small home builder myself.

Senator MORGAN. I am opposed to tax credits. These gimmicks are used for people who have a lot of opportunity to invest and to avoid paying income tax, while those of us on a salary end up paying a lot of tax. Isn't there another way of doing this? There must be 25 different tax gimmicks. Last year during the tax bill, the first question I asked the corporations is how much taxes did you pay last year. One man who rated in the top 500 got red in the face, and said "You asked a nasty question." I said "How did you get out of paying it?" and he read off tax credit after tax credit. Unless you change my mind, I am not ever going to vote for another tax credit. You

have a big landlord, who owns a lot of buildings, or a lot of multi-family dwellings. He will get a 20-percent tax credit. So he sees this year his income is going to be big, so he says I will go down and insulate all of these buildings, and I will get a 20-percent tax credit. So he ends up paying no taxes while the rest of us on salary pay it.

Is there something we can do about that?

Mr. BARDIN. Under the administration proposal, the individual homeowners would have a tax credit that is limited to \$410 maximum on retrofitting of the principal residence. That would mean that if he owed \$410 of Federal income taxes, it would be a total wash. The credit would eliminate the tax liability.

On the other hand, if somebody who is in that low a tax bracket only has a deduction, he would be getting a reduction, of only 14 percent of the total tax owed the Government. So the poorer person is helped by the tax credit rather than deduction.

Senator MORGAN. Is there any limitation on the multifamily?

Mr. BARDIN. No; there is not. There is a time limit on the business credit, but not a dollar limit, at least as far as the individual home owner. It seems to me that the tax credit is a more effective way of getting people to insulate their homes than a deduction. That doesn't answer all of your question.

Senator MORGAN. It is a good way to put more tax on the average income people.

Thank you, Mr. Chairman.

The CHAIRMAN. Gentlemen, I want to thank you very very much for your testimony. There are a number of questions that Senator Brocke said he would like to have answered for the record, and I am sure other Senators may have questions they would like to ask, too. I want you to know we have known what a competent man Secretary Simons is. Mr. Bardin, this is your first appearance before the committee and I must say I am tremendously impressed. I know we disagreed with you vigorously, but you presented your viewpoint with great force and intelligence. Some people would say you did a superb job on a hopeless cause, but I hope not.

Mr. BARDIN. Aside from the last remark, Mr. Chairman, I appreciate the compliment. I am glad the observation is not one shared by the Chairman. We look forward to working with you.

The CHAIRMAN. Our final witnesses are Robert Arquilla, president of the National Association of Home Builders, and Harry G. Elmstrom, president of the National Association of Realtors.

Mr. Arquilla, you have a substantial statement here, it is a fine statement, and it will be printed in full in the record, including the attachments which you made to it. I hope you can summarize it as much as possible.

STATEMENT OF ROBERT ARQUILLA, PRESIDENT, NATIONAL ASSOCIATION OF HOME BUILDERS; ACCOMPANIED BY JENNIFER SAUVE, AND DENNIS O'TOOLE, LEGISLATIVE STAFF

Mr. ARQUILLA. I will try to. Mr. Chairman, with me today I have Jennifer Sauve, and Dennis O'Toole from our legislative staff.

[Mr. Arquilla read the statement as follows:]

STATEMENT OF THE NATIONAL ASSOCIATION OF HOME BUILDERS

Mr. Chairman and members of the committee, my name is Robert Arquilla. I am President of the National Association of Home Builders. NAHB is the trade association of America's home building industry. Our membership totals over 87,000, located in 649 associations throughout the 50 states and Puerto Rico. I am accompanied today by J. Denis O'Toole, NAHB's Deputy Legislative Counsel, and Jennifer Sauve, Assistant Legislative Counsel.

We appreciate the opportunity to present our views on S. 1469, the National Energy Act.

NAHB recognizes the critical nature of the energy situation in the United States and the home building industry pledges its support and assistance in alleviating this problem. As part of this effort, I am pleased to report that our Association has formed a Special Committee on Energy.

This committee is composed of builders from every region in the country, and it is charged with the responsibility for formulating NAHB's policy on energy-related matters. Among the areas of study by the Committee are: energy conservation, alternative sources of energy, progress and technological improvements in the area of solar energy, and improved education of both the public and the builder as to the need and methods of achieving energy conservation.

At our recent Spring Board of Directors' meeting, NAHB adopted an Energy Policy Statement based on the recommendations of our Energy Committee. (Attachment "A" is a copy of this Statement.) While this statement is primarily a general statement of principles supported by NAHB, we expect our Committee's work to ultimately result in the development of recommended thermal standards for new residential dwellings.

NAHB has been aware for some time of the shortage of energy supplies in certain regions of this country and the increasing cost of all energy production to the consumer. Builders have attempted to address this situation by the use of better energy conservation design in the planning of new homes and apartments, and through the use of improved technological processes in the actual construction of the dwelling unit. NAHB's Research Foundation is continuing its work with Federal agencies, and the private manufacturers and suppliers of residential and commercial building products, on applied research that will permit the home builder to improve the energy efficiency of new residential and commercial structures.

However, since new construction each year accounts for the addition of only about two percent of the total housing stock—with most new homes generally being more thermally efficient than older homes—the greatest potential for energy conservation in buildings lies in retrofitting existing homes and buildings with present energy conserving technology. Thus, the President's energy proposals as set forth in S. 1469 have correctly placed greatest emphasis on the retrofitting of existing buildings. However, one caveat is that in many cases the cost of retrofitting an existing structure may approximate or exceed the cost of incorporating energy-saving technology into a new structure.

EXISTING STRUCTURES

NAHB supports the President's proposals for tax incentives for qualified residential energy conservation expenditures. The NAHB Research Foundation estimates that retrofitting just half of the existing single-family detached homes with a practical package of energy conserving items such as insulation, storm windows, storm doors and weather-stripping, would save up to one million barrels of oil per day.

One of the national energy goals stated in Section 3 of S. 1469 is to insulate 90 percent of all American homes and all new buildings by 1985. According to the estimates of NAHB's Research Foundation, there will be at least 77 million units in our national housing stock by the end of 1985. It is our best estimate that in order to meet the goal of S. 1469, approximately 47 million homes will have to be retrofitted. (See Attachment "B".) Of this total, we believe that 6.5 million to 7 million homes can be insulated with cellulose fiber and about 45 million homes could be insulated with mineral fiber. However, it

must also be taken into account that during this period approximately 16 million new homes will be constructed which will also require insulation. Consequently, we project a shortfall of 15 to 25 percent in the number of units that can be insulated by 1985 given projected source supply. We also project shortfalls in the supply of storm windows and storm doors due to the widely fragmented nature of that business. There is, however, probably adequate weather stripping and caulking and sealing capability to satisfy the demand of the next eight to ten years.

In addition to the problem of shortages in insulation material, another major area of concern of NAHB is with the role assigned the gas and electric utility companies in the retrofitting process. Under Section 102 of S. 1469, the FEA Administrator, after consultation with the Secretary of HUD, is to develop residential energy conservation plans. Under Section 103, these plans are to require that gas and electric utility companies offer their customers a residential conservation service, which would include inspecting the home to apprise the customer of the estimated cost of retrofit, installing energy conservation equipment, and providing for repayment to the utility through additions to monthly utility bills. Two effects of such a program are, one, that a comprehensive utilities weatherization program will exacerbate the shortage of insulation materials. Secondly, although a customer would have the option of having the equipment installed by a supplier other than a public utility, utilities will have an advantage over all other contractors and suppliers because they have access to every residential consumer of energy. The result of this unfair advantage may be to force the independent contractor out of business.

In an attempt to rectify this serious problem, Section 102(d)(2) requires that each State utility regulatory authority submit a plan to FEA Administrator which "contains an adequate program for preventing unfair, deceptive, or anticompetitive acts". However, even with this provision, NAHB is concerned that the unique position of a utility company and the ease to the consumer of one-stop shopping will adversely effect competition.

In its version of the bill, the Subcommittee on Energy and Power agreed to prohibit utilities from installing or subcontracting the installation of weatherization materials for two years. At that time, the FTC and FEA would assess the impact of this program and the utilities could assume such a role if the effect would not be anticompetitive.

NAHB believes, however, that the approach taken in the National Weatherization Act, as reported by the House Committee on Banking, Finance and Urban Affairs is preferable. The Banking Committee's bill would limit public utilities to an informational role. Utilities seeking to expand their role to include installation and financing could do so only where the FEA Administrator determined such a role would be consistent with Federal Trade Commission policies on competition and that the cost of any such service would be reasonable. This program is far preferable to the mandatory Federal nature of the proposal in S. 1469 which would require utilities, with their protected monopoly status, to enter a field in which they have no special expertise.

Senator Brooke, in his statement accompanying the introduction of S. 1304, also raised serious questions about the Administration's proposal that electric and gas utilities undertake to insulate the some of their customers. One way of dealing with the problem is to make low-interest loans of Federal funds available for insulation and retrofitting residential and small commercial buildings, as provided in S. 1304.

As we stated in our testimony before the House Subcommittee on Housing and Community Development, we believe it is also important to the success of the retrofit program that there be a tie-in with the secondary mortgage market in order to encourage maximum lender participation. Therefore, we support Section 113 of S. 1469, which authorizes the Federal Home Loan Mortgage Corporation and the Federal National Mortgage Association to purchase residential energy conservation loans.

NAHB recognizes that just as in the primary residential mortgage market, there are thousands of low income families who cannot otherwise afford to finance these energy conservation improvements without some form of government assistance. We, therefore, support Section 115 of S. 1469 which would increase funding for the existing low-income residential conservation program (weatherization) to \$130 million in fiscal 1978 and \$200 million per year in fiscal years 1979 and 1980.

SOLAR ENERGY

As pointed out in our policy statement, solar energy appears almost certain to play a major role in meeting the nation's long-term energy needs. In addition to the residential energy tax credit proposed in the President's plan, we support the credit for installation of qualified solar equipment.

By 1985, the goal as stated in S. 1469 is to have solar energy in use in more than 2.5 million homes. As the members of the Committee are aware, HUD's Office of Policy Development and Research currently has underway a solar energy residential demonstration program and has funded the costs of solar equipment for over 1,500 dwelling units as of January, 1977, with many home builders actively participating in the program and anxiously awaiting the funding of additional new projects.

However, NAHB is advising its members to proceed cautiously in the use of solar systems on three counts. First, while there are a large number of reputable manufacturers of such systems, the state of the art is in its infancy and many of the devices are unproven. Second, although the solar heating of domestic hot water is now economically feasible in many sections of the country, we believe caution should be exercised both as to the geographical location suitable for such solar heating and the cost effects of the systems upon the structure of the home necessitated by the inclusion of the solar unit. And, third, there are no industry standards or criteria for residential solar energy.

The energy saving potential of solar equipment in residences is great, but so is its potential cost. Therefore, we support the concept of low interest loans to homeowners and small businesses for installation of solar, energy conservation and other renewable energy source equipment and measures, provided in S. 805, introduced by Senator McIntyre. That bill would also provide grants to those whose incomes are less than \$30,000, to cover-up 20 to 25 percent of the purchase and installation costs.

MANDATORY INSULATION

The general thrust of the National Energy Act is toward the use of voluntary energy conservation measures, except for the required participation by electric and gas utilities. In the area of residential dwellings, of new as well as existing houses, we recommend that the Congress pursue the voluntary approach as its first line of action, and only if these measures prove insufficient to achieve widespread energy conservation should mandatory measures be resorted to. A type of voluntary effort we support is the tax credit for qualified residential energy conservation expenditures.

On the other hand, we oppose the course of action tentatively recommended by the House's Subcommittee on Energy and Power, which would deny mortgage financing, effective January 1, 1982, to housing which fails to meet Federal energy efficiency standards. While a few exemptions would be provided (such as for low-income homeowners), this provision would apply to virtually all existing principal residences. Implementation of this provision could be postponed until January 1, 1985, if determined to be necessary by the FEA Administrator.

NAHB opposes a mandatory insulation provision on several grounds. First, we indicated in our recent testimony before the House Committee on Banking, Finance and Urban Affairs on H.R. 6831, we do not believe that there will be sufficient insulation available to retrofit the volume of existing housing that would be required under the Subcommittee's proposal and also provide the necessary insulation for new housing. We believe that a serious shortage of insulation would occur under the Subcommittee's proposal, and artificially inflate the cost of new housing production as well as of the retrofitting program.

NAHB also believes this proposal could have an adverse impact on energy conservation efforts during the period of development of standards as a result of the uncertainty with respect to what standards might be imposed. Under the Subcommittee proposal, final energy conservation standards will not be promulgated until two years after enactment of the National Energy Act. Homeowners will be dissuaded from insulating their homes for the interim period not knowing whether the devices they plan to install will meet the future standards.

The House Committee on Banking, Finance and Urban Affairs has also considered the proposal added by the Subcommittee on Energy and Power and decided that mandatory Federal action requires in-depth consideration. NAHB supports the House Banking Committee's version, which authorizes the Secretary of HUD and the Administrators of VA and FEA to study a provision requiring mandatory Federal action that all residential dwelling units meet applicable energy efficiency standards. The study is to focus on the need for such a provision, the feasibility of mandatory action and the problems which are likely to appear. We would prefer to see the approach to voluntary action thoroughly pursued before resorting to coercive governmental action.

NEW BUILDINGS

Under the President's National Energy Plan, the effective date for implementation of energy conservation standards for new residential and commercial buildings will be advanced by one year, to 1980.

In the interim period between now and 1980, NAHB is taking the initiative in developing tough, but reasonable, thermal efficiency standards that can be used throughout the residential construction industry and provide a guide to the consumer as he shops the marketplace for housing. We hope that HUD and the new Department of Energy will carry out Congress' direction under Section 309 of the Energy Conservation and Production Act and consult with our industry in the development of performance standards. It is our expectation that when 1980 arrives, the NAHB developed standards will be a guide that will not materially differ from the Federal standards so that there will be minimum disruption in the construction of new housing.

In conclusion, I would like to reiterate the closing sentence of our policy statement that "NAHB will continue its leadership role in the area of energy conservation so vital to our country's economic health and growth."

Thank you for the opportunity to present our views on this most important subject.

ATTACHMENT A

NAHB POLICY ON ENERGY APPROVED BY EXECUTIVE COMMITTEE

NAHB recognizes the critical nature of the energy situation in the United States and pledges to provide support and assistance as it can to alleviating our nation's energy concerns.

With the combined abilities of our membership and the expertise of our research and technical staff, we assess our responsibility as one of expanding our role for aiding energy conservation and resource development techniques relevant to new and existing residential and commercial buildings. Our goal is to reduce energy consumption and therefore extend the time for use of available resources.

NAHB recognizes the necessity for energy conservation, not only for our continued healthy economic growth as a nation, but also to reduce our vulnerability to potentially harmful embargos, dramatic shifts in our balance of trade and possibly our future political position in the world of nations.

While reductions must be made in all categories of energy use, it is apparent that major contributions come from existing and new residential and commercial buildings and from transportation. Industrial use of energy is essential to the economic well being of the country and because efficiencies in production processes are dictated by the competitive nature of our society, further major reductions in energy consumption in this category are not likely.

The immediate imposition of the most advanced technologies for obtaining greater gasoline mileage in motor vehicles is obviously of great importance. However, the immediate utilization of the best possible techniques for conservation in new and existing buildings is of equal or even greater importance because of the relative life of buildings compared to motor vehicles. Automobiles have a relatively short lifespan. Buildings, on the other hand, will continue in use for generations and consequently, must be energy efficient as soon as possible.

We, the members of NAHB, recognizing the importance of energy conservation in buildings, have in the past years developed and applied construction practices and utilized materials which have contributed greatly to increased energy efficiency in the homes and structures we have built. We will continue

to incorporate into all newly constructed homes, apartments and commercial buildings the requisite components to control the rapidly increasing cost of home heating and cooling. These costs are in many areas approaching the traditional monthly costs of home ownership.

NAHB has historically, and correctly, maintained a policy based on performance rather than specification standards in dealing with building codes and building components. The Department of Housing and Urban Development, is currently developing such performance standards for energy conservation in response to Public Law 94-385. In the interim period, we have developed recommended criteria for thermal efficiency to be applied to new single family housing before these HUD standards are fully developed and promulgated.

The criteria as developed will insure cost effective thermal performance while maintaining freedom of choice in design and selection of energy conserving techniques.

As part of its ongoing service to its members and as part of its share in helping to reduce energy consumption in our country, NAHB will continue to provide information on building techniques, thermal insulation standards and the use of innovative devices, all designed to reduce energy consumptions or increase energy efficiency. NAHB will continue to conduct seminars on designing, building, and selling energy conserving homes. These seminars will be broadened in scope, and provided at very nominal costs, to NAHB members, representatives of all levels of government and to the general public.

The NAHB Research Foundation will also continue to study and recommend new techniques and new technology for energy savings in all buildings which can be accomplished in the most economical manner possible using products that meet recognized standards.

It will abide by its present practice of not certifying particular manufacturers or particular products unless they have been tested in its laboratory and which have obtained its label.

We call upon Congress and the Administration to establish a graduated scale of tax and investment credits as incentives related to any program of energy conservation in new building construction. Such tax credit must be available to the buyers of new homes and investment credits to builders of apartments and commercial buildings who invest their funds to attain and/or exceed established energy savings standards before any established deadline date.

This incentive program will operate in a manner similar to that proposed by the administration for the use of solar energy and the retrofitting of existing buildings. We support the Administration's proposals for tax incentives for the retrofitting of such existing buildings.

In addition, we urge the Administration to provide low cost government guaranteed loans for retrofitting existing structures in order to further encourage conservation efforts.

In determining the effectiveness of energy conserving measures, the basis from which the savings in energy are to be recognized should be the present HUD MPS's for residential construction and the ASHRAE 90-75 standard for commercial and industrial buildings.

NAHB will continue to oppose legislation dealing with energy "labeling" of homes. We do this because there is no way to properly account for differences in family size, energy needs and life styles. However, we recognize buyers should be fully informed and builders will provide statements of the calculated percentage difference in heat loss or heat gain from the "base" in order to determine the level of tax and investments credits in the incentive program.

Since residential and commercial buildings are largely dependent, at present, on fossil fuel or electricity derived from fossil fuel, for their energy needs, we actively support the expanded use of coal by both the utilities and by industry, based upon the application of sensible, realistic and economically feasible environmental standards.

NAHB has had a policy to urge the immediate de-regulation of the field price of new natural gas produced for inter-state commerce. We continued to support those positions which would result in the end of price control.

We support such measures as would permit increased prices on new natural gas in order to encourage the investment necessary for the discovery and development of new gas wells, with the expectation that at such time as there is a price balancing relationship between gas and oil, that price controls on both of these fuels be removed.

Solar energy appears almost certain to play a major role in meeting our nation's needs in the long term.

However, despite what will be an increased demand for the use of solar energy in single family homes and commercial buildings, we advise our members to proceed cautiously in their consideration of solar systems. While there are a large number of reputable manufacturers of such systems, the state of the art is in its infancy and many of the devices are unproven.

The NAHB Research Foundation and the Technical Services Department will continue to keep our members advised as solar technology improves. Solar heating of domestic hot water is now economically feasible in many sections of the country, but again, caution should be exercised both as to the geographical location suitable for such solar heating and the costs effects not only for such system but also upon the structure of the home necessitated by the inclusion of solar heating for domestic hot water.

NAHB supports continued research and development by the Federal Government into other energy resources such as wind power and geothermal.

Similarly, we actively support the efforts of the utility companies to increase the number of nuclear generating plants fueled by uranium using light water reactors, or other proven nuclear energy.

NAHB urges that all building codes be re-examined to eliminate those requirements that are wasteful of energy.

NAHB supports increased research and emphasis on local management techniques in reducing the consumption of electrical energy. Such techniques as time of day metering and peak load pricing should be incorporated into comprehensive rate structures which equitably distribute the cost of electrical generation and transmission while minimizing the capital outlay necessary to provide safe, dependable and adequate electric power.

As the nation's largest trade association of residential and commercial builders, NAHB will continue its leadership role in the area of energy conservation so vital to our country's economic health and growth.

ATTACHMENT B

Our projection of the number of residential units which must be insulated to meet the President's goal is based on the following statistics and assumptions:

We estimate that there are standing some 69 million residential units not including vacation and mobile homes. Further, that new construction will add approximately 2 million residential units per year for the next 8 years. Therefore, at the end of 1985 we envision a gross of 85 million residential units minus removals.

NAHB Research Foundation data show a remarkable correlation in removals to the existing house inventory at any given time. Very close to 1 percent of any year's inventory is removed in that year. We, therefore, estimate that over the next years slightly less than 8 million units will be deleted from the housing inventory. This would give us a net inventory at the end of 1985 of at least 77 million units.

Of that inventory, we estimate 9 million units in existence today which would not require significant insulation improvement. Most of these are electrically heated and/or air conditioned. Further, we assume that the 16 million units cited above will have proper insulation. Therefore, from the 77 million units we can deduct 25 million units requiring no additional insulation at the end of 1985. This leaves 52 million units requiring some or a great degree of improvement. As the President has referenced a 90 percent figure as the goal of his program, it follows that 90 percent of 52 million units is 47 million units.

Assuming today's technology, it would seem that the principal insulating products for existing homes over the next 8 years will be either cellulose in loose fill form or mineral fiber in blanket or loose fill form.

Based on information received from the National Cellulose Insulation Manufacturers Association, we estimate an industry production in 1976 of 300,000 tons per year. Assuming a 15 percent production growth for that industry for each of the next 8 years, we can calculate a total 8 year production of cellulose fiber of 8.236 billion pounds of cellulose insulation per residential unit. This creates a cellulose insulation capability of 6.5 to 7 million homes for the 8 years.

The mineral fiber industry (Fiber glass and rock wool) capacity in 1974 was on the order of 1.3 billion pounds per year. This figure is based on personal knowledge of that industry. Estimating a 30 percent growth in capacity since that time, we can estimate a production of 1.7 billion pounds for this year. At the same 15 percent per annum growth rate for the next 8 years, we can calculate industry capability of 23 billion pounds for the mineral fiber segment. We estimate a residential unit need of 500 pounds leading to the conclusion that the mineral fiber industry can provide insulation for 46 million homes.

We estimated above that the national target was 47 million residential units. It may be seen that our projection of the industry capability is on the order of 52 million units for both cellulose and mineral fiber combined. If we subtract the 16 million new units coming on-stream both now and at the end of 1985, we find a retrofit capability of about 36 million units. When this is compared to the 47 million unit goal we anticipate a shortfall of about 22 percent.

The above shortfall prediction is artificially precise. When we take into account the variables in our growth assumptions, insulation problems on a local basis in various parts of the country, and the fact that many side-walls cannot or will not be insulated, we must conclude that the shortfall will probably be in the range of from 15 to 25 percent.

The CHAIRMAN. Thank you very much, Mr. Elmstrom.

**STATEMENT OF HARRY G. ELMSTROM, PRESIDENT, NATIONAL
ASSOCIATION OF REALTORS; ACCOMPANIED BY ALBERT E.
ABRAHAMS, VICE PRESIDENT, GOVERNMENT AFFAIRS**

[The statement read by Mr. Elmstrom follows:]



NATIONAL ASSOCIATION OF REALTORS

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Statement of

HARRY G. ELMSTROM, PRESIDENT
 NATIONAL ASSOCIATION OF REALTORS®

Before the Senate Committee on
 Banking, Housing and Urban Affairs

on

Title I of S. 1469, regarding
 Energy Conservation in Buildings

June 27, 1977

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MR. CHAIRMAN AND MEMBERS OF THE COMMITTEE.

MY NAME IS HARRY ELMSTROM. I AM PRESIDENT OF THE 500,000 MEMBER NATIONAL ASSOCIATION OF REALTORS. WITH ME TODAY IS ALBERT E. ABRAHAMS, VICE PRESIDENT OF OUR GOVERNMENT AFFAIRS OFFICE. WE APPRECIATE THE OPPORTUNITY TO COMMENT ON PRESIDENT CARTER'S PROPOSED NATIONAL ENERGY PLAN.

RESOLVING OUR ENERGY PROBLEM IS KEY TO BOTH THE SECURITY AND ECONOMIC VIABILITY OF THIS NATION. REALTORS BELIEVE THAT THE CONTINUED SEVERITY OF OUR NATION'S ENERGY PROBLEM WILL REQUIRE SUSTAINED ATTENTION FROM BOTH THE PRIVATE AND PUBLIC SECTORS.

THE NATIONAL ASSOCIATION OF REALTORS SUPPORTS THOSE PORTIONS OF THE PRESIDENT'S ENERGY PLAN, S.1469, DEALING WITH ENERGY CONSERVATION IN THE HOME. THE PLANS OFFER HOMEOWNERS AMPLE OPPORTUNITY TO PURCHASE AND INSTALL ENERGY CONSERVATION MEASURES IN THEIR HOMES. WE ARE VERY ENCOURAGED BY THE VOLUNTARY APPROACH IN S.1469. S.1472, THE TAX PROVISIONS OF THE ADMINISTRATION PROPOSAL, WHICH IS NOW BEFORE THE SENATE FINANCE COMMITTEE, PROVIDES TAX CREDITS FOR ENERGY CONSERVATION EFFORTS IN BOTH SINGLE FAMILY HOMES AND MULTIFAMILY RESIDENCES. WE ARE CONFIDENT THAT, GIVEN THE PROPER INCENTIVES, THE AMERICAN PEOPLE WILL RESPOND TO THE NEED TO CONSERVE ENERGY IN THE HOME.

NATIONAL ENERGY GOALS FOR THE BUILT ENVIRONMENT

ENERGY CONSERVATION IN BUILDINGS IS AN IMPORTANT ELEMENT OF THE NATIONAL ENERGY PLAN. THE PRESIDENT HAS ESTABLISHED AS A NATIONAL GOAL THE INSULATION OF 90% OF ALL EXISTING AMERICAN HOMES BY 1985 AND INSULATION OF ALL NEW BUILDINGS. IN REACHING THIS GOAL, OVER 7 MILLION HOMES PER YEAR MUST BE BROUGHT UP TO A NEW LEVEL OF ENERGY EFFICIENCY. THE MAGNITUDE OF THIS UNDERTAKING RAISES SOME SERIOUS QUESTIONS. CAN IT BE DONE AND CAN IT BE DONE PROPERLY?

GOVERNMENT REPORTS POINT OUT THAT OVER 50 MILLION OF OUR 74 MILLION LIVING UNITS ARE "UNDER INSULATED." THIS ISSUE SHOULD BE PUT INTO PERSPECTIVE. THESE "UNDER INSULATED" UNITS WERE BUILT PRIOR TO THE PRESENT CONCERN OVER ENERGY. THEY WERE DESIGNED TO MEET PREVIOUSLY SET STANDARDS. STANDARDS ARE NOW CHANGING. WILL THEY CONTINUE TO CHANGE IN THE FUTURE? RE-INSULATING OLDER BUILDINGS IS NOT AN EASY TASK.

THE NATIONAL ASSOCIATION OF REALTORS IS CONCERNED OVER SEVERAL POINTS. FIRST OF ALL, WE ARE CONCERNED THAT A LARGE DEMAND FOR INSULATION MATERIAL MAY CREATE SHORTAGES AND INFLATE PRICES TO THE EXTENT THAT IT WILL BE DETRIMENTAL TO THE HOMEOWNER AND THE HOUSING INDUSTRY GENERALLY. FOR MODERATE AND LOW-INCOME INDIVIDUALS, THE COST OF INSULATING AND WEATHER-PROOFING THEIR HOMES COULD BE ONEROUS EVEN WITH THE ADOPTION OF THE PROPOSED TAX CREDITS. WE URGE THE CONGRESS AND THE ADMINISTRATION TO CAREFULLY MONITOR THIS POTENTIALLY DISRUPTIVE SITUATION.

SECONDLY, WE WOULD LIKE TO POINT OUT THAT THE PROPER INSTALLATION OF INSULATION IS AS IMPORTANT AS THE INSULATION ITSELF. AN OVER-ANXIOUS ATTEMPT TO REACH THE 1985 GOAL WITHOUT REGARD TO THE PROPER INSTALLATION COULD BE SELF-DEFEATING. IT CERTAINLY WOULD NOT REFLECT WELL ON THE EFFECTIVENESS OF THE PROGRAM IF HOMEOWNERS INSULATE THEIR RESIDENCES ONLY TO FIND LATER THEIR UTILITIES BILLS DO NOT DECREASE BECAUSE OF POOR WORKMANSHIP INVOLVED.

THIRDLY, WE ARE CONCERNED OVER THE POTENTIAL FOR FRAUD UNDER THE PROGRAM. A PROGRAM OF THIS SIZE MUST HAVE SAFEGUARDS TO INSURE THE WORK WAS ACTUALLY PERFORMED AND PERFORMED CORRECTLY.

WE DO, HOWEVER, APPLAUD THE PRESIDENT FOR THE VOLUNTARY ASPECT OF THE ENERGY PROGRAM WHICH IS COUPLED WITH INCENTIVES TO HELP PROMOTE CONSERVATION. IT IS OUR BELIEF THAT THIS IS THE ONLY WAY THAT SUCH A PROGRAM CAN OPERATE. A MANDATORY PROGRAM FOR INSULATING EXISTING HOMES WILL NOT WORK. BESIDES, THE FACT OF EVER RISING UTILITY BILLS IS THE SUREST INCENTIVE FOR THE HOMEOWNER TO CONSERVE ENERGY. NO PROGRAM CAN BE MANDATED SUCCESSFULLY IF UNREASONABLE DEADLINES MUST BE MET. ENORMOUS PHYSICAL CHANGES ARE NECESSARY UNDER THIS PROGRAM AT A TIME WHEN BOTH SKILLED LABOR AND AVAILABLE MATERIALS ARE IN SHORT SUPPLY.

IF IMPOSSIBLE DEMANDS ARE MADE, EXPECTATIONS WILL FALL FAR SHORT OF REALITY. COSTS WILL ESCALATE. WASTE AND EXTRA-VAGANCE ARE CERTAIN TO FOLLOW.

THE KEY TO THIS PROGRAM IS PUBLIC ATTITUDE. BEFORE ANY ENERGY CONSERVATION PROGRAM CAN BE EFFECTIVELY IMPLEMENTED IT IS ESSENTIAL THAT HOMEOWNERS ARE CONVINCED OF THE REAL NEED AND ECONOMIC DESIRABILITY TO INSTALL INSULATION AND OTHERWISE CONSERVE ENERGY. TO THIS END, THE NATIONAL ASSOCIATION OF REALTORS HAS LAUNCHED AN AMBITIOUS ENERGY CONSERVATION PROGRAM DESIGNED TO RAISE PUBLIC AWARENESS REGARDING THE NEED FOR CONSERVATION IN THE RESIDENTIAL SECTOR. REALTORS THROUGHOUT THE COUNTRY WILL PRESENT MATERIAL AND INFORMATION AT THE SETTLEMENT TABLE TO ENCOURAGE THE NEW HOMEOWNER TO CONSERVE ENERGY. MATERIAL HAS BEEN SENT OUT AND WILL CONTINUE TO BE SENT OUT TO OUR OVER 1,750 LOCAL BOARDS OF REALTORS.

ADDITIONALLY, OUR INSTITUTE OF REAL ESTATE MANAGEMENT (IREM) HAS RECENTLY COMPLETED A JOINT REPORT WITH THE FEDERAL ENERGY ADMINISTRATION. THIS REPORT, "ENERGY COST REDUCTION FOR APARTMENT OWNERS AND MANAGERS," DETAILS METHODS TO REDUCE ENERGY USE AND COST IN APARTMENT BUILDINGS. THIS GUIDE IS BEING DISTRIBUTED TO MEMBERS OF THE INSTITUTE OF REAL ESTATE MANAGEMENT WHO MANAGE 3.2 BILLION SQUARE FEET OF PROPERTY VALUED AT \$77.2 BILLION. IT IS ESTIMATED THAT THE IMPLEMENTATION OF THESE MEASURES PROPOSED IN THE IREM STUDY WOULD SAVE UPWARDS OF 30% IN ENERGY CONSUMPTION AND OPERATION COSTS.

PROVISIONS OF S.1469

TITLE I, PART A, ENERGY CONSERVATION PROGRAM FOR EXISTING RESIDENTIAL BUILDINGS.

SUBPART 1 -- UTILITY PROGRAM

THIS PROVISION REQUIRES THAT STATE PUBLIC UTILITY COMMISSIONS DIRECT THEIR REGULATED UTILITIES TO OFFER TO ALL RESIDENTIAL CUSTOMERS AN ENERGY CONSERVATION PROGRAM. THROUGH THE UTILITY PROGRAM ALL CUSTOMERS WILL BE PROVIDED WITH INFORMATION ON AVAILABLE CONSERVATION MEASURES, THE SAVINGS LIKELY TO RESULT FROM CONSERVATION EFFORTS, THE AVAILABILITY OF CONTRACTORS AND LENDERS IN THE AREA THAT CAN PARTICIPATE IN THE INSTALLATION AND FINANCING OF CONSERVATION MEASURES.

THE NATIONAL ASSOCIATION OF REALTORS BASICALLY SUPPORTS THIS UTILITY ENERGY CONSERVATION PROGRAM. WE ARE ENCOURAGED THAT THE PARTICIPATION IN THIS PROGRAM BY HOMEOWNERS IS VOLUNTARY.

WE WOULD LIKE TO SUGGEST THAT CONSIDERATION BE GIVEN TO INCLUDING HOMEOWNERS IN THE PROGRAM WHO INSTALL THEIR OWN CONSERVATION MEASURES. RESEARCH BY THE OWENS-CORNING CORPORATION SHOWS THAT 8 MILLION HOMES HAVE BEEN INSULATED BY HOMEOWNERS THEMSELVES IN THE PAST THREE YEARS. WE BELIEVE THAT HOMEOWNERS SHOULD HAVE THE CHOICE OF EITHER USING A CONTRACTOR, THE UTILITY COMPANY, OR DOING THE WORK THEMSELVES, WHILE STILL RETAINING THE INSPECTION, INFORMATIONAL AND FINANCING ADVANTAGES OF THE UTILITY PROGRAM.

SUBPART 2 -- FINANCING PROGRAM

THE NATIONAL ASSOCIATION OF REALTORS SUPPORTS SECTION 111, WHICH WOULD ALLOW, THROUGH AMENDMENTS TO THE NATIONAL HOUSING ACT, LOANS FOR ENERGY CONSERVATION AND THE ADOPTION OF SOLAR ENERGY SYSTEMS AS PERMISSIBLE TO QUALIFY FOR FHA TITLE I INSURANCE.

THE ASSOCIATION ALSO SUPPORTS OPENING UP THE FEDERAL HOME LOAN MORTGAGE CORPORATION AND THE FEDERAL NATIONAL MORTGAGE ASSOCIATION SECONDARY MARKET FOR RESIDENTIAL ENERGY CONSERVATION LOANS. SECTIONS 113 AND 114 WOULD PERMIT THE FHLMC & FNMA TO PURCHASE UNSECURED ENERGY SAVINGS HOME IMPROVEMENT LOANS. UNDER EXISTING STATUTES, THESE ENTITIES ARE PREVENTED FROM SUCH ACTIVITIES.

SUBPART 3 -- NEW BUILDING PERFORMANCE STANDARDS GRANTS

THIS SUBPART EXTENDS FUNDING FOR THE PURPOSES OF MAKING GRANTS TO STATES AND LOCAL GOVERNMENTS TO ASSIST THEM IN IMPLEMENTING NEW BUILDING ENERGY CONSERVATION STANDARDS UNDER SECTION 305 OF THE ENERGY CONSERVATION AND PRODUCTION ACT. WE UNDERSTAND THE PRESIDENT HAS DIRECTED HUD TO ACCELERATE DEVELOPMENT OF THE PERFORMANCE STANDARDS. THE NATIONAL ASSOCIATION OF REALTORS SUPPORTS THE ADOPTION OF REASONABLE ENERGY CONSERVATION PERFORMANCE STANDARDS FOR NEW BUILDING.

CONGRESS WILL BE ASKED BY THE PRESIDENT TO APPROVE THE USE OF SANCTIONS TO FORCE ADOPTION OF THE HUD DEVELOPED ENERGY STANDARDS FOR NEW CONSTRUCTION. ONE OF THE SANCTIONS THAT OUR ASSOCIATION HAS OPPOSED CONSISTENTLY IS THE PROHIBITION ON CONVENTIONAL LENDING BY FINANCIAL INSTITUTIONS CHARTERED OR INSURED BY THE FEDERAL GOVERNMENT. WE STRONGLY BELIEVE THAT SANCTION GOES TOO FAR. WE WOULD, THEREFORE, STRONGLY OPPOSE ANY PROGRAM THAT ATTEMPTED TO IMPLEMENT BUILDING ENERGY STANDARDS IN THIS MANNER.

MANDATORY HOME INSULATION PROGRAM

AT THIS TIME, MR. CHAIRMAN, WE WOULD LIKE TO BRING TO YOUR ATTENTION AN ISSUE OF UTMOST CONCERN TO THE NATIONAL ASSOCIATION OF REALTORS.

RECENT ACTION BY THE HOUSE INTERSTATE AND FOREIGN COMMERCE SUBCOMMITTEE ON ENERGY AND POWER BRINGS THE ISSUE OF MANDATORY HOME INSULATION TO THE FOREFRONT. THE SUBCOMMITTEE ENERGY BILL CONTAINS A MANDATORY "TIME OF SALE" ENERGY CONSERVATION RETRO-FIT PROGRAM. ESSENTIALLY THE SUBCOMMITTEE PROVISIONS CALL FOR HUD TO DEVELOP AN ENERGY PERFORMANCE STANDARD FOR EXISTING BUILDINGS TO BE MANDATED AS EARLY AS 1982. AT THE TIME OF SALE A HOME WOULD UNDERGO A FEDERALLY SPONSORED ENERGY AUDIT TO DETERMINE IF THE DWELLING WAS UP TO THE PERFORMANCE STANDARD. FAILURE OF THE HOME TO MEET THE STANDARD WOULD TRIGGER THE IMPOSITION OF A MORTGAGE FINANCING PROHIBITION, BOTH CONVENTIONAL AND FEDERALLY ASSISTED.

OUR ASSOCIATION STRONGLY BELIEVES THIS APPROACH TO ENERGY CONSERVATION IN THE HOME IS EXTREMELY ILL-ADVISED. AMONG THE VARIOUS ARGUMENTS AGAINST THIS APPROACH WE FEEL THE FOLLOWING ARE THE MOST COMPELLING:

- 1) ADOPTION OF THIS MANDATORY PROGRAM WOULD SUBSTANTIALLY DELAY VOLUNTARY ENERGY CONSERVATION EFFORTS IN THE HOME. HOW MANY HOMEOWNERS WILL INSULATE NOW ONLY TO FIND THEMSELVES OUT OF COMPLIANCE WITH THE PROGRAM IN

1982 AND FORCED TO DO IT ALL OVER AGAIN? A MANDATORY PROGRAM COULD MEAN A DELAY OF FIVE YEARS IN OBTAINING SIGNIFICANT ENERGY SAVINGS IN THE RESIDENTIAL SECTOR.

- 2) WE BELIEVE IT IS UNWISE TO MANDATE A FEDERAL ENERGY STANDARD BEFORE IT IS KNOWN IF THE STANDARD IS EVEN WORKABLE OR COST-EFFECTIVE. IT IS QUESTIONABLE IF, IN FACT, SUCH A STANDARD COULD EVER BE DEVELOPED CONSIDERING THE WIDE RANGE OF ARCHITECTURAL DESIGN, CONSTRUCTION, AND CLIMATIC DIFFERENCES FOUND IN THE 74 MILLION EXISTING RESIDENTIAL UNITS.
- 3) A MANDATORY PROGRAM AT THIS TIME WOULD INCREASE INFLATIONARY TRENDS FOR WEATHERIZATION MATERIALS AND INSTALLATION SERVICES, THUS WORKING A HARDSHIP ON HOMEOWNERS.
- 4) THE MANDATORY PROGRAM INCLUDED IN THE COMMERCE SUBCOMMITTEE BILL WOULD REQUIRE AN INORDINATE AMOUNT OF GOVERNMENT INTRUSION IN THE LIVES OF AMERICAN HOMEOWNERS.

THE HOUSE BANKING, FINANCE, AND URBAN AFFAIRS COMMITTEE IN ITS RECENTLY REPORTED ENERGY BILL DEALING WITH HOME INSULATION HAS TAKEN WHAT WE CONSIDER TO BE A MORE LOGICAL AND REASONABLE APPROACH TO THE CONCEPT OF A MANDATORY HOME INSULATION PROGRAM. SPECIFICALLY THE LEGISLATION CALLS FOR A ONE YEAR HUD STUDY. BECAUSE THE HOUSE BANKING COMMITTEE IS NOT EVEN SURE STANDARDS

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FOR EXISTING HOUSING CAN BE DEVELOPED, IT WANTS HUD TO THOROUGHLY STUDY THE IMPACT AND FEASIBILITY OF THE MANDATORY "TIME OF SALE" PROGRAM. THIS STUDY IS TO CONSIDER SUCH FACTORS AS THE EFFECT OF A MANDATORY PROGRAM ON THE HOUSING MARKET, THE INDIVIDUAL HOMEOWNER, AND THE ATTAINMENT OF THE PRESIDENT'S NATIONAL ENERGY GOALS. IN ADDITION, HUD IS TO CONSIDER THE DIFFICULTY OF IMPLEMENTING A MANDATORY HOME INSULATION PROGRAM TAKING INTO ACCOUNT THE EXPERIENCE OF PAST MANDATORY FEDERAL PROGRAMS, SPECIFICALLY THE REAL ESTATE SETTLEMENT PROCEDURES ACT OF 1974 AND THE FEDERAL DISASTER PROTECTION ACT OF 1973.

AS I HAVE STATED EARLIER OUR ASSOCIATION BELIEVES THE AMERICAN PEOPLE SHOULD BE GIVEN AN OPPORTUNITY TO WEATHERIZE THEIR HOMES ON A VOLUNTARY BASIS.

THANK YOUR, MR. CHAIRMAN.

The CHAIRMAN. Thank you. I want to thank both of you gentlemen for your statements.

I would like to start off by asking each of you to comment on the position that you have taken.

Mr. Arquilla, you say on page 4 that there will be a shortfall of 15 to 25 percent in insulating materials by 1985, and then on page 2, Mr. Elmstrom, you say "We are concerned that a large demand for insulation material may create shortages and inflate prices to the extent that it will be detrimental to the homeowner and the housing industry generally."

I have a study that was handed to me by Mr. Bardin before he left. The study is "Supply Response to Residential Insulation Retrofit Demand," by C.F. Inc. Let me read a couple of sentences of their findings.

Fiberglass insulation, which accounts for 85 percent of the mineral wool insulation market, is one of the most profitable building trade items, with a short capital cycle and quick payout period. Traditionally there have been quick capital adjustments to increased demands. Several new firms appear to be considering entry into the market. The major limiting factors are fear of the cyclical fall-offs in the new housing market and resulting oversupply.

So the major problem has not been supplies are going up too fast, but there will be a fall-off in demand and they are not sure about getting into it.

Rock wool and cellulose, although possessing only a small part of the market at present, should expand rapidly over the next few years. Given the expected expansion in fiberglass, it seems unlikely that these two sources will capture a larger share of the total market although the absolute level of this supply will increase. Industry sources have estimated that about 8 million retrofits have occurred over the last 3 years. Other estimates suggest that it is economically feasible to retrofit an additional 25 million homes.

They go on to say that :

There would appear to be no shortage of insulation capacity for retrofit purposes after 1977. Some potential for a shortfall exists in 1977 if owners add an additional high level of insulation. At full capacity in 1977, 4.8 million retrofits can be completed at average retrofit levels, and 2.75 million at a high retrofit level. Prices for insulation have appeared to move roughly with the wholesale price index, regardless of short term supply-demand situation. The fiberglass industry, which is the price leader, is very sensitive about the three-firm oligopoly and is worried about Government intervention. With excellent capacity utilization at current prices, they are unlikely to raise prices to take advantages of short-term demand pressures.

This study would seem to rebut the statement both of you gentlemen made that you will have, (a) a serious shortage if we move ahead with a vigorous program that gets results, and those results are a great deal of insulation, and (b) that would mean big price increases. What is your answer to that?

Mr. ARQUILLA. Well, we are really not sure, Mr. Chairman, just what the final standards are going to be that will be developed by FEA and HUD, whoever does end up devising that authority for housing. So all we can assume is what we feel is going to be the requirement. In retrofit we are not sure just what the requirements are going to be. To mandate that these requirements be done before we know what the requirements are is a difficult thing to understand and project.

We do know that there are three manufacturers of fiberglass, the largest used material in the country today. We do know that they have patents on the creation of that material.

Now if another firm were to come in, it has been projected that instead of a plant costing maybe \$15 or \$20 million, that their costs would really be between \$50 and \$70 million, with the necessity of developing a different process.

Now as far as costs are concerned, if we have a tax—I know it is not here for discussion today—a tax on the use of manufacturers not changing to gasification or gas in their operations, there is going to be a surtax, an additional tax placed on the use of that product. In the insulation industry the only way the product can be manufactured is through the use of gas. Now if that tax should go through, that will immediately increase the cost of the material.

As far as shortages are concerned, we in our industry felt a shortage all over the country during the months of December, January, and February. That may have been due to individuals retrofitting their homes. It was not because of high housing production—we know that was not the case, because of the bad weather in January and February. But it indicates to me that we do have a shortage of material. And that is the reason for our statement.

I am not trying to rebut a survey or report that you have there, not having seen it. But it would indicate that there are a lot of in-the-field problems that it perhaps does not refer to.

[The following comments were received for the record:]

Additional Comments by the National Association of Home Builders
to accompany NAHB's testimony before the Senate Committee
on Banking, Housing and Urban Affairs, June 27, 1977

The following comments are in response to Chairman Proxmire's request that NAHB review the study entitled "Supply Response to Residential Insulation Retrofit Demand", which was submitted to FEA on June 17, 1977.

NAHB called the Home Builders Associations and either builders or insulation contractors in the following areas:

Atlanta, Georgia	Suffolk County, Long Island,
Denver, Colorado	New York
St. Louis, Missouri	Columbus, Ohio
Philadelphia, Pennsylvania	San Diego, California
Dallas, Texas	Los Angeles, California
Miami, Florida	Boston, Massachusetts
Tampa, Florida	New Orleans, Louisiana
Chicago, Illinois	Phoenix, Arizona
Kansas City, Missouri	

The responses from all areas were quite uniform. There is a national problem in shortage of insulation at this time. As far as we can determine, all manufacturers are shipping on an allocation basis. They are taking on no new customers. The old customers are allocated shipments based on the previous twelve months shipment. The cutback in allocation varies depending on the customer, but can be as high as forty percent.

There are numerous results from this shortage. Some insulation contractors, who buy on a carload basis, are ordering thinner blankets so that they get more insulation cover per carload. Of course, this results in lesser insulation per job. There is also a definite trend toward more production going into batt insulation and less into blowing wood. The reason for this is that the manufacturer gets more R value per pound of insulation and therefore, more profitability. This is resulting in contractors using batt insulation in the sidewalls and blowing cellulose insulation in the attics. Cellulose insulation, up until recently, was considered a product for use in retrofit of existing housing. With cellulose insulation now being used in new construction to alleviate the shortage of glass fiber insulation, a further shortage will, in turn, be created in the retrofit business.

NAHB spoke to several insulation manufacturers and they admit to the shortage of insulation at the present time. When talking about planned expansion for increased production in the coming years, they are rather noncommittal, indicating that the decision rests on a number of variables. One of the prime considerations is the continued demand for insulation. They are sincerely concerned about governmental actions which would cause a rapid increase in insulation demand and a subsequent fall off in demand after a few years. This sort of thing would not warrant the needed capital investment.

The FEA Report indicates that industry expansion plans "do not assume any additional demand which may result from a tax credit or other federal initiatives." The FEA Report also projects a twelve percent per annum growth rate in the glass fiber industry through 1980 and eight percent thereafter. Applying these growth rates to the demand figures given in Attachment B to our testimony indicates without any doubt that we will face shortages. It may be worthwhile to note that recent shortages have caused price increases in the neighborhood of thirty percent in the last few months. This escalation is expected to continue in the coming months.

The FEA Report contains some assumptions which can be challenged, particularly the numbers of units to be insulated in the coming years both new and existing. Both reports have conclusions based on projected supply and demand, demand being based on the number of units planned. Naturally, all these assumptions can be varied to come out with varying conclusions.

If the industry is experiencing an average of thirty percent cutback in allocations from a year ago, when the demand at present is considerably greater than a year ago, the industry with its projected, planned expansion cannot supply the demand which would be created by a governmental insulation program which would encourage all existing units to be insulated by 1982. All of the people we have called in the various sites have indicated that this would be a chaotic move. We strongly suggest that the timing on such legislation be no sooner than 1985 to allow the industry to adjust their supply capabilities. Attached are reports of a few of the areas which we called which are typical of all the areas.

Myron Black, Denver, Colorado

Supplies are difficult. Manufacturers are trying to meet the demand but are now three weeks out on shipping cycle. They are normally one week out so they are presently two weeks deficient. Most manufacturers normally have two months of stock, but currently none are stocking materials and it appears that by early August they may be five to six weeks behind. The basic problem in the Denver area is the supply of blowing wool. There are insufficient supplies to handle both new and retrofit construction. So batts are now being used in new work - there seems to be plenty of them available. The shortage of fiberglass and rock wool has resulted in the use of cellulose. There are problems in the quality of cellulose as new standards do not exist for its manufacture. On a comparable basis with fiberglass, sixty to eighty percent of the cellulose is to be considered unsatisfactory. This low-quality cellulose has a real fire potential. If there were a major retrofit program undertaken without a four to five year transition period, a major catastrophe would result. There would not be enough insulation available to do the retrofit properly, which would mean that it would have to be done again sometime in the future at a greatly increased cost. Additionally, there is a shortage of qualified applicators, and any major program would further dilute the quality of work in insulation. There are local promotions for do-it-yourselfers in the Denver area, but the supplies are considered marginal.

John Hoffman, St. Louis, Missouri

The area is on allocation for batts. This particular company is getting about ninety percent of their needed supplies in the St. Louis area, but in other company areas where they have not been so long established, they are running maybe fifty percent of the needed supplies, taking them eight to nine weeks to get delivery and they need blown wool for two to three hundred homes. Part of the shortage was generated by the energy crisis, which has prompted builders to increase from six to eight inches to fourteen to sixteen inches. It is not believed the industry could handle a major retrofit program which would be totally disruptive and prices would go out of sight. He believes such a retrofit program should be phased over ten years.

Paul Raia, Suffolk County, Long Island, New York

These people are also on allocation. The normal consumption in the past was twenty to twenty-two trailer loads per week. They are now getting five to eight trailer loads. They are holding up jobs all over because they cannot supply the needed insulation. He, too, is concerned about price increases saying that he had a twenty-six percent increase since the first of the year. He said between two operations, one in Long Island and the other in New Jersey, they normally have available forty-four trailers of insulation and that today they have less than a half trailer and that is all odd-sized material. He believes that if major retrofit programs are undertaken absolutely no new work would proceed. He suggests that supplies to retail chains be curtailed and mentioned Rickles Stores, who will take about fifty trailers for a special promotion there, having no difficulty getting it. He does not believe the situation will improve in the near future.

Charles Carlin, Philadelphia, Pennsylvania

Insulation installers are on allocation in this area and are about eight weeks behind on receipt of delivery. Blown wool is in particularly short supply. Blankets are not so serious. He mentioned that builders are now using about double the amount of insulation that they had in the past and, thus, the supplies are going half as far. He, too, mentioned continual price increases and the loss of discounts. A major retrofit program would create real problems because of lack of production. The future looks bleak largely because chains such as Sears are now getting into the blown wool business and are thus drawing down on what would be supplies available to insulation contractors.

Gary Mattula, Dallas, Texas

Everyone is on allocation in the Dallas area. Generally supplies are about twenty percent less than last year. As an example one company was receiving four trucks per week three months ago - they are now receiving one and a half trucks per week with no immediate relief in sight. Blown wool supplies have been cut an average of thirty percent and deliveries are running five to six weeks late. Contractors are recognizing this and have tried to anticipate their needs, but still do not receive deliveries when promised. At least part of the problem is attributed to the increased use of insulation. For example, builders now put in nine to twelve inches where they had put in six inches. In the Dallas area, eighty percent of the available material goes to new construction with something a little less than twenty percent for retrofit. A major retrofit program would not work in the Dallas area because there are no supplies for it.

Bill Safreed, Miami, Florida

Everyone is on allocation in the Miami area. The situation is not considered critical yet, but it is bad and it does delay work. The supply situation even with the addition of a new Johns-Manville plant is not expected to improve within the next year. Any retrofit program would create chaos in the area.

Jim Ewing, Atlanta, Georgia

It is difficult to get insulation products. Delays exist for all types. The situation is not critical, but waiting periods are necessary. General information is that delays are from a week to a month. The Owens Corning people say it is a problem of plant production. They are operating at capacity now. To avoid the impact of back orders, builders must order early. If a major retrofit program were started, it would really cause serious problems with unacceptable delays. Do-it-yourself promotions by major chains such as Sears continue in the area, but the supply available is unknown.

The CHAIRMAN. Mr. Elmstrom.

Mr. ELMSTROM. Senator, my statement that I read to you did not make a definitive statement on this. We said it "may." However, I think I would like to point out to this committee that the study you just referred to, if I heard you right, refers to 25 million homes, when in fact we are talking about 74 million homes in this country.

However, once again our fear with this is not so much what Owens Corning Fiberglas—

The CHAIRMAN. What they said is:

Industry sources have estimated that about 8 million retrofits have occurred over the last 3 years. Other estimates suggest that it is economically feasible to retrofit an additional 25 million homes.

In other words, the implication here is that you are right, there are 74 million homes that need it theoretically or potentially, but apparently the argument there is they are not economically feasible to retrofit. You can't do it everywhere, even though we would like to.

Mr. ELMSTROM. Our research shows about 50 million of the 74 million need retrofitting to meet any kind of standards, and we don't know now what the standards are, of course.

I would point out that our statement on increasing costs is not so much on the manufacturing end because we don't have too strong a fear there, but we have a tremendous fear with this mandatory program. No matter how many policemen you hire, no matter how much publicity is given, we remember back in the days of asphalt siding, the people who sold aluminum on the basis that it would cut their fuel bills in half, and do all of these other marvelous things, and our mind is on some of those things. You are not going to stop the gypsies, and how you would police it is our fear in putting this mandate in here.

That is the point of our talking about pricing and so forth.

The CHAIRMAN. Very good. That is a reasonable position. You say that you are not so concerned about the manufacturing supply as you are about what happens when you try to put this into effect.

Senator SCHMITT. Would the chairman yield?

The CHAIRMAN. Yes.

Senator SCHMITT. Do you think it would be appropriate if the committee asked these two associations to comment on that report? As it sounds as if they have never seen the report before.

The CHAIRMAN. Yes; that would be fine. Of course they have had to do everything in a rush up there. This is a temporary report. It says other more extensive analyses are being undertaken, and one by Commerce and one by the Energy Department, and they say these should provide more detail than is now available. This is just all they have. But it is a temporary report.

That is a good point, we will make that available to you gentlemen and if you would like to comment for the record, that would be very helpful.

Mr. ARQUILLA. Yes; we will.

Mr. ELMSTROM. Yes.

The CHAIRMAN. Mr. Arquilla, you support credit for installing, as you put it, qualified solar equipment as proposed in the administra-

tion's bill. What does qualified mean? Is this any equipment that is qualified today? I understand S. 1469 calls for criteria and standards to be prescribed by HUD with FEA consultation. With the state of the art still in its infancy, as you testified, how quickly do you think the standards can be established for qualified equipment?

Mr. ARQUILLA. I would imagine we could come up with standards in 1 year's time at the most. I am surprised, really surprised, they are not in the works now. Perhaps they are, but not to my knowledge.

But at the present time solar energy is truly in its infancy. There aren't really enough companies producing in such great quantities that we are really able to get a good feel on its total worth.

The CHAIRMAN. I am questioning you on this, because there is such enormous public enthusiasm for solar energy and I think it is well placed, it is clean, it is inexhaustable, it has a great future, I think. But your industry is so vital in this. If the people in your industry can see that it is economically feasible and practical, I think we can move ahead and it would be very helpful.

Mr. ARQUILLA. There are a lot of problems with it. They have closed systems, open systems, mirror systems, different types of collectors, water and air systems. It is a very complicated and complex situation. It is not something that is just black and white on which you can make a judgment.

In most instances today we have various manufacturers making different components and it is a question of going to a very knowledgeable engineer to put those components together to make a package that will work.

That is the reason we are telling our membership to go carefully. I am sure that you have read as many articles as I have read in the Washington Post and New York Times, and Wall Street Journal about the so-called gypsies in the solar energy field, using solar energy to heat pools in Florida, as an example, and they don't work.

It has a tremendous potential, and I think perhaps ten years from now we will have it down to where it will be a realistic product to put into a home and where it will be cost justified. But with the state of the art as it is today, I think we do have to warn our membership and I think we should be warning the people of the country that it is not an answer to all of their problems.

The CHAIRMAN. Is HUD's demonstration program any help on this score?

Mr. ARQUILLA. It will be once we start getting some data out of it.

The CHAIRMAN. Mr. Elmstrom, on page 6 you say: "Congress will be asked by the President to approve the use of sanctions to force adoption of the HUD developed energy standards for new construction." Has that already been announced or are you predicting it?

Mr. ELMSTOM. I am going to pass that to Al Abrahams.

Mr. ABRAHAMS. Mr. Chairman, the last Congress passed as a section of the energy bill last year, a proposal to undertake the creation of performance conservation standards for new construction. I believe that the Congress in the final analysis decided it would not mandate the creation of those standards. I think both of these gentlemen have said they decided to wait until they saw exactly what stand-

ards HUD developed in 3 years, before approving the standards. That is also the position of Congress last year. The Congress voted itself another opportunity to see whether or not those standards have proved to be cost effective, make sense, simply create a Federal building code for its own sake, or whether it is a desirable thing to do. We don't know what those standards are.

The CHAIRMAN. In fact each House, both Houses of Congress have to approve those standards.

Mr. ABRAHAMS. That is correct, sir. I believe in 90 days. The point I am trying to make, sir, is that that doesn't, in our judgment—

The CHAIRMAN. Sixty days.

Mr. ABRAHAMS. Pardon me, thank you, 60 days. That means Congress can look at those standards when they come out, before it decides how to handle the implementation. The President, however, has told HUD in his message to the Congress, that they should step up that timetable to 18 months, and then said they should be mandated standards.

I think that is something the Congress has decided to take a look at in its consideration of the act at the time when the standards are finally promulgated. Therefore there is something of a difference between the philosophy of the Congress last year and what the President has indicated he wants to do once the standards are developed.

The CHAIRMAN. What would you gentlemen recommend if it becomes clear the present voluntary program does not succeed in substantial energy conservation?

Mr. ELMSTROM. I will be glad to give you my own opinion. I believe the voluntary program will succeed.

The CHAIRMAN. I hope it will, too, and I think obviously that is the better way. But if it does not succeed, would you still feel we simply have to throw up our hands, we can not have mandatory standards under any circumstances?

Mr. ELMSTROM. I couldn't answer that way at all. I believe then a new decision would have to be made. But I can't help my own feeling, the feeling of my Association that any mandatory program at this moment in history cannot succeed any better than a voluntary program, with the proper emphasis on the proper information that goes out on it.

So I have to stand on the voluntary program.

The CHAIRMAN. Senator Schmitt.

Senator SCHMITT. Thank you, Mr. Chairman. Gentlemen, you were in the room I believe during the preceding testimony and we heard a number of expressions, such as let's go ahead and take a chance, there is no substitute for experiment.

I happen to come from a scientific discipline, and experiments usually are run on a small scale, that is, as my mother would probably have said in Tennessee, you don't test the quality of the bacon by eating the whole hog, you test the bacon.

But apparently with S. 1469 we are going to take the whole hog here and run an experiment on the country, on the housing industry in particular, and to see if these kind of voluntary standards—to some degree voluntary; there is a certain amount of coercion involved

in the way the legislation is drafted—see if that will work, and actually begin to conserve significant amounts of energy.

What do you feel—I will let each of you answer—what do you feel would happen if S. 1469 never became law, Given the situation you know exists within the housing industry, within the suppliers to that industry and the economic situation we have in this country with respect to energy costs and capital costs?

Mr. ARQUILLA. Well, it is my feeling that the housing industry, our membership, is going to continue with its program to do a better job in conserving energy. We have an energy program which will come out in its final form at our fall board meeting and it will result in a performance standard. I think in the past 3 or 4 years our members across the country have done a substantially good job in insulating homes. I think that going further into retrofit, it is obvious when we get reports of that 8 million units have been retrofitted in the last 2 years or so, that the people have an urgent need to go up and retrofit, whether we have a government subsidy or not.

The question comes up, readily, in the number of homes for which retrofit is almost impossible. And even if you were to have this legislation, and even as a part of that legislation there was a mandate that you had to retrofit your house to certain standards, those houses would either have to be destroyed or partially torn down in order to meet those standards.

I don't really feel that we have to mandate this to the people of the United States. It is obvious that with the cost of fuel rising that we have got some smart people out there who will be insulating their homes in order to reduce their fuel costs. So that is the way I feel.

Senator SCHMITT. Do you think the President's goals would be met—

The CHAIRMAN. If the Senator would yield, the lights just went off. A year ago I asked the lights be turned off to save energy. We figured we would save a gallon of oil a day. And we just got the message through the staff now.

Senator SCHMITT. Well, that is fairly rapid progress for the Government.

Do you feel the President's goals could be met without these title I provisions in S. 1469?

Mr. ARQUILLA. I am sure there will be a certain number of families, in housing units across the country, who really don't care. It is the same thing as putting in 6 inches of insulation in wall and 12 inches in the ceiling and storm windows and then they leave the front door and back door open all day. In many multifamily dwellings where there is a central heating unit, and the people have to have it very warm, we have regulations where we have to maintain certain temperatures. On one of the most severely cold days in Chicago you can see thousands and thousands of multifamily units with windows open. Are we going to conserve energy at that end?

You know, it really depends on how willing the American public is to sacrifice in the end. That is really the whole story.

Senator SCHMITT. You are out there building homes. Are they willing to sacrifice right now?

Mr. ARQUILLA. Yes; they are, most of the people are looking for high insulation, storm windows and insulated glass. They are looking for these things and are willing to pay a reasonable amount more to have that benefit.

I say a reasonable amount. The chairman was asking me about solar energy. I can't really in good faith go to a home buyer and say this is the thing that you should do, it will cost you \$12,000 more to put it in with today's technology. I don't really think that has a cost-benefit effect at this point in time. Two years from now, I will probably change my tune, when we get more sophistication, we get complete systems, and we have better data on just how well they are operating, how efficient they are.

Senator SCHMITT. Mr. Elmstrom, would you like to comment?

Mr. ELMSTROM. Senator Schmitt, I don't believe it is necessary to repeat some of Mr. Arquilla's statements which I concur with. But I would like to point out as long as he is representing the home builders, which of course is new homes, I am rather confining myself to the used homes.

I am from the Northeast, by the way, in a high cost fuel area, and so forth, and people are very conscious—

Senator SCHMITT. I thought you might have been one of my constituents in New Mexico, and had moved there from the Northeast by your accent.

Mr. ELMSTROM. That is a Brooklyn accent, Senator.

Senator SCHMITT. We have a lot of Brooklyn accents there. they are tired of high heating bills.

Mr. ELMSTROM. For the past 4 or 5 years, I can't remember when we could have sold a used home, in the northern area, Saratoga, where we have 14 room old victorian houses, new houses and so forth, a cross section, without answering the first question asked by anyone who is a legitimate buyer, what the taxes are on the property. That is a major problem. But question No. 2 is what is the heating bill. Our answer is, of course, for 4 years now we will not list a house unless we have a copy of the fuel bills, if it is from an oil company, or a copy of the statement from the power company. We take those copies and photostat them and we say whether these people had four children, or one child, or whether these people spent all winter in Florida and they have no children, or no washing machine, and so on.

In other words, the building by itself is useless. As Bob said, the windows can be wide open.

So to us right now, my frank and honest opinion is we are going to retrofit all of the houses we possibly can, because you are talking to a man and women's pocketbook. You are not selling patriotism, you are talking to them where it hurts, in their pocketbook.

We are making every effort, and every buyer I know within reason will make an effort to bring that particular house up to whatever particular standards that house can be brought up to. As Bob says, for many houses, how you would ever make any sense out of retrofitting them I don't know. We have some honies up in our area.

Senator SCHMITT. You haven't said it specifically, but should I infer from your remarks that you think that there would be a rapid

acceleration in the use of insulation for retrofitting and for new construction without S. 1469?

Mr. ARQUILLA. Yes, I do.

Mr. ELMSTROM. I feel the same way. I think the figures already proved this and it will accelerate by itself as the fuel costs go up.

Senator SCHMITT. I would like to comment a little bit, actually a couple of questions about solar energy. I have been involved with that business for a number of years, and I agree with your remarks that at the present time the first costs and the reliability of the systems we can put into place right now is certainly not attractive for the average home buyer.

Of course if you happen to be an engineer or know one and want to design a system, and can afford to put it in, there are some very attractive opportunities.

What do you feel must be done over the next 4 or 5 years in order to see the costs of the units come down? I estimate by a factor of 10 is about what is required and the reliability has to go up by a factor of 10 before they are economical.

I think the best sign of that is none of the large manufacturers of house equipment are in the business. Westinghouse, GE, the Kennamores, Admirals, they are not making integrated solar energy equipment for installation in homes.

Do you have any insight into when that might occur and what would be required to make it occur more rapidly?

Mr. ARQUILLA. I think one of the basic problems that GE and Westinghouse and a few others might have is the question of the share of the market they might get. And the initial investment into developing packages that could be sold.

I think that in order for solar energy to ever be successful, we are going to have to package it. We have to have a 500 square foot unit, a 1,000 square foot unit, or areas in between. And we are going to have to have standards by which all units can be judged.

As soon as we start getting this packaging, I think it would be very very soon thereafter that we could start making the reductions that we need to install these units into various parts of the country.

In the northeast area it is economical to have solar energy for hot water. It is not economical in Chicago, because at the present time the utility rates are far lower and we have some competition in that we do have a good supply of natural gas and we do have electricity.

So what is good for one area might not be logical for another.

What I am really fearful of in solar energy down the road is that we might have a mandate that every house has to have a solar energy unit or can not be built. Now that is going to impose some severe restrictions in certain areas on individuals, their ability to buy or not buy. And I don't think that is really the approach we want to take.

As I say, I am beginning to think, after hearing this gentleman from FEA this morning, that maybe this is the way their thinking is now, let's try it and see if it works. I just don't feel we should be in the position to just try it to see if it works. I think we have to have factual information that it does work.

Senator SCHMITT. There is certain pressure on a new administration to look like they are doing something and maybe that is one of the jurisdictions they have for their experimental attitude.

Do you feel that the Federal involvement in research and development of solar energy systems for heating and cooling is adequate at the present time?

Are you familiar or involved in that? I know some associations are involved in the establishment of standards and building codes, things like that. Is your association involved with the NASA-HUD-ERDA effort?

Mr. ARQUILLA. Our Research Foundation has contracted with those governmental organizations to participate in some of the programs. I do think that the moneys are enough. I don't necessarily think that we have all of the geniuses in government and all of the engineers and physicists necessary to produce the ideal situation or ideal unit. I think that private enterprise is the best source for that. And I think eventually, that is where we are going to see the greatest improvement in the quality of the product as a package.

Senator SCHMITT. I agree with that. The one bottleneck we found in setting up those programs a few years ago was the private sector did not have the risk capital to provide that kick in packaging and reliability and in decreasing the costs that seemed to be necessary so they could enter the market. At least the NAS position was to try to foster or try to provide the kick and see that the private sector could then pick it up. I am wondering if you see any signs of that happening?

Mr. ARQUILLA. I am seeing signs of that happening. You know, it is the same thing with the heat pump that came out 15 years ago. It was very unsuccessful, because of its unreliability. It wasn't reliable. But there have been tremendous improvements in the manufacture of the heat pump package.

Senator SCHMITT. But it did get a bad reputation as a consequence of that?

Mr. ARQUILLA. Yes.

Senator SCHMITT. And was probably delayed by almost that 15-year period.

Mr. ARQUILLA. Right. I know a builder in Ohio who has put in 7,000 or 8,000 units and has been using it now for about 8 years and has not had but two or three problem children. I think that is a pretty darn good record.

Senator SCHMITT. I think the solar systems will come along. I am not at all convinced yet that everything has been done to make them available so that the average homeowner that has one installed is not going to regret it.

I think that is what we have to insure doesn't happen. A cooperative effort between industry and the Government here I think is in order.

At the earliest possible time the Government ought to get out of it. I am trying to test your feeling of whether that time has come or there needs to be a little more.

Mr. ARQUILLA. Maybe a little bit more. An engineering group came into our office a week ago and they gave an hour and a half presenta-

tion on how we could use solar energy in our homes. You don't have to make many changes, maybe just a few roof changes, you know. Well, we had to dig up the yard and put in some 600 to 800 feet of piping in the yard, in the ground. We had to change the pitch on the roof, we had to change the directions of our houses and we had to remove windows on one side. When we added it up, we were talking about a \$17,000 or \$18,000 package. I can't sell that.

Senator SCHMITT. Per unit?

Mr. ARQUILLA. Per unit. There is no way I can sell something like that. Now certainly we are in a very cold area, and we have to have additional heating to compensate for those cloudy days we do have in the Midwest during the winter months. I understand that, that is understandable. I don't think we have reached that point yet where we can really package these things and do an adequate, do a more than adequate job.

Senator SCHMITT. I appreciate your testimony very much. I think it will be useful, if you have a chance to, to comment on that preliminary report that Mr. Bardin provided. There seems to be a tendency in these hurry-up exercises to do your report inside the Government and then to put it out as having covered the whole ballpark as far as the various inputs of industry and users and consumers are concerned.

I hope you will comment, I think the committee would find it very useful,

Mr. ARQUILLA. We will be pleased to.

Mr. ELMSTROM. Our association will be most happy to provide these comments to the committee.

The CHAIRMAN. Thank you very much for excellent testimony, you made a good record.

The committee stands in recess until 10 o'clock tomorrow.

[Thereupon, at 1:05 p.m. the hearing was recessed, to reconvene at 10:00 a.m. the following day.]

[Copy of the legislation being considered follows:]

95TH CONGRESS
1ST SESSION

S. 1469

IN THE SENATE OF THE UNITED STATES

MAY 5 (legislative day, APRIL 28), 1977

Mr. JACKSON (by request) introduced the following bill; which was read twice and referred to the Committee on Energy and Natural Resources

A BILL

To establish a comprehensive national energy policy.

- 1 *Be it enacted by the Senate and House of Representa-*
 2 *tives of the United States of America in Congress assembled,*
 3 That this Act may be cited as the "National Energy Act".

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- Sec. 2. Findings.
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- Sec. 110. Amendment to National Housing Act.
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- Sec. 113. Amendment to Federal Home Loan Mortgage Corporation Act.
- Sec. 114. Amendment to Federal National Mortgage Association Charter Act.
- Sec. 115. Amendment to Energy Conservation and Production Act.

Subpart 3—New Buildings Performance Standards Grants

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Subpart 2—Disclosure of Automobile Fuel Inefficiency Tax and Disclosure of Automobile Fuel Efficiency Rebate

- Sec. 221. Disclosure in labeling.
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PART C—ENERGY CONSERVATION PROGRAM FOR SCHOOLS AND HOSPITALS

- Sec. 301. Amendment to the Energy Policy and Conservation Act.

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Sec. 744. Transfer of appropriations.

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Sec. 746. Authorization.

1 FINDINGS

2 SEC. 2. The Congress finds that—

3 (1) the United States faces an energy shortage
4 arising from increasing demand for energy, and for oil
5 and natural gas in particular, and insufficient domestic
6 supply of oil and natural gas to satisfy that demand;

7 (2) unless effective measures are taken to reduce
8 the rate of growth of demand for energy, the United
9 States will become increasingly dependent on the world
10 oil market and increasingly vulnerable to interruptions of
11 foreign oil supply;

12 (3) the United States can significantly reduce its
13 demand for oil and its demand for natural gas for non-

1 essential uses by carrying out an effective conservation
2 and fuel efficiency program in all sectors of energy use,
3 through reform of utility rate structures, and conversion
4 by industrial firms and utilities from oil and natural gas
5 to coal and other fuels; and

6 (4) the United States needs to develop renewable
7 and essentially inexhaustible energy sources to ensure
8 sustained long-term economic growth.

9 NATIONAL ENERGY GOALS

10 SEC. 3. The Congress hereby establishes the following
11 national energy goals for 1985:

12 (1) Reduction of annual growth of United States energy
13 demand to less than 2 per centum.

14 (2) Reduction of the level of oil imports to less than
15 six million barrels per day.

16 (3) Achievement of a 10 per centum reduction in
17 gasoline consumption from the 1977 level.

18 (4) Insulation of 90 per centum of all American homes
19 and all new buildings.

20 (5) An increase in annual coal production to at least
21 four hundred million tons over 1976 production.

22 (6) Use of solar energy in more than two and one-half
23 million homes.

6

1 REFERENCES TO FEDERAL POWER COMMISSION AND
2 FEDERAL ENERGY ADMINISTRATION

3 SEC. 4. If the Federal Power Commission or the Federal
4 Energy Administration is terminated, then any reference
5 in this Act (or any amendment made thereby) to the Fed-
6 eral Power Commission or the Federal Energy Adminis-
7 tration shall be deemed by a reference to the officer, depart-
8 ment, or agency in which the principal functions of such
9 Commission or Administration (as the case may be) are
10 vested after such termination.

11 TITLE I—PRICING, REGULATORY AND OTHER
12 NONTAX PROVISIONS

13 PART A—ENERGY CONSERVATION PROGRAMS FOR
14 EXISTING RESIDENTIAL BUILDINGS

15 Subpart 1—Utility Program

16 DEFINITIONS

17 SEC. 101. As used in this subpart:

18 (1) The term “Administrator” means the Administra-
19 tor of the Federal Energy Administration.

20 (2) The term “Commission” means the Federal Power
21 Commission.

22 (3) The term “natural gas” means natural gas as that
23 term is defined in the Natural Gas Act.

24 (4) The term “nonregulated utility” means a public
25 utility which is not a regulated utility.

1 (5) The term "public utility" means any person or
2 State agency which is engaged in the business of selling
3 natural gas or electric energy for purposes other than re-
4 sale; except that such term shall be deemed not to include
5 any such person or agency in any calendar year unless dur-
6 ing the second preceding calendar year either (A) sales of
7 natural gas by such person or agency exceeded ten billion
8 cubic feet, or (B) sales of electric energy by such person
9 or agency exceeded seven hundred and fifty million kilowatt-
10 hours.

11 (6) The term "rate" means any price, rate, charge,
12 or classification made, demanded, observed, or received with
13 respect to sales of electric energy or natural gas, any rule,
14 regulation, or practice respecting any such rate, charge, or
15 classification, and any contract pertaining to the sale of
16 electric energy or natural gas.

17 (7) The term "ratemaking authority" means authority
18 to fix, modify, approve, or disapprove rates.

19 (8) The term "regulated utility" means a public utility
20 with respect to whose rates a State regulatory authority
21 exercises ratemaking authority.

22 (9) The term "residential building" means any building
23 developed for residential occupancy, the construction of

1 which commenced prior to one year after the date of enact-
2 ment of this subpart, which has a mechanical or electrical
3 system for heating or cooling, or both, and which contains
4 no more than two dwelling units.

5 (10) The term "residential customer" means any per-
6 son to whom a public utility sells natural gas or electric
7 energy for consumption in a residential building.

8 (11) The term "residential energy conservation meas-
9 ure" means—

10 (A) caulking and weatherstripping of all exterior
11 doors and windows;

12 (B) furnace efficiency modifications limited to—

13 (i) replacement burners designed to reduce
14 the firing rate or to achieve a reduction in the
15 amount of fuel consumed as a result of increased
16 combustion efficiency,

17 (ii) devices for modifying flue openings which
18 will increase the efficiency of the heating system,
19 and

20 (iii) electrical or mechanical furnace ignition
21 systems which replace standing gas pilot lights;

22 (C) clock thermostats;

23 (D) ceiling, attic, wall, and floor insulation;

24 (E) hot water heater insulation; and

25 (F) storm windows.

1 (12) The term "residential energy conservation plan"
2 means a plan approved by the Administrator pursuant to
3 section 102(c) which is developed by a State regulatory
4 authority or by a nonregulated utility.

5 (13) The term "State" means a State, the District of
6 Columbia, Puerto Rico, and, at the discretion of the Admin-
7 istrator, any territory or possession of the United States.

8 (14) The term "State regulatory authority" means any
9 State agency which has ratemaking authority with respect to
10 the sale of electric energy or natural gas by any public utility
11 (other than by such State agency).

12 (15) The term "suggested measures" means, with re-
13 spect to a particular residential building, the residential
14 energy conservation measures which the Administrator, in
15 the rules prescribed pursuant to section 102(a), determines
16 to be appropriate for the location and the category of resi-
17 dential buildings which includes such building.

18 (16) The term "utility program" means a program
19 meeting the requirements of section 103 carried out by—

20 (A) a regulated utility pursuant to a residential
21 energy conservation plan developed by a State regula-
22 tory authority;

23 (B) a nonregulated utility pursuant to a residential
24 energy conservation plan developed by such utility; or

25 (C) a regulated or nonregulated utility pursuant to

1 an order of the Administrator issued pursuant to section
2 105.

3 RESIDENTIAL ENERGY CONSERVATION PLANS

4 SEC. 102. (a) The Administrator shall, not later than
5 one hundred and twenty days after enactment of this sub-
6 part and after consultation with the Secretary of Housing and
7 Urban Development and the heads of such other agencies as
8 he deems appropriate, promulgate rules for the content and
9 implementation of residential energy conservation plans.

10 (b) The rules prescribed pursuant to subsection (a)—

11 (1) shall identify the suggested measures for
12 residential buildings, by climatic region and by categories
13 determined by the Administrator on the basis of type of
14 construction or any other factors which the Administra-
15 tor may deem appropriate; and

16 (2) may include—

17 (A) standards for general safety and effective-
18 ness of any suggested measure;

19 (B) standards for installation of any residential
20 energy conservation measure; and

21 (C) such other requirements as the Administra-
22 tor may determine to be necessary to carry out this
23 subpart.

24 (c) Not later than one hundred and eighty days after
25 promulgation of the rules described in subsection (a), each

1 State regulatory authority may submit, and each nonregulated
2 utility shall submit a proposed residential energy conserva-
3 tion plan to the Administrator. The Administrator may, upon
4 request of a State regulatory authority or nonregulated
5 utility, extend the time period for submission of a plan by
6 such authority or utility. Each such plan shall be reviewed
7 and approved or disapproved by the Administrator not later
8 than ninety days after submission. If the Administrator dis-
9 approves a plan, the State regulatory authority or non-
10 regulated utility may submit a new or amended plan not
11 later than sixty days after the date of such disapproval, or
12 such longer period as the Administrator may, for good cause,
13 allow. The Administrator shall review and approve or dis-
14 approve any such new or amended plan not later than ninety
15 days after submission. After approval of a plan, a State reg-
16 ulatory authority or nonregulated utility may submit an
17 amended plan with the consent of the Administrator.

18 (d) No residential energy conservation plan submitted
19 by a State regulatory authority shall be approved by the
20 Administrator unless such plan—

21 (1) requires each regulated utility over which such
22 State regulatory authority exercises ratemaking author-
23 ity to implement a utility program described in section
24 103;

25 (2) contains an adequate program for preventing

1 unfair, deceptive, or anticompetitive acts or practices
2 affecting commerce which relate to the implementation of
3 utility programs within such State;

4 (3) contains adequate procedures to assure that
5 each regulated utility will carry out a utility program;

6 (4) contains adequate procedures to assure that
7 each regulated utility will charge fair and reasonable
8 prices and rates of interest to its residential customers in
9 connection with the installation of residential energy
10 conservation measures; and

11 (5) meets such other requirements as may be
12 prescribed in the rules promulgated pursuant to sub-
13 section (a).

14 (d) No residential energy conservation plan proposed
15 by a nonregulated utility shall be approved by the Admin-
16 istrator unless such plan—

17 (1) provides for the implementation by such utility
18 of a utility program described in section 103;

19 (2) contains procedures pursuant to which such
20 utility will submit a written report to the Administrator,
21 not later than one year after approval of such plan and
22 biennially thereafter, regarding the implementation of
23 such utility program and containing such information
24 as may be prescribed by the Administrator in the rules
25 promulgated pursuant to subsection (a); and

1 mine and apprise the residential customer of the
2 estimated cost of purchasing and installing each
3 suggested measure;

4 (B) offer to have the suggested measures
5 installed;

6 (C) make, or arrange for another lender to
7 make, a loan to such residential customer to finance
8 the purchase and installation costs of suggested
9 measures purchased from and installed by any of
10 the following persons:

11 (i) the public utility, or

12 (ii) the public utility and one or more
13 contractors, or

14 (iii) one or more contractors,

15 subject to such reasonable requirements as to credit-
16 worthiness as may be permitted by the applicable
17 residential energy conservation plan and to the
18 right of the public utility to inspect the residential
19 building to confirm the installation of suggested
20 measures;

21 (D) permit the residential customer to repay
22 the principal of and interest on any loan made pur-
23 suant to subparagraph (C), over a period of not
24 less than three years, as a part of his periodic bill
25 except that a lump-sum payment of outstanding

1 principal and interest may be required upon default
2 in payment by the residential customer;

3 (3) procedures whereby the public utility prepares
4 and sends to each of its residential customers a list of
5 suppliers and contractors in its service area who sell
6 and install residential energy conservation measures
7 which list is designed to encourage participation by
8 such contractors and suppliers in a nondiscriminatory
9 manner; and

10 (4) procedures whereby the public utility prepares
11 and sends to each of its residential customers a list of
12 banks, savings and loan associations, credit unions, and
13 other public and private lending institutions in its serv-
14 ice area which offer loans for the purchase and installa-
15 tion of residential energy conservation measures.

16 (b) The Administrator may, upon petition of a public
17 utility, supported in the case of a regulated utility by the
18 appropriate State regulatory authority, waive in whole or
19 in part the requirements of paragraphs (1) (c) and (2)
20 of subsection (a) with respect to the utility program of
21 such utility if such utility demonstrates to the satisfaction
22 of the Administrator that, despite good faith efforts on its
23 part, it is unable to meet the requirements of paragraph
24 (2) of subsection (a) because it both lacks the financial
25 capability to extend loans in accordance with such paragraph

1 and is unable to arrange with any other suitable financial
2 institution for the making of such loans, except that no
3 public utility may be granted a waiver under this section
4 unless such utility demonstrates to the satisfaction of the
5 Administrator that it has dedicated all capital reasonably
6 available to it toward meeting the requirements of para-
7 graph 2 of subsection (a).

8

ALTERNATIVE PROGRAMS

9 SEC. 104. (a) A State regulatory authority or a public
10 utility (supported in the case of a regulated utility by the
11 appropriate State regulatory authority) may apply for an
12 exemption from the requirements of section 103 at any time
13 prior to one year after enactment of this Act. The Adminis-
14 trator shall grant such an exemption if such authority or
15 utility demonstrates to the satisfaction of the Administrator
16 that it has implemented or will implement an alternative pro-
17 gram providing for the installation of residential conservation
18 measures in the homes of its residential customers which
19 program meets the requirements of this subsection. No ex-
20 emption shall be granted by the Administrator unless the
21 alternative program of such authority or utility includes the
22 following:

23

(1) procedures whereby the utility informs each of

24

its residential customers who owns or occupies a residen-

1 tial building in which the suggested measures have not
2 been installed, of—

3 (A) the suggested measures for the category of
4 residential buildings which includes such building;

5 (B) the savings in costs of home heating and
6 cooling that are likely to result from installation of
7 the suggested measures in typical residential build-
8 ings in such category; and

9 (C) the availability of arrangements for pur-
10 chase and installation of such measures;

11 (2) procedures whereby arrangements are offered
12 for the installation of the suggested measures to such
13 residential customers; and

14 (3) such other requirements as the Administrator
15 determines.

16 (b) Any application for exemption pursuant to sub-
17 section (A) shall contain such information as the Admin-
18 istrator may by rule require.

19 (c) No application pursuant to subsection (a) shall
20 be approved by the Administrator unless he determines that
21 the alternative program is likely to result in the installation
22 of suggested measures in as large a number of residential
23 buildings as would have been installed had such utility sub-
24 mitted a program which meets the requirements of section
25 103.

1 (d) Any State regulatory authority or public utility
2 may apply for a temporary exemption prior to the promul-
3 gation of guidelines pursuant to section 102. A temporary
4 exemption may be granted from the requirements of section
5 103 for a period not to exceed two years after the date of
6 enactment of this Act, if such authority or utility demon-
7 strates to the satisfaction of the Administrator that it has
8 implemented or proposes to implement an energy conserva-
9 tion program for residential customers which is likely to
10 result in the installation of suggested measures in a sub-
11 stantial proportion of residential buildings.

12 **FEDERAL STANDBY AUTHORITY**

13 SEC. 105. (a) If a State regulatory authority has not
14 had a plan approved under section 102 (c) within two hun-
15 dred and seventy days after promulgation of rules under
16 section 102 (a), or within such additional period as the Ad-
17 ministrator may allow pursuant to section 102 (c) (1), or if
18 the Administrator determines that such State regulatory au-
19 thority has not adequately implemented an approved plan,
20 the Administrator shall, by order, require each public utility
21 in the State to offer to its residential customers a utility pro-
22 gram prescribed in such order which meets the requirements
23 specified in subsection (a) of section 103.

24 (b) If a nonregulated utility has not had a plan ap-
25 proved under section 102 (c) within two hundred and sev-

1 enty days after promulgation of rules under section 102 (a)
2 or within such additional period as the Administrator may
3 allow pursuant to section 102 (c), or if the Administrator
4 determines that such nonregulated utility has not adequately
5 implemented an approved plan, the Administrator shall, by
6 order, require such nonregulated utility to offer its customers
7 a utility program prescribed in such order which meets the
8 requirements specified in subsection (a) of section 103.

9 (c) If the Administrator determines that any public
10 utility to which an order has been issued pursuant to subsec-
11 tion (a) or (b) has failed to comply with such order, he
12 may either order that such public utility may not increase
13 any at which it sells natural gas or electric energy until such
14 time as he determines that such utility has implemented a
15 utility program meeting the requirements of the order issued
16 pursuant to subsection (a) or (b), or petition the district
17 courts of the United States to enjoin such utility from violat-
18 ing an order issued pursuant to this subsection.

19 (d) Any public utility which violates an order under
20 subsection (b) shall be subject to a civil penalty of not more
21 than \$25,000 for each violation. Each day that such violation
22 continues shall be considered a separate violation.

23 RELATIONSHIP TO OTHER LAWS

24 SEC. 106. The Administrator may by order upon peti-
25 tion by a public utility and for good cause, supersede any

1 law or regulation of any State or political subdivision thereof,
 2 to the extent that such law or regulation prohibits a public
 3 utility from taking any action required to be taken under
 4 section 103 of this Act.

5 CONTRACT PROVISIONS

6 SEC. 107. No public utility shall be subject to any
 7 liability under any provision in any contract which restricts
 8 any public utility from lending, borrowing, or entering a new
 9 line of business, if such lending, borrowing, or entering a new
 10 line of business is required under section 103 of this Act.

11 RULES

12 SEC. 108. The Administrator is authorized to promulgate
 13 such rules as may be necessary to carry out this subpart.

14 AUTHORIZATION OF APPROPRIATIONS

15 SEC. 109. There are hereby authorized to be appropri-
 16 ated to the Administrator such sums as may be necessary to
 17 carry out his responsibilities under this subpart.

18 Subpart 2—Financing Program

19 AMENDMENTS TO NATIONAL HOUSING ACT

20 SEC. 110. Section 2 (a) of the National Housing Act
 21 is amended by adding at the end of the first paragraph there-
 22 of the following sentence: "For the purpose of this section,
 23 the terms 'financial institution' and 'lending institution' shall
 24 be deemed to include any public utility which is engaged
 25 in making loans or advancing credit for energy conserving

1 improvements as defined in subparagraph (2) of the fourth
2 paragraph of this section only for the purposes of such loans
3 or advances of credit. The term 'public utility' means any
4 person or State agency which is engaged in the business of
5 selling natural gas or electric energy for purposes other than
6 resale.”.

7 SEC. 111. Subparagraphs (2) and (3) of the fourth
8 paragraph of section 2 (a) of the National Housing Act are
9 amended to read as follows:

10 “(2) The term ‘energy conserving improvements’
11 means (i) energy conservation measures as defined in
12 section 101 of the National Energy Act, or (ii) any
13 addition, alteration, or improvement to an existing or
14 new structure which is designed to reduce the total en-
15 ergy requirements of that structure, and which is in con-
16 formity with such criteria and standards as shall be pre-
17 scribed by the Secretary in consultation with the Ad-
18 ministrator of the Federal Energy Administration; and

19 “(3) the term ‘solar energy system’ means any
20 addition, alteration, or improvement to an existing or
21 new structure which is designed to utilize solar energy
22 to reduce the energy requirements of that structure from
23 other energy sources, and which is in conformity with
24 such criteria and standards as shall be prescribed by the

1 Secretary in consultation with the Administrator of the
2 Federal Energy Administration.”.

3 SEC. 112. Section 2 (f) of the National Housing Act is
4 amended by adding the following at the end thereof: “The
5 Secretary shall conduct a study within two years after the
6 enactment of the National Energy Act in order to deter-
7 mine an actuarially sound premium rate for loans for energy
8 conserving improvements authorized under section 2 (a) of
9 this subchapter, and shall, based on this study, no earlier than
10 two years after date of enactment of the National Energy
11 Act, set an actuarially sound premium rate for such loans,
12 which rate may exceed the otherwise applicable 1 per centum
13 limitation of this subsection.”.

14 SEC. 113. Section 302 (h) of the Federal Home Loan
15 Mortgage Corporation Act (12 U.S.C. 1451 (h)) is
16 amended by adding at the end thereof a new sentence, to
17 read as follows: “The term ‘residential mortgage’ is deemed
18 to include a loan or advance of credit insured under title I
19 of the National Housing Act whose original proceeds are
20 applied for in order to finance energy conserving improve-
21 ments to residential real estate. The term ‘residential mort-
22 gage’ is also deemed to include a loan or advance of credit
23 for such purposes not having the benefit of such insurance
24 and to include loans made where the lender relies for pur-

1 poses of repayment primarily on the borrower's general
 2 credit standing and forecast of income, with or without other
 3 security.”.

4 **AMENDMENT TO FEDERAL NATIONAL MORTGAGE**

5 **ASSOCIATION CHARTER ACT**

6 **SEC. 14.** Section 302 (b) of the Federal National Mort-
 7 gage Association Charter Act is amended by adding at the
 8 end thereof the following new paragraph:

9 “(3) The corporation is authorized to purchase,
 10 service, sell, lend on the security of, and otherwise deal
 11 in loans made for the energy conservation purposes
 12 described in section 2 (a) of the National Housing Act,
 13 whether or not insured under such section. To be eligible
 14 for purchase, any such loan not so insured may be se-
 15 cured as required by the corporation.”.

16 **AMENDMENT TO ENERGY CONSERVATION AND PRODUCTION**

17 **ACT**

18 **SEC. 115.** Section 422 of the Energy Conservation and
 19 Production Act is amended to read as follows:

20 **“AUTHORIZATION OF APPROPRIATIONS**

21 **“SEC. 422.** There are authorized to be appropriated for
 22 purposes of carrying out the weatherization program under
 23 this part, not to exceed \$55,000,000 for the fiscal year end-
 24 ing September 30, 1977, not to exceed \$130,000,000 for the
 25 fiscal year ending September 30, 1978, not to exceed

1 \$200,000,000 for the fiscal year ending September 30, 1979,
2 and not to exceed \$200,000,000 for the fiscal year ending
3 September 30, 1980, such sums to remain available until
4 expended.”.

5 Subpart 3—New Building Performance Standards Grants

6 AUTHORIZATION FOR SECTION 307 (b) OF ENERGY

7 CONSERVATION AND PRODUCTION ACT

8 SEC. 131. Section 307 (b) of the Energy Conservation
9 and Production Act is amended to read as follows:

10 “(b) There is authorized to be appropriated for the
11 purpose of carrying out this section, the following amounts—

12 “(1) for the fiscal year ending September 30,
13 1977, not to exceed \$5,000,000;

14 “(2) in the fiscal year ending September 30, 1978,
15 not to exceed \$10,000,000; and

16 “(3) in the fiscal year ending September 30, 1979,
17 not to exceed \$10,000,000.

18 Any amount appropriated pursuant to this subsection shall
19 remain available until expended.”.

NATIONAL ENERGY CONSERVATION POLICY ACT

TUESDAY, JUNE 28, 1977

U.S. SENATE,
COMMITTEE ON BANKING, HOUSING, AND URBAN AFFAIRS,
Washington, D.C.

The committee met at 10 a.m., in room 5302, Dirksen Senate Office Building, Senator William Proxmire, chairman of the committee, presiding.

Present: Senators Proxmire and Schmitt.

Also present: Senator Ernest F. Hollings.

The CHAIRMAN. The committee will come to order.

I understand the distinguished Senator from South Carolina, Senator Hollings, has an introduction. What I'm going to ask is that he introduce President Hardin of the U.S. League of Savings Associations and then we will hear from Mr. Reich of the Federal Trade Commission and then we will go back to the panel including Mr. Hardin if that's acceptable.

STATEMENT OF ERNEST F. HOLLINGS, U.S. SENATOR FROM THE STATE OF SOUTH CAROLINA

Senator HOLLINGS. Thank you, Mr. Chairman, and that will be acceptable.

Mr. Chairman, I will appreciate the privilege. I asked for this opportunity. I was a former member of this committee and I have worked in the field of conservation in buildings both in our Commerce Committee and in housing on the \$10 million loan guarantees in the Senate. Working in this field, I thought that the principal Committee of Banking, Housing and Urban Affairs should know a little bit about the background of this new president of the U.S. Savings and Loan League. He's not just one of those that comes along as a representative within the Washington scene, but instead from the grass roots, starting back 30 years ago with his own savings and loan association at Rock Hill, S.C. we were talking with our former colleague a minute ago, Tom Gettys, who was on the Housing Committee in the House of Representatives representing the 5th District of South Carolina, which includes Rock Hill.

John Hardin has come up through the ranks. More recently he has served as a director of the Federal Home Loan Bank Board in Atlanta, and now he is the national president and a member of the housing commissioner of South Carolina's housing authority as the commissioner there and has been in every particular field with respect to housing and with respect to savings and loan.

Even more, in South Carolina we remember him as one of the most dynamic mayors we have ever had. He was the mayor of the city of Rock Hill for a long time and then the State president of the Municipal Association. So he's been working in this particular field and comes with a heck of a lot of marlarky—you will enjoy listening to him—but a heck of a lot of commonsense too with his outstanding background and experience in this field. I don't know of any better authority in the savings and loan association to be a spokesman and a national president. And I don't say that just to get his vote. I don't run again until 1980 and he will be long gone by then as national president, but in all candor, it is a privilege to present him to this distinguished committee and I'm sure you will appreciate his testimony. I wanted to come here this first time because he will be testifying before you from time to time, I'm sure, during the next few years. Thank you very much.

The CHAIRMAN. Thank you, Senator Hollings. I might say if Mr. Hardin has anything like the marlarky and commonsense and chutzpah like you have, he will be a real star.

Senator HOLLINGS. Thank you very much.

The CHAIRMAN. We will now hear from Director Robert Reich of the Office of Planning and Evaluation, Federal Trade Commission.

**STATEMENT OF ROBERT B. REICH, DIRECTOR, OFFICE OF POLICY
PLANNING AND EVALUATION, FEDERAL TRADE COMMISSION**

Mr. REICH. Mr. Chairman, I will submit for the record my prepared testimony and highlight it for the committee.

The CHAIRMAN. We would appreciate that because we do have a number of witnesses this morning and we would like to ask some questions and other Senators will be here. The entire statement will be printed in full in the record.

Mr. REICH. I also bring to the committee's attention a report, as an appendix to my testimony, which was prepared by the FTC staff in response to a request from the House Subcommittee on Energy and Power. The report in greater detail addresses several of the concerns both in the consumer protection and in the competition area which the Federal Trade Commission has with regard to the proposed legislation.

Most of our concerns involve part A of the President's proposed legislation which places utilities in the business of advising customers of the need for insulation, supplying the insulation and financing the purchase.

First of all, public utilities are exempt from the Truth-in-Lending Act and the Fair Credit Billing Act for most services that they now perform. We think it's advisable to add a provision in the legislation which expressly makes the Truth-in-Lending Act and Fair Credit Billing Act applicable to transactions entered into between home owners and utilities which involve financing.

The Federal Trade Commission does construe these acts to pertain to utilities that are now offering to finance home insulation but several utilities throughout the country have not construed it that way. There is some confusion, and clarification is in order.

Second, we are concerned that utilities, unlike other financiers, have at their disposal a potentially coercive debt collection technique, which is simply the termination of service. We would recommend that a provision be inserted in the legislation which expressly prohibits utilities from terminating service for failure to pay moneys due to the home insulation portion of that utility bill, assuming that utilities will be getting into the home financing business.

Third, we propose that the legislation be clarified to expressly save the Federal Trade Commission's existing statutory enforcement authority, particularly with regard to consumer protection rules that are already in effect. As the committee may know, the home improvements industry has been a constant source of problems for consumers in terms of shoddy workmanship and simply bad performance.

The holder in due course rule, the 3-day cooling off rule and the various other rules that the Federal Trade Commission has promulgated and is now promulgating should be made applicable to all these transactions whether or not they are facilitated by public utilities.

Fourth, I wish to highlight a troubling aspect of the legislation with regard to competition. The President's proposal will give utilities three functions: The inspection, the selling of home insulation either directly or through subcontractors, and also the financing of these measures. Since in most locales each of these functions could be achieved by private parties other than utilities, the question does arise whether the unregulated sector can do the job or ought to be displaced by utilities.

We are concerned about several potential competitive abuses that arise under the President's proposal. First, the inspection role might not be carried out in a neutral manner if the utility can profit from overselling conservation measures or from charging business to itself or to its favorite subcontractors. It may simply overstate the need for insulation if it's both appraising and also supplying.

Second, the utility might be able to take unfair advantage of its unique position as a regulated monopoly with easy access to consumers, with direct access, which no other competitor in the home insulation business also would have, to win business away from independent contractors and also to charge a higher price for the insulation.

And, third, if a utility can cross-subsidize its sales and services through increases in electric or gas rates, it might drive competing contractors out of the market while in the long run overcharging consumers, even though it would appear that its price for conservation measures taken alone are relatively low. This will be a very difficult thing to police.

We recommend, therefore, that the role of the utilities in the sale, installation, and financing of insulation be strictly circumscribed. At most, if a utility wants to enter this field, it should participate directly rather than through subcontractors to avoid the possibility that the utility will tie up the local contractors and thereby minimize the competition.

We recommend additional safeguards in the report we submitted to the House Subcommittee on Energy and Power.

Finally, we recommend that utilities should be prohibited from recovering any of the cost in providing these services within utility rates charges across the board to all customers.

Now the last problem that I wish to highlight for the committee this morning concerns the insulation industry itself. A preliminary analysis of the home insulation industry showed that the fiberglass insulation industry, which occupies about 80 percent of the home insulation industry right now, is quite concentrated. There are only three major manufacturers of fiberglass insulation.

We also discovered, again in a preliminary analysis, that there is not a great deal of capacity; that there are people and firms that would like to enter the fiberglass industry but cannot because the technology is tied up in licenses which are owned by the three major firms in the fiberglass insulation industry. There is some talk and some speculation about whether other forms of home insulation might take up the slack, such as cellulose. A preliminary investigation by the FTC staff indicated that cellulose would not be able to take up the competitive slack, primarily because the substance with which cellulose must be treated in order to make it both fire resistant and also efficacious—that is a Borax solution—is itself in very short supply. In short, our preliminary analysis showed that there may be some severe competitive problems in the short run, that there may be a substantial price rise in the area of home insulation if the tax rebate provisions and the incentives built into the President's proposals are in fact enacted.

That concludes, Mr. Chairman, the concerns that the Federal Trade Commission has, at least the highlighted version of those concerns, and, again, I draw the committee's attention to a report that goes into those concerns in greater detail. I would be happy to answer any questions that the committee may have.

The CHAIRMAN. Very good. I want to thank you very much for a fine statement and for a remarkable summary of the statement that you have.

Let me just start off with the last point that you made with respect to the availability of supply of insulation materials particularly fiberglass. Are you familiar with the ICF report?

Mr. REICH. Yes, I have seen it.

The CHAIRMAN. That report seems to contradict what you have just told us. The report indicates that this industry is—it is true that it's concentrated. It's true that there are only three major producers. It's an oligopoly situation. There's no question about that. But the report finds that because of the nature of the industry that it should be able to expand quickly and easily.

It says there are no major supply constraints—this is part of the summary on page 2 of the report—beyond the approximate 18 months leadtime for new equipment installation. The major limiting factor is the fear of cyclical falloff in the housing market. It goes on to say that it's a very profitable industry with a short capital cycle and quick payout periods. Industry sources have estimated they would be

able to expand effectively and there would be no lack of capacity after 1977, and so forth.

At any rate, this study which is admittedly a very temporary or at least abbreviated and limited study and they say further details will be forthcoming in about a month, suggests that the industry can expand and they say as far as the price angle is concerned they are very conscious of their vulnerable position because they are under careful scrutiny now. There are only three companies. They have to be careful about increasing prices and for that reason there's some reason here to suggest that they might be able to expand rather quickly without a big increase in price.

What's your response to that?

Mr. REICH. I have two responses, Mr. Chairman. First, our study of the fiber glass industry also is preliminary and our conclusions that there is not excess capacity right now are also tentative. We are at this very moment carrying on a more formal and intensive investigation. But I think that the committee should be aware that in a concentrated industry such as this, if the demand for the product is fairly inelastic, although there may be excess capacity, there also would be a great incentive on the part of a very few manufacturers to withhold supplies for the sake of increasing the price. If the demand is sufficiently inelastic, it will be profitable for the manufacturers to withhold supplies.

The CHAIRMAN. Except here is an industry which should be extraordinarily vulnerable to criticism because of the energy crisis because of the great attention the President and others are calling to it. If they try to exploit it by increasing prices when they are already making a substantial profit, it seems to me that the possibility of a crackdown, including price controls, would be a serious threat to them.

Mr. REICH. Mr. Chairman, we have already received complaints from several customers in this industry that manufacturers were holding back supplies at this very time perhaps out of anticipation of a pending price rise.

Senator SCHMITT. Excuse me. You have received complaints. Have you analyzed these complaints? Do you know that they are factual?

Mr. REICH. Yes, Senator, As part of our formal investigation of the insulation industry, we are right at this moment analyzing the complaints. But I wish to add that—

The CHAIRMAN. Senator Schmitt's question was—

Senator SCHMITT. You made a charge here

The CHAIRMAN. Can you verify the complaints? Are they actually withholding supply?

Mr. REICH. No. I can only say for the public record that we have received several complaints and we are checking them out. But the interore effect of public scrutiny to which you refer may be quite powerful in the short run, but as a matter of economics and antitrust law I for one am not confident that over the long run, at least over the next 3 or 4 years, it will be possible to police the industry to such an extent that we can attribute a shortage of supplies to willfulness or simply to lack of excess capacity. It's difficult enough right now to measure that on a preliminary analysis.

The CHAIRMAN. Will you make available to the committee whatever study the FTC has made of this so we can have that along with this, and then you say that's a preliminary study. When will you have further documentation?

Mr. REICH. The preliminary study is found at attachment B of the report submitted to the committee as an appendix to my prepared testimony. The formal investigation normally runs about 60 days. The Bureau of Competition in the Federal Trade Commission—

The CHAIRMAN. Any additional information you can give us that would flesh out the preliminary study would be very welcome.

Mr. REICH. Certainly.

The CHAIRMAN. Now the administration testified yesterday the FTC would, under their proposal, be the lead federal agency in assuring that the energy program is being carried out under the fair trade laws. Is the FTC experience such that it can do this job on such a broad scale? What problems do you foresee, No. 1, if Congress does not make the changes you suggest or Congress does make the changes?

Mr. REICH. It will be very difficult, given the present manpower in the FTC, for the FTC to police the multivarious type of potential problems in this area. Again, if utilities are both financing and supplying the insulation and also appraising, that alone is a major enforcement effort to insure that that conjoining role is not—

The CHAIRMAN. How much manpower would you have to have in order to effectively enforce that?

Mr. REICH. I'll take a guess and then I'll get back to the committee, with your permission, with a more specific figure. My guess would be that we would need about, in terms of auditors, 350.

The CHAIRMAN. What would be the cost of that? \$15,000 a job or \$20,000 a job?

Mr. REICH. Yes, it can be figures. It would be \$15,000 to \$20,000 a job and anyone who's able in mathematics can figure that faster than I can sitting here off the top of my head. But let me emphasize, Mr. Chairman, that in order to police those transactions and to avoid anticompetitive impacts from that conjoining of roles, we are really talking about an auditing and enforcement effort that is very similar to the kind of very elaborate auditing and the enforcement effort now undertaken by the FEA with regard to oil prices and many of their other activities. It is not simply a matter of going over books because it also entails or would entail an investigation of competitive markets.

The CHAIRMAN. Could it be done by state public service commissions?

Mr. REICH. The Federal Trade Commission has not addressed this issue. My judgment is that the public utility commissions' track record in the competition area is not all that strong. I'm not aware in the past of any referral by State public utility commissions to either state or Federal antitrust agencies, and I think it's fair to say that public confidence—I'm not trying to disparage State public utility commissions because many are doing excellent jobs—but public confidence in their ability to police both with regard to competition and consumer protection is not high.

The CHAIRMAN. The administration has testified that the States will play the key role in limiting abuses under the proposed program.

Is this a principal problem that you see, that the public service commissions have a poor track record in enforcing effective competition?

Mr. REICH. Well, quite frankly, Mr. Chairman, yes, they do have a poor track record. I think they would need to be beefed up considerably if they were going to effectively meet some of the potential abuses both in the competition and consumer protection areas.

The CHAIRMAN. We heard testimony yesterday that the insulation industry is characterized by a significant degree of concentration. We have already handled that.

Will you explain the problem relating to the holder in due course in a court decision and how this could affect the energy improvements program?

Mr. REICH. Assuming that the holder in due course rule would apply to transactions undertaken by the utilities in financing home insulation, the holder in due-course rule would apply if there is a business connection between the financier and the seller of the home insulation. If a utility finances the transaction and refers the customer to a third party contractor to do the actual installation or insulation, the holder in due-course rule would apply. If the contractor handed the utility a note and the utility became the direct creditor in that situation, the consumer would preserve all its claims and defenses vis-a-vis the utility financier.

If the insulation or installation were defective, the customer might withhold payments and assert any valid legal claims and defenses under his contract.

The CHAIRMAN. How would that differ from lending institutions?

Mr. REICH. It would be exactly the same. The utility would be no more and no less vulnerable than any other lending institution under the holder in due course system.

The CHAIRMAN. Would there be a secondary market? Supposing they sold the—FNMA picked up the obligation.

Mr. REICH. If a third-party financier were to do the financing and a third-party contractor were to do the contracting so that the utility did nothing more than supply lists of potential financiers and potential contractors and played a completely neutral part in supplying those lists, then I would doubt that the holder in due-course rule would apply. But if the utility were to screen those lists of financiers and the list of contractors and make recommendations as to which financiers and which contractors were the most reliable or reasonable, then the holder in due-course rule presumably would apply and the consumer might assert those claims and defenses. The screening function itself would probably create enough of a potential business relationship between financier and seller to trigger the holder in due course rule.

Now I would like to emphasize for the record that the Federal Trade Commission is at this very moment scrutinizing a similar set of arrangements and has not definitively ascertained whether and to what extent the holder in due-course rule would apply. The rule is new, implementation of the rule is now underway, and the very factual circumstances are being scrutinized by staff. I'm giving you my best judgment.

The CHAIRMAN. One more question before I yield to Senator Schmitt. Our discussion of the holder in due-course doctrine raises

the whole question about the experience and competence of the utility to act as a banker or a financier. Does this give you concern or trouble, their competence in the field? After all, this is something that's usually been financed by bankers who have experience in handling credit and we are now asking the utility to do something foreign or different from their experience.

Mr. REICH. It does give us pause, not from the standpoint of the utilities ability to carry out internally and profitably these functions, because that's not within our expertise—but it does give us pause from the standpoint of the utilities' ability to carry out both the spirit and the direction of consumer protection laws and also act as an effective policeman of these transactions. Bankers and other lending institutions have under the holder in due-course rule and several other related measures been very effective in policing such transactions. There was a great deal of fear I understand when the holder in due-course rule was promulgated that the secondary credit market would almost dry up in many of these areas. That has not, so far as I'm aware, come to pass. Instead, just the opposite is true. The lending institutions have been enormously effective and much better at monitoring these markets than consumers. They have the comparative advantage the consumers don't have. The question remains whether utilities would be as effective as other lending institutions. I think that's a serious question.

The CHAIRMAN. Senator Schmitt.

Senator SCHMITT. Thank you, Mr. Chairman.

I appreciate the testimony. This was an issue yesterday that came up time and time again and it's good to have the horse's mouth present.

You paint a somewhat bleak picture of possible noncompetitive and consumer oriented problems if the President's proposals were instituted. Let's assume that they were not. We did have some testimony yesterday saying that the industry and the people are moving quite rapidly toward more conservative homes with respect to energy. Maybe we can just let those trends continue and reach the same goal.

If we did that, what would you recommend as the Federal Trade Commission's new role or expanded role, or would you just continue the way you are?

Mr. REICH. Senator, if there's no change in the status quo as to insulation and financing of insulation, I think the Federal Trade Commission, given its present resources, is probably fairly well equipped to police the marketplace as it has done in the past. I hasten to add that the parade of horrors to which I referred in my testimony is purely hypothetical. We are undertaking research and investigations right now to further flesh out these problems. I also want to add that the bleak picture that I paint of potential competitive abuses obviously must be weighed against the very, very critical issues presented in the energy proposals. I have not done that weighing and the Federal Trade Commission is incompetent to do that weighing. That's weighing that you must do.

What I can do is point out ways in which those competitive abuses might either be alleviated or mitigated. One possible measure that Congress may want to consider with regard to the home insulation

industry and the fiberglass industry is mandatory licensing of that technology. The main barrier to entry into the fiberglass industry seems to be, again in our preliminary investigation, the licensing of the technology that is in the hands of the three large fiberglass manufacturers. Allowing others to use that same technology might be one way of avoiding some of this anticompetitive trap to which I referred.

Senator SCHMITT. Are there any precedents for such an activity?

Mr. REICH. There are analogies. The Federal Trade Commission recently scrutinized a trademark and determined that to remedy anticompetitive consequences the trademark would have to be licensed to others. That's an extreme remedy.

Senator SCHMITT. Are there any constitutional questions in such a remedy?

Mr. REICH. There may be some constitutional questions. They would of course need to be addressed. I offer this possibility only as one that may merit further examination.

As to the utilities' role as financier and supplier and appraiser of home insulation, there are other ways to which I referred of mitigating competitive abuses.

Senator SCHMITT. With respect to the insulation industry's ability to produce at a capacity required by the assumptions in the legislation, do you see any mechanisms by which—other than the licensing proposal, by which that industry could be assured of the capacity necessary?

Mr. REICH. In my limited expertise and given our preliminary investigation, no, Senator. I'm not aware of any other expedients that would allow others to enter into that industry and fairly well insure adequate supplies.

Senator SCHMITT. What are the main patent limitations? Is it on the process?

Mr. REICH. It's primarily concerning the process. The initial patents, as far as I'm aware, on fiberglass and on development of fiberglass have run out and that process is generally available; but there has been a second round of patents that concern the manufacturing process. It's those second round of patents that our preliminary analysis shows have created a substantial barrier to entry.

In our preliminary analysis of this situation, we interviewed several manufacturers—not of fiberglass, but manufacturers who would like to get into the fiberglass area, and who told us that they would not get into it at least for 10 years unless they had access to that technology. But if they did have access to the technology, they would be able to get into it they thought in about 2 years. Now that 2-year lag time—

Senator SCHMITT. Were these small companies or large companies? What was the capital resource of these companies?

Mr. REICH. I'm sorry, Senator. I don't know.

Senator SCHMITT. That would have some effect on that kind of decision.

Mr. REICH. But whatever the capital resources, they assured us, given capital resource, given capital markets, they could and would

have entered the fiberglass market if they had that technology. Again, this is a preliminary view of that industry.

Senator SCHMITT. You realize, of course, that one aspect of this problem that we discussed some yesterday is the use of solar equipment. Has the Federal Trade Commission had any experience yet in the solar equipment industry and whether or not that industry is expanding along legitimate grounds? Is there any sign of abuses to the consumer in that industry at this time?

Mr. REICH. We have had very limited experience. The Bureau of Competition has prepared and will release shortly a report on the solar industry and potential competitive problems in that solar industry. I believe that the report focuses on photovoltaic cell usage which is a technology unique to the solar industry, but I believe that the report does not focus on solar heating and cooling systems which is more pertinent for the particular energy legislation at issue.

Senator SCHMITT. Would you examine your records and reports for that and if there is some information I think the committee would appreciate having it.

Mr. REICH. Certainly.

Senator SCHMITT. Finally, you mentioned the poor track record of the State public utility commissions. Is that something that can be documented, that there's a poor track record? Could you expand a little bit on what you mean by poor track record?

Mr. REICH. We have received complaints going back many years from utility customers who feel that they have somehow been mistreated either because their utility service was cut off unfairly or because they don't feel they have the safeguards procedurally to contest utility bills. These are not utilities in the home insulation industry or offering financing. This is just the straight provision of utility services. Those complaints over a period of years are not overwhelming, and again I don't want to in any way disparage the public utility commissions because many of them are doing an outstanding job, but I think they do reflect a lack of public confidence in State public utility commissions. I think we also need to face the fact that many of those public utility commissions at this moment are not well staffed. They don't have the resources to undertake the kind of policing that might be necessary under the proposed legislation.

Senator SCHMITT. Do you think we could give them the resources so they could implement it?

Mr. REICH. That certainly is a possibility, Senator.

Senator SCHMITT. I'm not sure public confidence is much higher in certain Federal agencies than it is in State public utility commissions, if my mail is any indication. Public confidence is pretty low in all of them and I think what we have to do is search out a way that can be effective and hopefully by doing it properly we can restore some public confidence.

Mr. REICH. I agree with you.

Senator SCHMITT. Centralization is not necessarily good for public confidence.

Mr. REICH. I agree with you, Senator. I think there are two questions. One, do you want to give public utilities the responsibility of

financing and appraising and also supplying this insulation? Second, if you do, who is going to have the resources to adequately police this market to make sure they are not anticompetitive and there is consumer protection?

Senator SCHMITT. I gather by what you're saying that you and the Commission would prefer to have a competitive home insulation environment much like we have now rather than concentration of activity in the utilities. Is that a correct assessment?

Mr. REICH. I think yes. It's also fair to say that utilities do have economies of scale with regard to undertaking the appraisal and the energy auditing function.

Senator SCHMITT. But with that comes a competitive advantage also.

Mr. REICH. It becomes a competitive advantage only if you tag on to that auditing function the financing and installing. If you take away the financing and installing and supplying and just leave the economies of scale that adheres in doing the audit, that doesn't raise the same kind of potential problems. In fact, that may be a good balance. That may maximize both what the energy proposals are intended to accomplish and also minimize the anticompetitive dangers.

Senator SCHMITT. Do you agree with the FEA's estimate yesterday that each appraisal would cost \$20 to \$40 per home on the average?

Mr. REICH. I'm in no position to assess that dollar figure, Senator.

Senator SCHMITT. That's interesting. I would have thought you might be able to assess that. If you have any information at the Commission that would help us understand better the cost to an individual homeowner of the provisions of this bill, it would help. There are not many visits to a home by anybody these days that can be done for \$20 or \$40, particularly if you're going to do a legitimate assessment of the insulation or conservation needs of a home. I find myself a little bit skeptical of that figure, but we would like your input if you have some.

Thank you, Mr. Chairman.

The CHAIRMAN. I just have two questions relating to the Federal Trade Commission that I missed on the first round.

Yesterday Mr. Bardin of the Federal Energy Administration had a rather strong criticism of the position the FTC has taken. Let me read from the transcript of what he said:

We strongly oppose the Federal Trade Commission's proposals to narrow the requirement that utilities offer to install insulation. In light of the urgent need to save energy, utilities must be mandated we believe to offer both the installation and the financing services proposed. As I understand it, the Federal Trade Commission's concerns are limited only to the installation services. The Federal Trade Commission is understandably anxious to preserve a maximum choice, competitive choice, for each householder. We share that concern, but we urge the committee to look carefully at the picture that some would paint to you of predatory utilities who will take unfair advantage of this program.

They think if we had predatory utilities they would have acted now. They could act now and act on a voluntary basis and they

would do so. This would mandate them to come in. He goes on to say this:

The solution advocated by the Federal Trade Commission is simply unrealistic, even schizophrenic, and is addressing the hypothetical, the alleged problem of the predatory utility, because their solution is to make the program voluntary to allow those utilities, such as the three dozen or so gas utility and other electric utilities already doing this program—allow them to promote conservation and installation of retrofit and financing of retrofit if they so elect.

Now if there is a predatory utility out there, it certainly is going to elect to take advantage of this opportunity. What we want to do is to enlist the good services of all the utilities with the managerial capability to reach the public to get a job done in a reasonable number of years, a job which will take a great deal of know-how and organization if it is to be accomplished.

Now what's your answer?

Mr. REICH. I respectfully disagree on two counts. I had not heard that testimony, but from your rendition, Mr. Chairman, it sounds as if one of the assumptions is that predatory utilities, if there are such things, would have come in already. But I would direct the committee's attention to the fact that powerful tax incentives are in the offing that are going to radically change the nature of that market and presumably increase public demand. At least that's the intent. So that while it might not be profitable for a utility to come in and act in a predatory fashion at this stage, a year from now or 2 years from now when these tax incentives are in fact in place, it may unfortunately be very profitable for a utility to act in a predatory manner.

But there's a second point that I wish to raise. Our concern is not with outright predatory practices necessarily—

The CHAIRMAN. Let me just interrupt here because it seems to me that this aspect of a utility's operation would not be governed by the usual regulatory restraints. That is, any profit that they made in this area would not be governed by the limitation on what they can earn on their invested capital. Isn't that correct?

Mr. REICH. Yes; that's my understanding.

The CHAIRMAN. Therefore, they would have an incentive for maximizing their profit here without any feeling that they would therefore have to take a lower rate of return on their other business.

Mr. REICH. Exactly. You're absolutely right.

But second, our concern is not with outright predatory practices which tend to be quite visible and which are difficult to police. Our concern also extends to other sub rosa activities that a utility might engage in, such as cross-subsidization. That is, attributing the cost of these supply or financing functions to its normal rate structure that's spread over the cost of everybody's utility services, thereby giving it a major competitive advantage over other financers or suppliers; second, merely taking advantage of its economies of scale and access not in any predatory way but simply charging a higher price for insulation and for financing than the consumer could obtain elsewhere. The consumer knows the utility and gets a bill from the utility every month, and therefore may be unable or unwilling or maybe simply too trusting to go out and undertake the kind of comparative shopping necessary to discover that there are far cheaper ways of insulating and financing.

Again I bring the committee's attention to the fact that the energy appraisal or auditing role seems to me to be the critical one in terms of taking advantage of the economies of scale inherent in the utilities' access to every customer. We don't see the same competitive problems with those economies of scale. If the customer is apprized by the utility of certain needs with regard to insulation, the customer then is on notice that he or she can save perhaps substantial funds by finding a contractor and getting financing. It doesn't seem to me to be critical that the utility, in addition to the appraisal or auditing roles, also provide financing and direct supply, particularly inasmuch as there are other alternative sources of financing and supply.

The CHAIRMAN. Let me ask you just one other question. A subsequent witness—and I hope I'm not being unfair to him—but he will follow you, Mr. Nash, says in his statement something that I would like very much to get your comment on.

He says:

We are concerned with what appear to us to be some serious omissions in the proposed legislation. In the past, individual companies have been confronted with antitrust allegations involving the insulation of homes where the utility listed or selected the contractor. Consequently, with any legislation of the type now before the committee, immunity from such antitrust liability should be provided.

How do you feel about that?

Mr. REICH. I disagree. Congress is already besieged with requests for immunity from the antitrust laws and my general view is that the public is not well served by providing that kind of immunity. Even if you provide immunity from antitrust—

The CHAIRMAN. But you can see their viewpoint. If we're asking them to do this job and select a contractor and be as vigorous and helpful as possible to persuade home owners to insulate, if we're going to get their enthusiastic participation, we are going to have to give them some kind of protection. If I were a utility I would be very concerned about that—or a utility official.

Mr. REICH. Presumably, Mr. Chairman, we don't want to give them a license to charge extraordinarily high prices nor do we want to give them a license to essentially transfer the tax credits, the tax incentives into their pockets.

The CHAIRMAN. But we want to give them an incentive. We want to give them—after all, if you're going to get them to move, you've got to provide that somebody makes money along the way. I have no objection to that. Profits is what makes our system work.

Mr. REICH. But again, the name of the game and the heart of our concern is—

The CHAIRMAN. The purpose of tax incentives is to get action.

Mr. REICH. That's right, but the price you pay for getting action may be excessive profits or anticompetitive tendencies in this industry. It seems to us, given our concerns, it's too high a price to pay. The legislation considers placing primary responsibilities upon the utility and with those responsibilities I would say goes other responsibilities including adherence to the antitrust laws. If you give an exemption to the antitrust laws, it seems to me that increases the

necessity to regulate very carefully the rates and the charges and the profits of these entities. You're simply switching the focus of regulation from antitrust enforcement to minute auditing of those books, unless you're willing to take the accepted price of excessive profits.

Senator SCHMITT. Mr. Chairman, one followup question about something you said, Mr. Reich. Do you believe that the Government has an obligation to make the consumer shop around for bargains?

Mr. REICH. No; but one cardinal principle, Senator, with which we operate at the Federal Trade Commission is that we want to maximize the opportunities for consumers to undertake comparative shopping and that principle is at the heart of our concerns about a whole battery of abuses—bait and switch, unavailability of advertised specials, fictitious pricing. The fundamental notion is that you want to facilitate comparative shopping. We don't want to force anybody; but by the same token, you want to give people a fair opportunity to undertake comparative shopping.

If the utilities under the patina of the President's energy legislation, with that kind of authority and that kind of backing, undertake the financing or direct servicing of home insulation, there may be very little incentive to undertake comparative shopping. In fact, consumers may simply not feel it necessary to undertake comparative shopping. They may assume that the utility, as a regulated vehicle, is going to charge a fair rate. They are not used to undertaking comparative shopping for energy supplies, for electricity or gas that's supplied by the public utility.

It may be that the reasonable assumption of a customer of a public utility, whatever the public utility is selling, is that just like gas and electricity, this is not a product that necessitates comparative shopping.

Senator SCHMITT. You don't think that the competitors to the utility would ensure that their potential customers knew that there was somebody else out there to shop from?

Mr. REICH. Again, we must take account of the special access that utilities have to their customers, an access that is part of their rate structure. Other competitors would have to overcome that barrier if they were to alert customers of their cheaper price for other capital or supplies.

Senator SCHMITT. Well, I'm a little bit concerned about how you draw some of these boundaries. We have to be careful of not overprotecting the consumer and that's something that I was a little bit concerned about in one of your statements. As a matter of fact, I would like to know your opinion in a related matter. Do you think we are being unfair to those individuals who have already taken upon themselves to insulate their homes without a Government credit or assistance?

Mr. REICH. Presumably, those individuals are enjoying the advantage of foresight in that they are going to have to endure a price rise in the home insulation industry. The disadvantage of being too quick to take advantage of the tax incentives may be more than balanced by the advantage of getting in there early enough to take advantage of low prices.

Senator SCHMITT. Do you think it's possible to document that possibility?

Mr. REICH. It will be possible to document after the fact, once we know the scope and direction of the price rise. I think at this point it would be difficult because we don't know to what extent consumers who have already insulated their houses really are going to reap that kind of advantage.

Senator SCHMITT. Well, it's something that's a little bit subtle for some constituents that we may have who have patriotically or otherwise decided that it was time we start to save energy. Many have over the last several years or decade. Suddenly the Government is going to come in and help all of those people who didn't act with such foresight and you have to admit that there's a feeling that the Government is being a little bit unfair.

The CHAIRMAN. Of course, every day that passes they may be able to save money on heating and cooling their house.

Senator SCHMITT. But they still feel like they are being had by having foresight.

The CHAIRMAN. I know that.

Senator SCHMITT. Thank you, Mr. Chairman.

[Complete presentation of Robert B. Reich follows:]

THESE REMARKS REPRESENT THE VIEWS OF FEDERAL TRADE
COMMISSION STAFF. THEY ARE NOT INTENDED TO BE,
AND SHOULD NOT BE CONSTRUED AS, REPRESENTATIVE OF
OFFICIAL FEDERAL TRADE COMMISSION POLICY.

STATEMENT OF

ROBERT B. REICH
DIRECTOR
OFFICE OF POLICY PLANNING AND EVALUATION
FEDERAL TRADE COMMISSION

BEFORE THE

SENATE COMMITTEE ON BANKING, HOUSING
AND URBAN AFFAIRS

ON

NATIONAL ENERGY CONSERVATION POLICY ACT

JUNE 28, 1977

I am Robert B. Reich, Director of the Office of Policy Planning and Evaluation of the Federal Trade Commission, and Co-Chairman of the Commission's Energy Task Force. I am happy to be here today to discuss certain provisions of the proposed National Energy Conservation Act.

At the outset I should emphasize that I am here as a staff member and that my views do not necessarily represent the views of the Commission or any Commissioner. Recently the Chairman of the FTC, Michael Pertschuk, appointed an energy task force to examine the likely impact of the proposed National Energy Act upon consumers and competitive markets, and to propose specific initiatives to protect consumers from fraud and to ensure that competition is unimpaired. In response to a request by the House Subcommittee on Energy and Power, the Task Force prepared a report which focuses upon potential consumer and competitive problems in the proposed legislation, and recommends specific amendments to remedy those problems. My testimony today will highlight that report, which is appended.

Most of our concerns involve part A of the President's proposed legislation, which puts public utilities into the business of advising their customers of the need for home insulation, supplying the insulation, and financing the purchase. This amalgam of roles raises potential troubling consumer issues.

Public utilities are exempt from the Truth-in-Lending Act and Fair Credit Billing Act for most services they now perform. If this exemption applies as well to their financing of home insulation, consumers will not be informed of interest rates they are being charged for this service, and will not be able to dispute alleged billing errors as they would if they had obtained the insulation and financing from third parties. The consumer may have no way of determining what portion of his utility bill is attributable to payments for home insulation, interest, or utility service. By the same token, public utilities will enjoy the competitive advantage of immunity from the administrative burdens of these legislative schemes relative to other suppliers and financiers of home insulation.

The Federal Trade Commission does not construe Section 104(4) of the Truth in Lending Act to authorize an exemption for extensions of credit by utilities for the purpose of home insulation or retrofitting. Some utilities currently sponsoring programs similar to the utility program required in the bill, however, have failed to comply with applicable consumer credit protection laws. Explicit clarification, therefore, is warranted.

A second potential problem arises because utilities, unlike other financiers, have at their disposal a potentially coercive debt collection technique: if the insulation or

its installation is defective and the consumer therefore chooses to withhold payment, the utility might attempt to retaliate by terminating service and thereby jeopardizing the health and safety of the debtor. Accordingly, where the debt to the public utility is a result of energy conservation measures purchased or financed by the utility, termination should not be permitted for nonpayment.

Thirdly, the proposed legislation should be clarified to expressly save the Federal Trade Commission's existing statutory and enforcement authority to remedy deceptive or unfair trade practices in the provision of insulation or retrofitting under a utility program. In particular, the FTC's rules preserving consumer claims and defenses against holders-in-due-course and mandating a three-day cooling-off period for door-to-door sales, should be applicable to these transactions.

The home improvement business has generated a large number of consumer complaints. Consumers have been victimized by poor materials, improper installation, shoddy workmanship, and incomplete work. Low income consumers have been particularly vulnerable to exaggerated or deceptive claims and marketing techniques in this area. These problems are attributable, in part, to the lack of standard measures for judging the efficacy of home improvement materials, such as insulation or solar devices. Moreover,

because home improvements often constitute substantial, non-repeat purchases, the average consumer has little market experience upon which he can rely in making decisions. Finally, it is often difficult for the consumer to ascertain whether the work has been completed properly; the consumer may suspect that home insulation buried behind the walls is unsatisfactory only when he scrutinizes his utility bills over an extended period of time.

The abuses which have occurred have been rendered all the worse by the practice of taking second mortgages to secure credit obligations arising from the home improvements, and the application of state laws creating mechanics and materialmen's liens in the improvements and property in which they are made.

The retrofitting and weatherization initiatives built into the National Energy Act can be expected to increase substantially the demand for such service. In light of this increase, the Holder-in-Due-Course Rule and the "Cooling-Off" Rule should be available to consumers.

I wish to highlight a fourth troubling aspect of the proposed legislation. The president's proposal will give utilities three clear functions: inspecting homes to recommend residential retrofitting investments; selling and installing conservation measures, either directly or through subcontractors; and financing such measures.

Since, in most locales, each of these functions could be achieved by private parties other than utilities, the question arises whether the unregulated sector can do the job or ought to be displaced to a large extent by utilities.

We are concerned about several possible competitive abuses under the President's proposal. First, the inspection role might not be carried out in a neutral manner, if the utility can profit from overselling conservation measures or from channeling business to itself or its favored subcontractors. Second, the utility might be able to take unfair advantage of its unique position as a regulated monopoly with easy access to consumers, to win business away from independent contractors. And third, if the utility can cross-subsidize its sales and services through increases in electric or gas rates, it might drive competing contractors out of the market while in the long-run overcharging consumers, even though it would appear that its prices for conservation measures, taken alone, are relatively low.

We recommend, therefore, that the role of the utilities in the sale and installation area be strictly circumscribed. If a utility wants to enter this field, it should participate directly, rather than through subcontractors, to avoid the possibility that the utility will tie up the leading local contractors and thereby minimize independent competition. This leaves open the

possibility of competition from utilities in areas where there is little or no independent competition, or where it seems unlikely that existing contractors would be able to increase their scale of services to meet the increased demand over the relatively short term of the President's program.

Additional safeguards should be considered to assure that utilities entering the market directly do not take unfair advantage of their appraisal role. One such safeguard would be a requirement that utilities inform customers of all companies willing to perform an initial inspection and appraisal of residential needs, supply and/or install conservation measures, or provide financing.

Finally, utilities should be prohibited from recovering any of the cost of providing these services within utility rates charged across-the-board to all customers.

Our staff report on the proposed legislation pointed out one final area of concern. A preliminary analysis of the home insulation industry showed that the fiberglass insulation industry, which produces a substantial amount of the insulation material used in homes, is unusually concentrated. Three firms constitute the entire industry, and there appear to be very high barriers to entry into the manufacture of fiberglass insulation, particularly in meeting high capital requirements and obtaining competitive

technology and technical know-how. Our staff has been told that the three existing fiberglass insulation manufacturers have been reluctant to conclude patent licensing and technical know-how agreements which might facilitate new entry and increased competition during the life of the President's program. While there may be substitutes for fiberglass in some insulation uses, our staff has been told that all insulation manufacturers are operating at or near capacity.

Accordingly, the Administration plan promises a rapid short-term increase in demand for home insulation which may result in substantial price increases unless new sources of supply arise. Our staff is now analyzing the industry in greater detail to determine what steps would be necessary to facilitate new entry and the availability of adequate capacity in the fiberglass insulation industry at competitive prices.

I hasten to add that the problems I have highlighted are hypothetical, and each of them requires extensive further examination. The proposed legislation does require that each state regulatory authority submit a plan, to be approved by the FEA Administrator, which "contains an adequate program for preventing unfair, deceptive, or anti-competitive acts or practices...which relate to the implementation of the utility programs." But the question

remains: Are state regulatory authorities sufficiently expert in competition and consumer protection matters to adequately monitor these transactions?

Mr. Chairman, that concludes my prepared testimony. I will be happy to answer any questions you may have.

ATTACHMENT A

Comments on Title I, PART A,

NATIONAL ENERGY ACT BILL,

H.R. 6831

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I. FEDERAL TRADE COMMISSION JURISDICTION

PROBLEM:

Subsection 102(d)(2) of the National Energy Act bill requires participating states to submit for Federal Energy Administration approval programs "for preventing unfair, deceptive or anticompetitive acts or practices" in the implementation of utility programs. Because this language mirrors that of Section 5 of the Federal Trade Commission Act, 15 U.S.C. §45, it is at least arguable that § 102(d)(2) effectively transfers jurisdiction over such acts or practices from the Commission to the FEA. A variant of this argument prevailed in FTC v. Miller, 549 F.2d 452 (7th Cir. 1977). Alternatively, a regulated utility might argue that so long as its conduct conforms to a § 102(d)(2) program imposed by a state utility commission, the Federal Trade Commission may not preempt state action by finding such conduct violative of Section 5 of the Federal Trade Commission Act. Cf. Parker v. Brown, 317 U.S. 341 (1943). Also, it might be argued that the bill authorizes the Federal Energy Administration to exempt public utilities from complying with existing or future Trade Regulation Rules in their implementation of utility programs. Although these arguments may not be legally sound, the statute should effectively preclude them.

SOLUTION:

A saving provision should be added to Section 106 to protect the Commission's existing statutory and enforcement authority. It should assure that in the unlikely event there is a conflict between an FEA rule under the utility program and a Federal Trade Commission rule of general applicability, the Federal Trade Commission rule will apply.

LANGUAGE:

Add the following new subsection 106(b):

"(b) Nothing in this Act shall be construed as restricting the jurisdiction of the Federal Trade Commission under any provision of law, including this Act, to prevent unfair methods of competition and unfair or deceptive acts or practices by public utilities in connection with utility programs under this Part, including jurisdiction to enforce all applicable Trade Regulation Rules issued under the Federal Trade Commission Act 15 U.S.C. §41 et. seq. and all applicable provisions of the Consumer Credit Protection Act, as amended, 15 U.S.C. § 1601 et. seq."

II. UTILITY PROGRAM

A. COMPETITIVE POSITION OF UTILITIES

PROBLEM:

The preeminent role of public utilities in the National Energy Act bill's program for retrofitting existing homes creates serious competitive problems. Utilities have established channels of contact, via servicing and billing, with almost every American home. Unless there is a maximum degree of competition at each level of the program, consumers may find that the utility monopoly, however well-regulated, has expanded to include the retrofitting business. The requirement that public utilities arrange for home appraisals, installation of energy-saving materials or devices, and financing of weatherizing costs may drive smaller businesses that lack the economic resources of utilities from the market. Independent businesses that do not sub-contract with utilities and lack similar access and exposure to consumers will be unable to compete effectively. The result may be increased concentration, a greater potential for development of oligopolies or monopolies in individual geographic regions, and related problems of overcharging for supplies, services, and capital. On the other hand, direct entry by utilities into the retrofit business in some markets may increase competition with existing businesses, large and small.

SOLUTION:

Public utilities should not be required to offer to install suggested energy-saving measures. Public utilities should be allowed to enter the supply and installation business, but only if sub-contractors are not utilized. If a utility elects to enter the supply and installation business, it should enter as a direct competitor of existing businesses, if competitive conditions make such entry feasible. Otherwise, utilities should stay out of the developing energy-conservation supply and installation field, allowing independent businesses to compete on equal footing.

Additional safeguards should be considered to assure that utilities entering the market directly do not take unfair advantage of their appraisal role. One such safeguard would be a requirement that utilities inform customers of all companies (possibly including themselves) willing to perform an initial inspection and appraisal of residential needs, supply and/or install conservation measures, or provide financing.*

SUGGESTED LANGUAGE:

The utility program should be revised as follows:

1. eliminate Section 103(a)(2)(B) and reletter subsections (C) and (D) as (B) and (C) respectively;

* Proposals to address additional competitive problems by rulemaking appear in section III. C., infra.

2. revise Section 102(d)(4) by omitting "installation of residential energy conservation measures" and adding in its place "utility program described in section 103;"
3. omit from section 104(a) the words "providing for the installation of residential conservation measures in the homes of its residential customers;"
4. amend section 104(a)(1)(C) to read "the list of suppliers and contractors who can arrange for purchase and installation of such measures;"
5. delete section 104(a)(2) and renumber section 104(a)(3);
6. revise section 104(d) by substituting for "a substantial proportion" the words "as large a number" and adding after the word "building" the words "as would have occurred under a program which meets the requirements of section 103."

Utilities may be prohibited from entering the supply and installation business through sub-contractors by making the following revisions:

1. reletter section 103(b) as 103(c);
2. add a new section 103(b) with the following language:

"Any utility electing to supply and install residential energy conservation measures shall not sub-contract with any independent business or company to provide such services, except that by rule the FEA Administrator shall make provision for any utility which was party to a contract with a sub-contractor as of April 20, 1977, to continue to provide such services pursuant to that contract for the term of the contract, exclusive of any renewal provision, or one year, whichever is shorter."

3. delete from the first sentence of section 103(a) the words "(b) and" and change "subsections" to "subsection."

The following changes are recommended as safeguards to ensure that consumers receive information about competitors in the inspection, supply and installation businesses:

1. add to the end of Section 103(a)(1)(C) the phrase "and the inspectors, suppliers, and contractors described in paragraph (3) of this subsection;"
2. insert the words "and are willing to perform a residential inspection and give an estimate of costs" between the words "measure" and "which" in Section 103(a)(3).

B. CONSUMER CREDIT PROTECTION

PROBLEM:

The Consumer Credit Protection Act, 15 U.S.C. § 1601, et. seq. Public Law 90-321, as amended, contains seven separate titles establishing minimum federal protections for consumers (and in some cases businessmen) involved in credit transactions. The separate titles include the Truth in Lending Act with its Fair Credit Billing Amendments.

Section 104 of the Truth in Lending Act, 15 U.S.C. §1603, exempts certain transactions under public utility tariffs if the Federal Reserve Board determines that the state regulatory body regulates the charges involved. In the context of traditional utility activities this exemption is sensible since the Act's primary purposes -- to facilitate comparative shopping for credit and to foster price competition -- will not be served. In contrast, extensions of credit under utility programs should not be exempted since there are alternative sources of both the services to be performed and the financing that will be available. Compliance with the Truth in Lending Act will encourage consumer shopping and credit price competition. In addition, the Truth in Lending Act provides a three-day period during which a consumer may cancel a loan. This

provision may be important in home improvement transactions in which a security interest is taken in the principal residence of the consumer.

The Federal Trade Commission does not construe Section 104(4) of the Truth in Lending Act to authorize an exemption for extensions of credit by utilities for the purpose of home insulation or retrofitting. Some utilities currently sponsoring programs similar to the utility program required in the bill, however, have failed to comply with applicable consumer credit protection laws. Explicit clarification, therefore, is warranted.

The application of the Fair Credit Billing Act to utility programs which otherwise meet the Act's definition of "open end credit" also requires clarification. The Fair Credit Billing Act (15 U.S.C. § 1666-1666j) (Supp. IV, 1974), provides a mandatory dispute resolution procedure for alleged billing errors appearing on periodic billing statements sent to consumers. Utility billing systems which meet the definition of "open end creditor" should be required to comply with the Fair Credit Billing Act dispute resolution procedures.

SOLUTION:

A provision clarifying the applicability of the Truth in Lending Act to extensions of credit by utilities under utility programs should be added to Section 106. It is

anticipated that FEA in its rules applicable to residential energy conservation plans under Section 102, alternative plans under Section 104 and utility programs under Section 105 will provide guidelines for compliance with the Truth in Lending Act and the other titles of the Consumer Credit Protection Act.

LANGUAGE:

Add the following new subsection 106(c):

"(c) Nothing contained in §104(4) of the Truth in Lending Act, Public Law 90-321, as amended, 15 U.S.C. § 1603(4), or the regulations issued pursuant thereto shall be deemed to exempt sales or credit extensions by public utilities under § 103 of this Act."

C. FEDERAL ENERGY ADMINISTRATION RULEMAKING

PROBLEM:

Programs by state utility commissions to prevent "unfair, deceptive or anticompetitive acts or practices" under subsection 102(d)(2) will be greatly improved if the Administrator, as part of his rulemaking under Section 102, provides standards for such programs. The Federal Trade Commission, which has extensive experience in giving specific meaning to a similar statutory mandate, should be directly involved in the development of such standards. Further, the Administrator should promulgate rules designed to prevent unfair, deceptive or anticompetitive acts or practices in

the implementation of utility programs under Sections 102(e),* 104 and 105. There is a growing body of Federal Trade Commission Trade Regulation Rules which would apply to sales and financing under utility programs. Thus, it is important that the Administrator promulgate rules for these utility programs in close cooperation and coordination with the Federal Trade Commission.

SOLUTION:

Section 102 should be amended to require the FEA Administrator to include specific standards for the program required by subsection 102(d)(2), and to promulgate rules in cooperation and coordination with the FTC to prevent unfair, deceptive or anticompetitive acts or practices under Sections 102(e), 104 and 105.

The following are examples of acts or practices which should be proscribed by rule:

1. Termination of Utility Service for Nonpayment on Residential Energy Conservation Measures.

Utility service termination could be an extremely coercive debt collection technique, because it might endanger the safety and health of the debtor. Where the debt to the public utility is a result of residential energy conservation measures purchased from or financed

* The bill inadvertently contains two sections designated as 102(d). The second section so designated 102(d) will be referred to as 102(e) in this submission.

by the utility, termination should not be permitted for nonpayment. Other companies offering this service cannot employ this collection technique and the consumer would not expect service terminations to occur where the debt does not arise from that service. In addition, FEA standards should establish a uniform method of allocating consumer payments between utility services and energy conservation services.

2. Security interests.

One area of the home improvement business that has caused great concern to consumers and regulators in the past has been the practice of taking second mortgages to secure credit obligations arising from the improvements, and the application of state laws creating mechanics and materialmen's liens in the improvements and property in which they are made. Low income consumers have been threatened with loss of their homes for work not completed by the contractor. See Slaughter v. Jefferson Federal Savings, 361 F. Supp. 590 (D. D.C. 1973), rev'd, 538 F.2d 39 (D.C. Cir. 1976). A recent newspaper article details how a home was to be placed for sheriff's

sale even though the consumer had paid cash for the improvements. The contractor had employed subcontractors to perform the work, but left town with the consumer's cash. After the work was completed, the subcontractors obtained a lien against the consumer's home for the value of their work. Similar incidents in Southern California have led to licensing and bonding requirements in that state. The problem has been so serious that a separate section of the Truth in Lending Act, 15 U.S.C. § 1635, was created to deal with it. The statement of basis and purpose of the Federal Trade Commission's rule concerning the preservation of consumer claims and defenses also refers to this problem. 40 Fed. Reg. 53511 (Nov. 18, 1975).

Accordingly, no foreclosure should be permitted as a result of a mortgage on a consumer's principal residence arising from purchase of residential energy conservation measures under a utility program. The only alternative would seem to be a strict performance bonding requirement for contractors and/or a guarantee by utilities that perform the work directly.

Dispute Resolution Procedures.

The Fair Credit Billing Act on 1974 (15 U.S.C. § 1666-1666j) (Supp. IV, 1974) includes a mandatory dispute resolution procedure designed to correct billing errors under "open end" credit accounts which are composed primarily of credit card and department store revolving charge accounts.

Utility billing systems may not meet the technical definition of open end creditor, however, and therefore will not be required to comply with the Fair Credit Billing Act's dispute resolution procedures. Therefore, the FEA guidelines should require a billing error dispute procedure identical to § 167 of the Fair Credit Billing Act for any amounts billed on the consumer's regular periodic utility bill for the purchase of residential energy conservation measures.

4. Acceleration Charges.

Where the utility program's credit transactions are traditional installment contracts, § 103(a)(2)(D) provides that "a lump sum payment of outstanding principal and interest may be required upon default in payment by the residential customer." This clause raises the question of whether a creditor is entitled to collect unearned finance charges on a precomputed loan, or whether recovery should be

limited to earned finance charges determined either at the time of default or at the time at which a judgment is obtained. The question should be resolved by an FEA rule limiting recovery to earned finance charges.

5. Public participation before state regulatory commissions

Some form of public participation in the formulation, implementation and policing of state residential energy conservation programs under Section 102 should be required by FEA rule. See Lefler & Rogol, "Consumer Participation in the Regulation of Public Utilities," 13 Harv. J. Legis. 235 (1976). The Federal Trade Commission has pioneered public participation on the federal level through its pilot program under the Federal Trade Commission Improvements Act, 15 U.S.C. § 58(h), PL 93-637, § 202(h).

Unless a state currently provides for public participation in its proceedings, FEA regulations should require that a program be implemented that would, at a minimum, apply to the formulation, implementation and policing of state residential conservation programs under Section 102. The Subcommittee, however, may consider amending Title I, Part E, of the bill to include consumer

participation provisions similar to those proposed in H.R. 6660, which should then be made applicable to regulatory proceedings involving utility programs.

6. Neutral Inspection.

As long as utilities are required to offer an appraisal and are also allowed to provide and install energy-saving measures, the potential for conflicts of interest and other abuses exists. FEA guidelines should require that the appraiser/inspector sent by a utility pursuant to section 103(a)(2)(A) neither recommend nor disparage any particular brand or company. Although enforcement may be difficult, the rules would help give independent supply and installation companies an equal opportunity to compete with a utility. They would also tend to discourage over-statement of consumers' needs by the inspector.

7. Cross-Subsidization.

Utilities should not be permitted to compete unfairly by underpricing supplies, services, or capital and recovering the difference through higher energy rates. Cross-subsidization can also occur if a utility shifts the cost of inspections to the rate base, thereby enabling it to

charge less for actual installation than an independent competitor who must absorb the cost of "free" inspections and estimates in his price. Accordingly, FEA guidelines should require strict cost-accounting and separate financial records for every utility's residential energy conservation program. The rules should specify that (1) any utility entering the supply and installation business is forbidden from passing the costs of that business to the rate-payers; and (2) all expenses of the utility's supply and installation business, including a proportionate share of overhead and administrative costs, must be allocated to that business.* The FEA rules

* The issue of whether utilities should be required to offer a "free" inspection is not addressed in the bill. An argument can be made that utilities should be required to recover the cost of inspection by charging fees for the service. This would have the advantage of placing costs upon the party who benefits, rather than on all rate-payers. In addition, this would require utilities to compete on an equal basis with private inspection firms. The major drawback to this would be that some consumers might not obtain inspections if they are aware that a fee will be charged.

The Committee may wish to recommend a tax credit to reimburse homeowners for part of the cost of residential inspections. Alternatively, the cost of appraisals and estimates made in connection with the purchase and installation of energy-conserving devices could be considered to be part of the cost of such devices and eligible for any appropriate tax credit.

should authorize a utility to recover its inspection costs from the rate base only if the utility commits in its utility plan submitted to the FEA Administrator for approval that it does not and will not offer supply and installation services.

8. Lists of Suppliers and Contractors

FEA guidelines should establish strict but fair standards for utilities to follow in compiling and maintaining full and complete supplier and contractor lists as required by Section 103(a)(3). Although the bill does require that the list be "designed to encourage participation ...in a non-discriminatory manner," there is no additional requirement that the list be extensive or complete. The guidelines should assure that the lists contain the names of all qualified, bona fide companies, are updated periodically, and follow a random order or method of presentation.*

* The minimum standards that a contractor or inspector must meet to qualify for listing should be set by FEA. A utility should not pass judgment on a contractor's qualifications or bear responsibility for a listed contractor's failings. To avoid a complicated licensing process which could raise unnecessary barriers to entry into the conservation program, we would suggest that any contractor seeking to be listed by the utility must certify, under penalty of perjury, that it meets the standards. The utility would list any self-certified contractor requesting listing. Data to be included on the list should be determined by rule, with particular attention to the advisability of indicating which companies are bonded and which offer free inspections and estimates.

Consideration should be given to requiring an appeal process for companies that are excluded from the list under the standards to be enacted. Finally, if the bill is amended as proposed in Section II.A. supra to require utilities to inform their customers which companies are willing to perform residential inspections, then rules should be promulgated to create standards and procedures applicable to the compilation, maintenance, and revision of this portion of the list.

9. Overlapping Utility Service Areas

Where two utilities have overlapping service areas (for example where one utility provides gas for heating purposes and another provides electricity to the same residence), the utilities may attempt to join forces to offer the mandated services, or one utility may rely on the other to provide the services for that geographic area and relieve itself of the obligation of offering a full-fledged utility program. Specific rules should be promulgated to prevent joint efforts of this sort and to ensure the maximum degree of participation (and competition) by utilities.

10. Tying Arrangements

A utility that engages in the supply and installation business might attempt to link its provision of energy to customers to the supply and installation of particular energy-saving measures. FEA rules should prohibit such tie-in arrangements.

LANGUAGE:

The current subsection 102(b)(2) should be renumbered to (b)(3), and the following provision be inserted as subsection (b)(2):

"(2) shall include standards for the program required by subsection (d)(2) and standards designed to prevent unfair, deceptive or anti-competitive acts or practices which affect commerce in the implementation of residential energy conservation programs under Section 102(e), alternative programs under Section 104 and utility programs under Section 105, which the Administrator shall develop in close cooperation and coordination with the Federal Trade Commission; and"

III. FTC RESPONSIBILITIES

A. RULEMAKING

PROBLEM:

Numerous potential consumer protection and anticompetitive problems can be anticipated to result from the massive programs contained in both Titles I and II of the National Energy Act bill. There are at least 70 million residential dwellings in the United States; 40 million of them could benefit from retrofit with energy saving devices. The timetable contained in the Act for retrofit of homes is very short; according to the national goals established in the bill, by 1985 insulation will be installed in 90 percent of all American homes and all new buildings, and solar energy will be used in more than two and a half million homes.

Elements of the home improvement industry in this country have often been a source of serious consumer abuses. Such problems may be exacerbated by the increased demand for home insulation and retrofitting spawned by the utility programs in Title I and the rebate provisions of Title II.

The Federal Trade Commission is the federal agency possessing the broadest responsibility for preventing unfair, deceptive and anticompetitive practices in the marketplace. If it is to adequately monitor the marketing practices associated

with the manufacture, sale and installation of energy savings devices, and enforce its general Section 5 authority under the Federal Trade Commission Act, the Commission will require significantly increased resources. Problem areas already identified by the Commission include the following:

1. Warranties and Consumer Remedies.

Warranty and consumer remedies for breach of warranty present particularly troublesome problems with respect to home insulation and other energy saving devices, including solar products. The absence of adequate or proven test and performance standards for solar equipment itself makes warranty and warranty enforcement particularly important to the consumer. With respect to insulating devices, it is often extremely expensive, if not impossible, to determine whether the product purchased meets the standards represented by either the seller or the manufacturer. Simple visual inspection of attic insulation, for example, often will not disclose improper installation and certainly will not tell a consumer whether he has received the "R-value" promised.

The National Bureau of Standards under contract with the FEA recently had installed three different types of insulation in a building at the NBS's

Center for Building Technology. It subsequently tested the building and found that all three installations resulted in significantly less "R-value" than represented by the manufacturer. The only method for determining the efficacy of installed insulation is through the use of "thermography." Thermography equipment costs approximately \$45,000 to purchase. Where thermography service is available, it costs between \$50 and \$80.

The traditional problem of undercapitalization in the home repair industry is particularly severe in the solar heating and cooling industry, where many of the small, pioneering companies are undercapitalized. Solar equipment is expensive, representing a major investment by the homeowner. If it is improperly installed or defective, however, the equipment may also pose a risk of structural harm to the home. Indeed, an argument could be made based on this type of risk, for requiring that solar property be installed with a minimum performance bond if it is to qualify for a tax credit under Title II. Such a requirement, however, would raise serious barrier-to-entry questions, and might have an unduly stifling impact upon innovation in the nascent solar industry.

These problems of warranty and consumer remedies can best be addressed through the rule-making process. Accordingly, the Commission should be directed to initiate rulemaking to address warranties and warranty practices in connection with the sale of retrofitting devices, including insulation, energy saving devices and solar property.

2. Product Claims.

A consumer must have truthful, relevant product information readily available in order to make intelligent purchase decisions. This information must be available in a form that is readily understandable. It must facilitate the comparison of energy savings values between both products and brands. Most consumers will be unable to purchase all the recommended energy savings devices for their homes. Their purchases, therefore, ought to result in the greatest energy savings for the dollar. This goal can be accomplished best if the products and those who market them utilize easily understood and comparable energy claims.

The Commission has authority to monitor energy savings claims and to take action on a case-by-case basis against those who make unfair, deceptive or false claims. The case-by-case approach, however,

is expensive, and can only stop the most blatant abuses. Accordingly, the Commission should be given authority to institute a rulemaking proceeding to establish requirements for the disclosure of energy savings information and claims with respect to energy savings devices and products.

3. Marketing and advertising claims.

The most difficult types of unfair and deceptive acts and practices to control are those that take place everyday in thousands of localities around the country. Yet, the home improvement industry is primarily composed of thousands of locally-based, small businesses. These businesses advertise in local papers and on local media, or solicit business through the local mail or door-to-door. If the FTC is to monitor much of this activity, it will require substantial additional resources.

Again, the most efficacious approach to preventing unfair and deceptive acts or practices in the marketing, advertising and installation of energy savings devices and solar energy property is through the rulemaking process. Accordingly, the Commission should be directed to initiate a rulemaking proceeding with respect to energy savings information and claims and unfair methods of competition or unfair

or deceptive acts or practices by those who market, advertise and install energy saving devices and solar energy property, and to require such other disclosures as are necessary to aid consumers in preserving scarce fuel supplies.

4. Expedited Rulemaking

At present, the Federal Trade Commission is authorized to promulgate Trade Regulation Rules under Section 18 of the FTC Act, 15 U.S.C. § 58.* Section 18 contains a broad grant of authority for the Federal Trade Commission to prescribe rules (commonly known as "Trade Regulation Rules") which "define with specificity

* Section 18 was added to the FTC Act in 1975 by Title II, Section 202 of the Magnuson-Moss Warranty -- Federal Trade Commission Improvement Act, Pub. L. No. 93-637 (January 4, 1975).

The Federal Trade Commission also has inherent authority to promulgate rules under section 6(g) of the Federal Trade Commission Act to interpret and enforce the prohibitions contained in Section 5 of the Act. See National Petroleum Refiners Association v. FTC, 482 F.2d 672 (D.C. Cir. 1973).

acts or practices in or affecting commerce" and further states that such rules may "include requirements prescribed for the purpose of preventing such acts or practices." When a rule becomes effective, a subsequent violation constitutes an unfair or deceptive act or practice in violation of Section 5(a)(1) of the FTC Act.

However, from 1975 to the present the median elapsed time from publication of the initial notice of proposed rulemaking pursuant to Section 18 to the Commission's consideration of whether to promulgate a final rule is currently estimated to be 31 months.* Thus, rules to protect against unfair, deceptive and anticompetitive acts or practices related to the marketing of energy saving components, if promulgated under Section 18 of the Federal Trade Commission Improvements Act, will become effective only after many of the purchases prompted by the National Energy Act bill are completed. Under the utility program in Title I, for example, utilities are required to have contacted all of their customers by January 1, 1980. Under Title II, tax rebates and credits are made retroactive to April 20, 1977, and decline over time to encourage early purchase. Accordingly, the Commission should be required to use expedited rulemaking procedures under 5 U.S.C. §553 in promulgating the rules previously discussed.

* By way of comparison, pursuant to Title I of the Magnuson-Moss Warranty -- Federal Trade Commission Improvement Act, the Commission has promulgated three "warranty" rules implementing provisions of Title I. These rulemaking proceedings were conducted under 5 U.S.C. §553 with the additional requirement that oral presentations be allowed. All three rules were promulgated within six months of the notice of proposed rulemaking and required an average of two-thirds of an FTC attorney workyear per rule.

The possibility of civil penalties under Section 5(m)(1)(A) of the FTC Act and "consumer redress" under Section 19 of the FTC Act has been a significant factor in gaining compliance with FTC Trade Regulation Rules. For the Commission's rules on energy to be effective law enforcement tools, the Commission must also be able to sue rule violators for civil penalties and "consumer redress." Moreover, the availability of a consumer redress remedy for violations of energy-related rules could prove to be the only effective means of resolving the difficult warranty and consumer remedy problems discussed above. Accordingly, violations of the rules promulgated by the Commission under the National Energy Act should be subject to civil penalties and consumer redress as if they were violations under Sections 5(m)(1)(A) or 19 of the FTC Act.

SOLUTION:

Add a new Subpart 4 to Title I, Part A.

LANGUAGE:

"Subpart 4 -- Federal Trade Commission Sec. 140:
(A) The Federal Trade Commission shall initiate a rulemaking proceeding dealing with:

- (1) requirements applicable to manufacturers of building insulation, solar energy heating or cooling property and other energy conservation devices, products or systems, with respect to disclosure of energy use and savings information or claims;
 - (2) requirements applicable to any person marketing, advertising or installing building insulation, solar energy heating or cooling property and other energy conservation devices, products or systems, with respect to disclosure of energy use and savings information or claims;
 - (3) any other requirements necessary to prevent unfair methods of competition and unfair or deceptive acts or practices under Section 5(a)(1) of the Federal Trade Commission Act in the manufacture, marketing, advertising, distribution and installation of building insulation, solar energy heating or cooling property and other energy conservation devices, products or systems; or such other disclosures as may be necessary to aid consumers in preserving scarce fuel supplies.
- B. The Federal Trade Commission shall initiate a rulemaking proceeding dealing with warranties and warranty practices in connection with the sale and installation of building insulation, solar energy heating or cooling property and other energy conservation devices, products or systems; and, to the extent necessary to supplement protections offered the consumer by any other provision of law, shall prescribe rules dealing with such warranties and practices. In prescribing rules under this paragraph, the Commission may exercise any authority it may have under other laws, and in addition, it may require:
- (1) disclosure that such items are sold without any warranty and specify the form and content of such disclosure;

- (2) a written warranty as to the insulation value and proper installation of such items;
 - (3) establishment of informal dispute settlement mechanisms.
- C. The Federal Trade Commission shall prescribe the rules required by paragraphs (A) and (B) in accordance with Section 109(a) of the Magnuson-Moss Warranty--Federal Trade Commission Improvement Act, 15 U.S.C. 2309, except that Section 18(e)(3)(A) of such Act shall not apply to judicial review under Section 18(e).
- D. In prescribing rules under paragraphs (A) and (B), the Federal Trade Commission shall consider --
- (1) the National Energy Goals contained in Section 3 of the Act,
 - (2) the need to reduce unnecessary consumer costs resulting from ineffective or inefficient insulation, solar energy heating or cooling property and other energy conservation devices, products or systems,
 - (3) ease of administration and enforcement, and
 - (4) industry practices.
- E. (1) The Federal Trade Commission shall have procedural, investigative, and enforcement powers, including the power to issue procedural rules in enforcing compliance with the rules prescribed pursuant to the requirements of this Subsection, and to require the filing of reports, the production of documents and physical evidence, and the appearance of witnesses, as though the applicable terms and conditions of the Federal Trade Commission Act were part of this Subsection.
- (2) A substantive amendment to, or appeal of, a rule promulgated under paragraphs (A) and (B) shall be prescribed, and subject to judicial review, in the same manner as a rule prescribed under such paragraph.

- F. (1) When any rule prescribed under paragraphs (A), (B), and (E) takes effect, a subsequent violation thereof shall constitute an unfair or deceptive act or practice in violation of Section 5(a)(1) of the Federal Trade Commission Act, unless the Federal Trade Commission otherwise expressly provides in such rule.
- (2) For the purposes of Section 5(m)(1) and Section 19 of the Federal Trade Commission Act, rules prescribed under paragraphs (A), (B) or (E) shall be deemed "rules under this Act respecting unfair or deceptive acts or practices."

B. PRODUCT STANDARDS

PROBLEM:

Privately developed product and material standards applicable to energy saving devices and solar energy property will play a major role in the implementation of

the National Energy Act bill.* Yet these privately developed standards have the potential to restrain trade, deceive consumers or to expose them to health and safety hazards. Unduly restrictive standards may exclude valuable energy saving devices from the marketplace. Consumers may be deceived by industry "seals of approval," if the standards relied upon for such approval are inadequate to establish claimed energy saving potentials. Private standards may also tend to freeze the state of the art around existing energy conservation products and materials stifling in innovation.

The Federal Trade Commission staff is currently investigating privately developed standards and standard setting mechanisms. In his testimony before this Subcommittee on March 3, 1977, Chairman Collier described this investigation and the Commission's concerns about the

* Numerous provisions in the bill relate to product or material standards. Under Sec. 1101 of Title II, the Secretary of Treasury must define the term "insulation," to identify in regulations "solar energy property" and to determine, upon request of the Administrator of FEA, what other "devices or measures" should qualify for a tax credit. Under Section 102, of Title I, the Administrator of FEA is authorized to establish "standards for general safety and effectiveness of any suggested [conservation] measure" and "for installation of any residential energy conservation measure."

antitrust and consumer protection implications of privately developed standards. One of these concerns is the degree to which government agencies rely upon privately developed standards, occasionally adopting them as government standards.

The extremely tight time limitations imposed by the National Energy Act bill for promulgation of utility programs, tax rebate rules and other programs virtually assures that the Administrator of FEA and the Secretary of the Treasury must rely upon private industry standards in implementing the Act. Though many, perhaps most, of the privately developed standards will be suitable for use in implementing the Act, there is, as indicated above, significant potential for abuse. The Federal Trade Commission has developed valuable expertise in evaluating potential anticompetitive and consumer protection impacts of privately developed standards. If consulted by the FEA Administrator or the Secretary of the Treasury, the Federal Trade Commission could point out potential adverse impacts of specific standards, and recommend methods of either avoiding those impacts or disclosing them to consumers.

SOLUTION:

The Administrator of FEA and the Secretary of the Treasury should consult with the Federal Trade Commission with regard to any product or material standard that is relied on in implementing the Act.

LANGUAGE:

Add a new subsection 141 to the proposed new Subpart 4,
as follows:

"Sec. 141: The Secretary of Treasury and the Administrator of FEA shall consult with the Federal Trade Commission with regard to any product or material standard which is relied on in implementing this Act as a basis for judging the efficacy, energy efficiency, safety or other attributes of energy conservation materials, products or devices, for the purpose of insuring that such standards do not operate to deceive consumers or unreasonably restrict consumer or producer options, and that such standards (where applicable) are suitable as a basis for making truthful and reliable disclosures to consumers regarding performance and safety attributes of energy conservation products, materials and devices."

C. INCREASED AUTHORIZATIONS

PROBLEM:

In order to undertake the additional responsibilities imposed under the National Energy Act bill, the Federal Trade Commission will require substantially increased budgetary authority.

SOLUTION:

Authorize appropriations to the Federal Trade Commission to carry out its responsibilities under the National Energy Act.

LANGUAGE:

Add a new section 142 to the proposed new subpart 4,
as follows:

"Sec. 142: There are hereby authorized to be appropriated to the Federal Trade Commission such sums as may be necessary to carry out its responsibilities under this subpart."

IV. OTHER PROGRAMS

A. AUTOMOBILE DISCLOSURES

PROBLEM:

Section 222 of the bill authorizes the Commission to prescribe rules requiring that the amount of any tax or tax rebate under the Act be disclosed in advertisements which: (1) state the price or fuel economy of any automobile or (2) feature an identifiable model. As presently drafted, however, this provision applies only to "televised" advertisements, and advertisements in writing. Moreover, the purpose of the National Energy Act would be furthered if the FTC were authorized to require that certain additional facts related to automobile efficiency be disclosed in any advertisement.

SOLUTION:

The FTC should be authorized to promulgate rules requiring the following additional disclosures:

1. Standard Fuel Economy Information.

Disclosure of EPA mileage ratings in all advertisements would remind consumers to consider not only the advertised model's cost of acquisition, but also the cost of ownership.

2. Octane Ratings.

Disclosure of octane ratings at point-of-sale and also in owner's manuals would enable consumers to avoid purchasing gasoline with excessive octane levels.* More crude oil is required to produce high octane gasoline than to produce relatively lower octane gasoline. Thus, octane "overbuying" causes a substantial waste of energy reserves which should, if possible, be eliminated.

3. Recommended Maintenance and Use.

Many new car purchasers may not appreciate the extent to which patterns of automobile use (e.g. choice of length and frequency of trips, shopping, social activities) and maintenance affect fuel economy. Disclosure in owners' manuals of recommended maintenance and use would enable consumers better to conserve fuel.

* The House this session overwhelmingly approved H.R. 130, Title II of which mandates octane posting on dispensing pumps and requires the Commission to develop rules for disclosure of a car's octane needs in its owner's manual. A similar bill, S. 18, has been introduced in the Senate.

LANGUAGE:

Strike Section 222(a). Insert in lieu thereof the following:

"Section 222: (a) The Federal Trade Commission is authorized to prescribe rules requiring disclosure --

- (1) in any advertisement whether in print, broadcast or point-of-sale, with respect to any identifiable new automobile model that makes any representation, express or implied, with respect to fuel consumption, cost of acquisition or operation:
 - (a) the applicable fuel economy rating for each such model which is required to be disclosed by the manufacturer or importer pursuant to section 506 (a) of the Motor Vehicle Cost Savings Act, as amended; and
 - (b) the tax imposed under Section 4064 of the Internal Revenue Code of 1954 or rebate payable under Section 6429 of such code.
- (2) in the owner's manual of every new automobile beginning with FY 1979:
 - (a) the octane rating of such new automobile;
 - (b) information to assist the owner in saving fuel by
 - i. improved driving techniques
 - ii. improved trip selection, and
 - iii. proper self-maintenance procedures

B. ENERGY EFFICIENCY STANDARDS FOR CONSUMER PRODUCTS OTHER THAN AUTOMOBILES

PROBLEM:

Section 201(a) of the bill would amend Section 325(a) of the Energy Policy and Conservation Act (EPCA) of 1975 to require the Administrator of the Federal Energy Administration to prescribe by rule energy efficiency standards for certain types of consumer products, such as freezers, water heaters, and room air conditioners. The Administrator would also have the option under this section to establish by rule such standards for other types of products, including, inter alia, dishwashers, clothes dryers, and television sets.

The Administrator may prescribe standards only in those instances where the standards would be, inter alia, economically justified. Similarly, the standards themselves must be ". . . designed to achieve the maximum improvement in energy efficiency which the Administrator determines is . . . economically justified "

In determining whether an energy efficiency standard is economically justified, the Administrator must consider the economic impact and any negative effects on competition

likely to result from the imposition of the standard. The economic and competitive impacts of an energy efficiency standard are important factors in determining whether such a standard is economically justified. For example, unreasonably high standards might be too expensive for small firms to meet, and also could act as a barrier to entry into the market by new firms. The Commission can provide valuable advice to the Administrator regarding these impacts.

SOLUTION:

The Administrator should consult with the Federal Trade Commission.

SUGGESTED LANGUAGE:

Add a new Paragraph (6) to Section 201(a), Part B, Title 1, which reads:

"(6) In determining the economic impact of the standard pursuant to paragraph (5)(A) and in determining any negative effects on competition likely to result from the imposition of the standard pursuant to paragraph (5)(E), the Administrator shall consult with the Federal Trade Commission."

Renumber remaining paragraphs accordingly.

C. FEDERAL INITIATIVES

PROBLEM:

Section 721 of the National Energy Act bill authorizes funding for development of existing federal retrofitting and conservation programs, and Sections 741 to 746 establish and authorize funding for a new program to encourage the demonstration and use of solar heating and cooling devices in federal buildings. The funds authorized under both plans will allow the federal agencies to use the money internally to develop proposals and to contract out the research, development and installation of these energy-related measures. Since a substantial portion of the funding will probably be used for independent contractors, the government should take care that all available money does not go only to large, established firms or businesses.

SOLUTION:

A provision should be inserted in the bill to ensure that small businesses receive a fair share of the contract and contract funds for research, development, manufacture and installation of solar heating and cooling devices and other energy-related measures.

SUGGESTED LANGUAGE:

Add the following as new subsection (g) in Section 721 of the bill, and as a new subsection (b) to Section 746:

"Each agency entering into contracts to develop or complete the plans or projects authorized by this subpart shall ensure that small business concerns are given a full and fair opportunity to compete for and enter into such contracts with each agency, in accordance with applicable Federal Procurement Regulations."

D. ENERGY CONSERVATION PROGRAM FOR SCHOOLS
AND HOSPITALS

PROBLEM:

Section 301 of the bill would add several new sections (Sections 303-309, 391) to the Energy Policy and Conservation Act (EPCA) of 1975. The new EPCA Section 303 authorizes the Administrator of the Federal Energy Administration to make grants to the states which would be used as partial financing for certain specified energy conservation projects for public and nonprofit schools and hospitals.

States must formulate and submit for FEA approval plans describing their proposed energy conservation program for public and nonprofit school and hospital grants. Although the Administrator appears to have the authority to prescribe any guidelines for state plans that he deems necessary, he is specifically directed to prescribe only guidelines indicating the types of energy conservation measures appropriate for each region of the country.

SOLUTION:

The Administrator should be required to promulgate guidelines designed to ensure that the states spend the grant monies in a manner likely to promote competition and to afford small businesses a full and fair opportunity to participate.

The Administrator should also be required to consult with the Federal Trade Commission prior to promulgating rules designed to ensure that the states spend the grants they receive in a manner likely to promote competition. The Commission and its staff could provide valuable input to the Administrator in the formulation of such guidelines.

LANGUAGE:

In proposed Section 304(a) of the EPCA (Section 301 of the bill), insert the words "and guidelines designed to ensure that state plans contain measures designed to promote competition, which were prescribed after consultation with the Federal Trade Commission." between the words "nation" and "The". In proposed Section 304(a) of the EPCA, also delete the "." after "nation".

Response to request for information concerning the effect of increased demand within a relatively short period of time on the fiberglass home insulation industry.*

Background

The fiberglass home insulation industry, which accounts for approximately 80% of home insulation, is a highly concentrated industry, composed of three firms. These firms, Owens-Corning Fiberglas, Johns-Manville, and Certain-teed, have national domestic market shares of approximately 50%, 25%, and 25%, respectively. In addition, due to the high cost of transporting insulating materials, there may be a series of regional markets whose structure may be different from the national market.

Evidence necessary to evaluate the competitive conduct and performance of this industry is not available at this time. The rate of return for the three firms has been only average or below average for the last 15 years. However, this rate of return is not necessarily reflective of the fiberglass home insulation product line.

There are severe barriers to entry into the fiberglass home insulation industry. These barriers consist of cost, competitive technology and technical know-how. Although existing patents for the basic processes have expired the three fiberglass home insulation manufacturers currently hold new patents which have significantly

* This response was prepared on the basis of a brief, informal staff survey. It should not be construed to state an official position of the Federal Trade Commission or any individual Commissioner.

increased the efficiency of the manufacturing process. Without access to this new technology, a new entrant cannot economically compete. It has been estimated by an official of a large home-building products manufacturer which has shown some interest in entering the industry that it would take about 10 years and an investment of approximately \$80 million at today's cost for his company to develop the needed technology and enter the industry with one plant.

Technical know-how is also extremely important. Even if a firm were to acquire the needed cost competitive technology it could not operate competitively without the technical know-how to design and operate a plant as an efficient economic process. It has been estimated by the same home-building products manufacturer that if his company were able to obtain licensing for the needed cost competitive technology and technical know-how, it could enter into the fiberglass home insulation industry with one plant in 2 to 3 years at a cost of \$30 to \$50 million. While it is likely that most large firms would enter with more than one plant, a single plant could have a significant impact in a regional market.

At least four home-building products manufacturers, two of which have well-known national distribution systems, have expressed an interest in entering the fiberglass insulation industry. Capital for these four companies

does not appear to be a barrier. But entry without licensing of the cost competitive technology and without access to technical know-how is considered by these firms as infeasible. Consequently, attempts have been made to acquire the needed patent licensing and technical know-how. The three existing fiberglass manufacturers have been reluctant to enter into such agreements.

It is not known whether the three existing manufacturers have excess capacity. Johns-Manville has recently announced plans to double its capacity and Certain-teed is in the process of bringing a new plant into operation. The expansion plans of Owens-Corning Fiberglas and the further expansion plans of Certain-teed are not known.

Other insulating materials such as rock wool, macerated paper and foam plastics like polyurethane do not appear to be competitive substitutes for fiberglass as a home insulating material. Rock wool has lower insulating value and, consequently, requires more product to meet insulating needs. Rock wool has been on the decline and is projected by Predicasts, Inc., in its Special Study of Glass and Other Advanced Fibers, February 22, 1973, to account for only 2.0% of the structural insulation materials market (both commercial and residential) by 1985. Moreover, existing rock wool manufacturers for the most part are single plant operations currently operating at 100% capacity and lacking the capital needed to expand capacity.

Macerated paper is not a viable substitute due to its inherent flammability.

Polyurethane cannot be considered a competitive substitute at this time because of the vast price differential between it and fiberglass. Although it has superior insulating quality, it is approximately three times more expensive than fiberglass. Moreover, since polyurethane is highly toxic when burned, its use as a home insulating material may be limited.

Imports are not competitive with domestic manufacturers because of the relatively high cost of transporting such a bulky, light-weight product. Domestic prices would have to rise very substantially before imports could be competitive.

Effect of short-term increased demand

The obvious effect of a sudden upward shift in demand will be higher prices for fiberglass home insulation. The effect which other insulating materials such as rock wool and polyurethane will have on the market will be minimal. There may be short-term shortages of fiberglass material to meet the energy conservation plan.

The increase in demand for fiberglass home insulation materials will have to be met by the three existing manufacturers unless the technology and technical know-how are made available to potential entrants. Since the level of augmented demand is expected to last only through 1985 (when the proposed tax credit terminates), new entrants

without access to the technology and technical know-how will not affect the energy conservation plan. However, if potential entrants are able to acquire licensing of the technology and technical know-how, de novo entry can be accomplished within 2 to 3 years. New entry, or perhaps even the threat of new entry, could be expected to result in increased competition, additional needed supplies, and lower prices to consumers.*

Staff preliminary investigation of home insulation industry

These preliminary comments were prepared on short notice without benefit of an industry-wide investigation. Since the impact of legislatively fostered increased demand on the home insulation industry is of significant public interest, the Bureau of Competition is undertaking further analysis of the issues raised here, and may recommend specific legislation to facilitate new entry and the availability of adequate capacity at competitive prices.

* In addition to the questions for which information is provided hereinabove, Congressman Brown asked (1) whether there are other comparable examples of industries which have received sudden, short-term boosts of demand, and (2) whether the short-term nature of the demand increase will discourage de novo entry. We have not been able to identify useful parallels, and are unable to predict the effect of the short time period, per se, on entry.

The CHAIRMAN. Thank you, sir.

I'm going to ask Mr. Hardin, who's been introduced so ably by Senator Hollings, and Mr. Nash to come forward if they would as our next witnesses.

Mr. Hardin, as you know, is the president of the U.S. League of Savings Associations. Mr. Nash is chairman of the Energy Management Committee, Edison Electric Institute, New York, N.Y. We are honored to have both of you here.

Gentlemen, unfortunately, I am going to have to leave. I have an amendment coming up on the floor which I'm going to call up shortly. I'm going to ask Senator Schmitt to chair the committee in my absence.

Senator SCHMITT. I guess, if it makes no difference to you, Mr. Hardin, we will proceed with your testimony and you can read it or summarize depending on your inclinations. It will be made a part of the record, however.

STATEMENT OF JOHN A. HARDIN, PRESIDENT, U.S. LEAGUE OF SAVINGS ASSOCIATIONS

Mr. HARDIN. Thank you very much, Senator, and I'd first like to comment on how much I appreciate the glowing remarks from our Senator from South Carolina, Mr. Hollings, and if I might just say a personal word, being from South Carolina, one of the 13 original colonies, we are proud to have a man of his stature representing us in this august body.

I am delighted to be here today representing the Savings and Loan League of the United States, representing 4,400 members with 15,000 offices throughout the United States, and that means that we actually serve every city and small town and hamlet in this nation for their housing needs.

We feel that we have had some responsibility to seeing that this nation is a nation of home owners. 63 percent of our people in this country now own their own home or are buying them, we feel, mainly through our efforts. Last year, for instance, we had the opportunity to make nearly 80 percent of the single family mortgage loans privately held in this nation. So we are in a position and want to give our congratulations to President Carter for his foresight and his efforts toward conserving energy in this Nation in every way. We feel that many of his proposals have been those that we have had an opportunity—along with Harold Olin who's with me who works in charge of our energy effort in the U.S. League—we are here to work with many of the President's advisers in forming some of the energy recommendations such as tax incentives and we have been delighted that some of those have been in his proposal.

It's been recommended that all residences must be certified as energy efficient by July 1—the House Committee has recommended that all residences be certified as energy efficient by January 1, 1982, if they are to receive "Federal financial assistance" defined to include home loans by federally-chartered and insured financial institutions, as well as Government-backed mortgages.

We would like to, if it's possible, give a strong statement of opposition to this for many reasons. We most strongly question the wisdom

of legislation that will make it virtually impossible for many American families to sell their homes without Government permission. Now this at the time, Mr. Chairman, when it comes when we're making every effort to do our part to see that the cities of this country are rehabilitated. We are encouraging our members to make more loans in the inner-city and in the cities of this Nation. They are doing it. In 30 cities, for instance, we have a neighborhood housing service program that goes through the Federal Home Loan Bank through savings and loans to bring the various groups together. Now this would, in effect, we believe, absolutely cut off sale of homes in the inner-cities if these older houses had to meet all the specifications of some type of governmental permission. Really, it's a type of redlining in reverse; where we are trying to bring loans to the inner-city and to the cities, this particular proposal we believe would stop people and we are particularly disturbed about the use of a financing cut-off to enforce compliance with energy standards. The lender and the credit function is a poor choice to police energy efficient goals and we hope that this particular feature will not be included in the final legislation.

We have been telling our people to get involved in making loans to the cities and making loans for purposes of upgrading houses. We have had a conference with Mr. Olin's group. I have appointed a special committee on energy. We met here in Washington some months ago and we met with people from the Carter administration and we are also having a meeting in Denver in the next few weeks to try to bring our people together because we feel that we are fortunate really to be in a business where we can do something positive in regard to energy savings. and if we had certain types of business—say the soft drink business or the furniture business—there would be very little we could do. But in the savings and loan business we happen to be the ones that are making the loans for practically 80 percent and there is a definite part that we can play and we are, in my own institution, giving a reduced rate on home improvement loans and many associations that we have throughout the country are doing just that.

I'd like to just show you a newspaper ad that recently ran a few days ago in Phoenix where it says "Ask your house these eight questions," and then here's the energy mark on the First Federal in Phoenix. This type of thing is being done all over the country to encourage people to come to our associations and get this type of loan for insulation, installment of storm windows or what have you.

Senator SCHMITT. Does that include solar equipment?

Mr. HARDIN. And solar, yes, it does.

Senator SCHMITT. Is there any qualification to that which you would make?

Mr. HARDIN. Some of our institutions are saying only up to \$2,000 for the reduced rate, which would be the smaller things like installment of storm windows and so forth as an incentive to get them started, but what we are saying on solar heating and the more major expenditures would be that we try to encourage them to put these features into the house when they buy it, whether it be an old house or a new house because what's happening is if you buy a home and

then come back 6 months later and say, "I want to put in storm windows or insulation or solar heat," then we make a home improvement loan or they get it from us or a commercial bank or whoever, and they have two payments. We feel that we are in a position to advise—not require—but to advise purchasers that at the time of purchase, whether old or new, that the energy conserving features should be in the house and we will lend the additional funds at that time spreading the payment over 30 years instead of a small five or seven year payment with a home improvement loan. This is working in many cases.

Senator SCHMITT. Are you providing the consulting services on what is necessary for improved insulation or solar equipment?

Mr. HARDIN. That is why we are having these particular meetings that Mr. Olin is to try to get our appraisers and our loan officers throughout the United States, and through our educational wing of the Savings and Loan League—we would have—how many clinics—

Mr. OLIN. We are going to have a clinic probably in every part of the country.

Mr. HARDIN [continuing]. To try and educate our people.

Mr. OLIN. To train people to go into a house and do an audit, preaudit and post-audit, to determine what kind of improvements are necessary and that they have been installed properly.

Senator SCHMITT. Basically, to do what S. 1469 would mandate that the utilities do. Is that correct?

Mr. OLIN. Essentially, right.

Senator SCHMITT. Thank you.

Mr. HARDIN. So actually the energy conservation is something that we can step out in front and do something about and we feel that that we are.

Your committee has done something about it already, also. You have approved an increase in our home improvement ceilings which we appreciate which will help us serve the family making major energy improvements. You have in conference legislation to up the \$55,000 ceiling which inhibits the Federal savings and loans to finance the new homes with long-range, though expensive, energy saving features.

Our statement also talks about the need for more flexible mortgage instruments like a line-of-credit to permit improvements to be financed at a special bargain rate below usual home improvement loan rates, and a "skip payment" privilege are examples of changes which will help families cope with rising utility bills to make improvements which will pay off over a period of years.

The Tower-Cranston resolution would encourage the development of these and other changes in the fixed rate, fixed term, fully amortized mortgage loan.

On specific language in S. 1469, we have serious reservations about portions of the National Energy Act mandating that regulated utilities provide certain services regarding energy conservation. They are asked to measure the improvements needed in homes, to sell them, and then finance them through this monthly bill. We feel that utility companies should provide utility services.

In preparation for this particular testimony this morning I have asked our people in Chicago to make a survey and find out just where we do stand in this home improvement business and I am delighted to find out myself and to tell you and the committee that savings and loans have increased their loans of this type at a 44 percent a year rate since 1972 where they now provide one-third of the home improvement loans that are made in this country and they do this at a rate below what some of the few utilities now providing this service charge.

We make both conventional and FHA title I home improvement loans. Utilities which have been discussed previously here are exempt from the truth-in-lending and other consumer protection laws and are not necessarily accustomed to coping with the holder in due course and similar rules. They may need specialized personnel and equipment to enter the financing area and this implies rate increases for all customers, including those with efficient homes already.

In short, we feel that we are in a position where we are in the finance business and utility companies have a specific role that they can play and should play. Take the electric utility as an example Duke Power in my area of the country will tell the customers specifically what they need and then we are in a position to finance that need and the contractors that do that type of work are the one that are already available that we know that we can work with then I think we all have a specific part to play and trying to lump under the one utility group that has not been in this type of work we do not believe is necessary or appropriate.

We also approve of the amendments to the law governing the secondary market agencies that enable them to backstop increase activities in home improvement lending.

In short, we believe that private enterprise is meeting this challenge. We are doing all in our power. We are making it our number one objective this year and we are already seeing the benefit as the results. We are proud to have this opportunity to be of service to the American people and we feel that through working with the utility companies and with the contractors that do this type of work and with our far-flung institutions nationwide that we can meet this need. Thank you.

[Complete statement and additional information follow:]

WRITTEN STATEMENT OF JOHN HARDIN
ON BEHALF OF THE UNITED STATES LEAGUE OF SAVINGS ASSOCIATIONS
TO THE SENATE BANKING COMMITTEE, REGARDING
S. 1469, THE NATIONAL ENERGY ACT

June 28, 1977

MR. CHAIRMAN: My name is John Hardin. I am President of First Federal Savings and Loan Association of Rock Hill, South Carolina, and appear today in my capacity as President of the United States League of Savings Associations.*

The U. S. League, and its 4,400 member savings and loan associations nationwide, appreciate this opportunity to testify on Part A of S. 1469, the National Energy Act.

As the nation's principal source of home mortgage credit, our member institutions have a vital stake in the residential energy conservation effort.

The U. S. League applauds President Carter's initiative in dramatizing our nation's critical, yet somewhat invisible, energy problems. We commend his emphasis on residential conservation as a realistic way of achieving substantial energy savings. We appreciate his confidence that the voluntary efforts of private financial institutions can do much to encourage energy-saving improvements in homes.

*The United States League of Savings Associations (formerly the United States Savings and Loan League) has a membership of 4,400 savings and loan associations, representing over 98% of the assets of the savings and loan business. League membership includes all types of associations--Federal and state-chartered, insured and uninsured, stock and mutual. The principal officers are : John Hardin, President, Rock Hill, South Carolina; Stuart Davis, Vice President, Beverly Hills, California; Lloyd Bowles, Legislative Chairman, Dallas, Texas; Norman Strunk, Executive Vice President, Chicago, Illinois; Arthur Edgeworth, Director-Washington Operations; and Glen Troop, Legislative Director. League headquarters are at 111 E. Wacker Drive, Chicago, Illinois 60601; and the Washington Office is located at 1709 New York Ave., N. W., Washington, D. C. 20006; Telephone: (202) 785-9150.

As President of the U. S. League, I formed a special Energy Committee in February in part to respond to the White House invitation for public participation prior to the President's April messages; our letter to the Honorable James Schlesinger is attached to this statement. It contains a number of specific suggestions which we were gratified to see incorporated in the President's approach. I should note that the League has recognized the importance of energy efficiency in housing for a number of years through articles in its publications and the work of Mr. Harold Olin, the U. S. League's Director of Architectural and Construction Research, who accompanies me today. (One example is our "Clipbook of Energy-Saving Ideas in Home Building" which we have distributed widely and have available here this morning.) You may also recall that our organization submitted a statement for your hearings last summer on the Energy Conservation Act of 1976.

There are some obvious benefits to our institutions from a national program to promote energy conservation. With energy costs stabilized our present borrowers will be better able to meet their loan obligations; the value of our security property will be enhanced; more families will have the potential of attaining homeownership; and, our savers will have more disposable income to invest in their savings accounts. Thus we have a fundamental interest in the success of the national conservation effort.

With this background, I would now like to address in greater detail the Administration's approach to residential conservation, and alternatives suggested by others, and then the provisions of Part A of S. 1469.

Cut-Off of Financing for Failure to Retrofit Residences

When President Carter addressed the Congress and the nation in April he set a goal of bringing 90% of all residences within minimum Federal energy standards by 1985. Though the 90% figure may be overly optimistic, we applaud his basic approach to achieving this target-- incentives and encouragement for the voluntary cooperation of millions of individuals and private-sector institutions.

As you may be aware, Mr. Chairman, a House Commerce Subcommittee was not satisfied with the Administration's approach to residential energy conservation. It has recommended that all residences must be certified as energy efficient by January 1, 1982 if they are to receive "Federal financial assistance" -- defined to include home loans by Federally-chartered and insured financial institutions, as well as Government-backed mortgages.

We would strongly urge that Congress reject such a drastic step. We must strongly question the wisdom of enacting legislation that makes it virtually impossible for most American families to sell their home without Government permission. While there may be some merit in establishing minimum efficiency standards for new residences -- as provided by last year's Energy Conservation and Production Act -- it is virtually impossible to apply such requirements to millions of existing structures. To deny financing to existing properties is to make them generally unsalable -- thus depriving existing homeowners of their most fundamental property rights.

We are particularly disturbed about the use of a financing cut-off to enforce compliance with energy standards. The lender, and the credit function is a poor choice to "police ." government programs; it

is a little like asking the bank which makes auto loans to be responsible for compliance with seat belt ordinances. This mechanism was utilized with the Flood Disaster Protection Act of 1973, and Congress has now seen fit to amend that law (in the housing bills now pending in Conference). At least the flood law was limited to residences in flood plains and in communities not complying with the Federal flood insurance program; the language of the House Commerce Subcommittee would apply to every existing residence in the United States!

The House Subcommittee attempted to create a number of exceptions to its financing cut-off for homes of families unable to afford retrofitting, homes in decrepit condition, and a mechanism for conditional sales where the buyer is to make the repairs. But we seriously doubt that compensating provisions can be formulated with equity. The elderly, the handicapped, and ordinary families could be "locked into" their present dwelling because of inability to make repairs satisfactory to permit sale of their property. And, as the January, 1982 date approaches, we would predict that materials and installation costs will skyrocket as shortages occur in some locales in an effort to meet the deadline for old and new residences.

Mr. Chairman, we have a great deal more confidence than the House Subcommittee in the willingness of the American people and our financial community to respond to the President's call for energy conservation in housing. There is a growing awareness about energy waste, and its cost to families and the nation. The Congressional Budget Office's June, 1977 staff working paper noted a marked increase in insulation sales beginning with the Arab Oil embargo in 1973/74.

It cited a 1976 survey for the National Insulation Tracking Study which indicates that perhaps 20% of owner-occupied homes were re-insulated between 1973 and 1976. The tax credit incentives which our organization endorses, and which are being reviewed by other Committees of the Congress, should sustain -- if not accelerate -- this trend.

In my own travels throughout the country for the U. S. League, our members report a keen interest on the part of home buyers in cost-saving features. People are asking about the efficiency of heating and cooling systems, whether insulation is adequate, whether there are storm doors and windows. Buyers are willing to pay premium prices for homes which will save on their utility bills over the long haul.

Rapidly rising utility bills in the past few years have educated families to the importance of energy efficient dwellings. The housing marketplace is already "discounting" the energy-hogging home without the need for direct government sanction.

As I indicated above, the U. S. League has initiated an extensive effort among savings and loan associations and allied activities. Mr. Olin has been working with professional appraisal groups for a number of years to spread the gospel of "life cycle" costing for energy-saving improvements -- which departs from the traditional present-value analysis for home components. The U. S. League will devote its Summer Clinic this year to energy conservation, and our affiliated Institute for Financial Education is developing course work to train mortgage loan officers at our associations. On their own initiative, individual institutions have developed a variety of special lending programs to encourage borrowers to retrofit their residences.

At this point, I should mention that in recent weeks the members of this Committee have approved legislative changes of great value to our overall financing program for energy conservation. I'm referring, of course, to the amendments to the Home Owners' Loan Act (governing the investment powers of Federally-chartered savings and loan associations) included in S. 1523, the Housing and Community Development Act of 1977. Your action raising the conventional home improvement loan limit to \$15,000, which is not an issue in Conference, will enable our institutions to provide funds for the kinds of major energy-saving improvements (e.g., modernized heating systems) which could make a significant reduction in energy waste in many residences. What the Conference decides on the \$55,000 ceiling of Section 5 (c) also has energy-saving implications. As I have noted, there is growing recognition in both our business and the public of the "life cycle" value of energy-efficient features of new and used homes, though these features may initially increase the price of a home. The \$55,000 dollar limit and its peculiar accounting treatment, which places every penny of loans above the ceiling in our partially-filled non-conforming 20 percent-of-assets "basket", retards the ability of our Federal associations to provide the credit to buy such housing.

There still remain, however, a number of other tight statutory and regulatory limitations which inhibit our participation in conservation efforts and the options open to our institutions and the public in financing energy improvements. For example, FHA Title I loan over \$7,500 must be accompanied by a second lien, and cannot be made beyond regular lending area. The total of home improvement and equipping loans (including the FHA's) cannot exceed 20%-of-assets. We are also

effectively prevented from offering second mortgages to finance major improvements for existing customers, since these are limited to a non-conforming residential "spillover" category typically restricted to 2 $\frac{1}{2}$ -of-assets. Though your "\$55,000 relief" and higher home improvement ceilings will be immediately helpful, FHLBB rules still contain tight loan-to-value and maturity limits which restrict financing on homes with expensive energy saving features. The rewrite of Section 5(c) contained in our bill S. 1666 (which was discussed at hearings of your Subcommittee on Financial Institutions a week ago) would solve many of these rigidities in present law and rules.

The almost universal fixed-rate, fixed-term, fully-amortized mortgage instrument itself is unduly confining and an impediment to innovative energy-saving financing for the public. For instance, a very appealing financing opportunity for the consumer might be the exercise of a line-of-credit or open-end clause to permit improvements to be financed at a special "bargain" rate below usual home improvement loan rates. Another possibility is the "reverse annuity" concept which would permit homeowners to tap the "savings" represented by the built-up equity in their home. Another change might provide for a "skip payment" privilege when home owners are unexpectedly faced with temporary unemployment induced by a "deep freeze" utility crisis such as that experienced by much of the nation last winter. We would strongly recommend that your Committee provide a signal to the Federal Home Loan Bank Board to proceed to experiment with a variety of flexible mortgage instruments. Senators Tower and Cranston of this Committee have introduced legislation (S. Con. Res.9) to this end, and we incorporated their language in the U. S. League's S. 1666.

Comments on Part A, S. 1469

Mr. Chairman, we have serious reservations about portions of the National Energy Act mandating that regulated utilities provide certain services regarding energy conservation. Section 103(a) (2) (C), if enacted, would require public utilities (which have residential sales in excess of stated threshold figure) to "...make, or arrange for another lender to make, a loan to such residential customer to finance the purchase and installation costs of suggested measures..." Section 110 then adds "public utility" to the list of financial and lending institutions eligible to receive Federal Housing Administration insurance for the familiar "Title I" home improvement loans.

Adding the financing function to the other important assignments of public utilities in S. 1469 duplicates well established services already available to the public. Commercial banks and savings and loan associations already provide over \$8.5 billion annually in home improvement loans; I am particularly pleased to report that S&Ls have demonstrated an annual rate of increase of 44% since 1972 in the improvement lending area, and have doubled their share of the market in the past five years, to the point where they now make over 1/3 of all such loans. S. 1469 certainly implies that those utilities unaccustomed to home improvement financing will need to acquire specialized personnel and equipment at considerable expense. This means rate increases for all customers, including those whose residences are already energy-efficient.

Although public utilities are well equipped to assess the thermal efficiency of homes and perhaps perform an accreditation of

materials and contractors for installation of such materials, they are not particularly familiar with (and in some cases exempt from) the extensive legal and regulatory requirements which apply to lending institutions -- such as the Truth-in-Lending, Fair Credit Reporting, Fair Credit Billing, and the Equal Credit Opportunity Acts. The Federal Trade Commission's trade regulation ("Seller's" rule) promulgated last year altering the "holder in due course" doctrine is a recent example of specialized rules with which traditional financial institutions must contend in home improvement lending. The impact of this FTC regulation is to expose lenders to the same claims and defenses which a consumer may raise against the seller of a product.

We believe that it is in the public interest for the traditional financial institutions to continue to perform the financing function. One important protection provided by traditional lenders is their experience in underwriting; they are accustomed to counselling borrowers, so that they do not undertake obligations beyond their ability to pay.

The provision contained in § 103(a) (4) which requires public utility companies to provide their customers with a listing of financial institutions available to finance the purchase and installation of energy conservation measures would, however, prove most beneficial to their customers/consumers.

As a result, we recommend that Section 110 be deleted from S. 1469 entirely. Those portions of Section 103 compelling utilities to finance residential customers and accept repayment over no less than three years be limited instead to encouraging use of traditional supervised financial institutions to provide financing services.

In the interest of current and prospective American homeowners who will be affected by the terms of S. 1469, we also suggest minor changes in two definitions found in Section 101 of the bill:

- 1) the definition of "residential building" found in Section 101(9) should be amended to include residential buildings which contain no more than four dwelling units, rather than two dwelling units as the present language of the bill specifies. Such a change would bring this definition of "residential dwelling" into conformity with similar definitions of that term commonly found in Federal housing legislation.
- 2) the limited definition of "residential energy conservation measure" found in Section 101(11) should be expanded to provide flexibility for future technological advancements in this area.

Sections 113 and 114 are constructive additions to this National Energy Act and in line with a suggestion we submitted to Mr. Schlesinger. These sections amend the statutes governing the Federal Home Loan Mortgage Corporation and the Federal National Mortgage Association to permit the purchase of unsecured energy-saving home improvement loans. These established secondary market facilities provide, as you know, a mechanism for moving available funds from capital-surplus to capital-short areas in the economy. Lenders doing home loan business with FNMA or the FHLMC typically package a block of loans, which the agency then buys -- making new funds available to the originator. The secondary market facility then either holds the loans for its own portfolio, or repackages them (or interests in them) for resale to other institutions with excess funds. In the mortgage field, the repackaging instrument can be designed to appeal to other financial institutions, or even to new kinds of investors -- pension funds, for

instance -- thus tapping new sources of capital. The same mechanism, we believe, can be applied to energy-saving home improvement loans.

While the secondary market sections may not be a major component of the President's financing approach, they will encourage financial institutions to offer home improvement lending for retrofitting.

The final section of Subpart 2 provides additional funding for the "weatherization" program established by your Subcommittee in legislation in the last Congress. Our April 7 recommendations to the President include the comment: "The weatherization program authorized under the Energy Conservation and Production Act should be adequately funded in order to help low-income people save energy and costs". Residential energy loss is undoubtedly greatest in homes and apartments of low-income families-- yet these are the least credit-worthy and least able to undertake retrofitting improvements. Since many in this segment of the population pay little or no taxes, the tax credit incentives called for by the President are of little help. We therefore support the increased funding for the weatherization program as a necessary part of our nation's total residential conservation effort.

Policy Considerations

We would fully expect that the Congress will carefully review a wide variety of approaches to modifying the Administration's National Energy Act. With this in mind, we would like to conclude with a brief discussion of policy considerations from our perspective as home lending specialists.

First of all, we would observe that credit incentives are never particularly effective unless consumers are convinced of real savings for the family budget and the merit of new products. In last year's Energy Conservation Act deliberations there were recommendations for Government-subsidized and guaranteed loans to induce homeowners and corporations to retrofit structures. Yet the relatively small principal amounts for many energy-saving improvement loans imply only very modest dollar savings to consumers through the use of subsidized interest costs. It is open to question whether the "bargain" offered by such subsidies is such as to make such retrofitting "irresistible".

The President's program, we feel, recognizes that different income strata in the population require different incentives. Tax credits should appeal to many families with significant tax liabilities; this approach also involves the greatest freedom of choice for the consumer, speed in implementation, and simplicity of program administration. The most disadvantaged income groups are served by the "weatherization" program. The middle income groups, then, are those most likely to utilize the financing programs offered through our savings and loan associations.

We are concerned, of course, that any new Federally-sponsored program of tax and credit incentives could become a target for disreputable businessmen and shoddy merchandise. In our view, one protection against families overextending themselves through purchases on credit is to encourage the participation of supervised financial institutions -- such as savings and loan associations -- with our sound underwriting procedures.

We are encouraged by the President's decision to leave our involvement, and that of our borrowing customers, basically upon a "voluntary" basis. As discussed earlier in this testimony, we strongly oppose the Government "forcing" energy-saving improvements on the public through use of such sanctions as "certificates of energy efficiency" or prohibitions on lending for homes not meeting standards. We believe such an approach would be a terrible mistake. The family home is a precious resource -- of fundamental importance in our free society. Anyone who has experienced the exercise of eminent domain or condemnation powers can appreciate the disruption created by depriving citizens of their property rights; and this, in effect, is what happens if you make an existing home unsalable through sanctions on lenders. We also point out that the Federally-insured financial institution, in business for the purpose of providing credit, is a poor choice to "police" compliance with any mandatory standards for materials, installation, or performance.

Thus, we repeat again our praise for President Carter's bold program to alert the nation to the consequences of energy waste, and his legislative package to assure adequate energy resources for this and future generations of Americans. We know that your Committee and the Congress will improve upon that beginning.

I have appreciated this opportunity to present the views of the U. S. League and look forward to your questions.

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USL**UNITED STATES LEAGUE of SAVINGS ASSOCIATIONS** WASHINGTON OFFICE

1709 NEW YORK AVENUE, N.W. / WASHINGTON, D.C. 20006 / TEL. (202) 785-9150

April 7, 1977

The Honorable James R. Schlesinger
 Assistant to the President
 The White House
 Washington, D. C. 20500

Dear Mr. Schlesinger:

The U. S. League of Savings Associations appreciates the opportunity to present its suggestions regarding our nation's energy policy. We feel that the energy situation represents a serious and far-reaching problem and we commend President Carter and the Administration for soliciting the viewpoints of the American public before announcing a program.

The U. S. League of Savings Associations has a national membership of 4,400 savings and loan associations, representing over 98% of the assets of the savings and loan business. Savings associations are the second largest type of financial institution in the nation, with assets at year-end 1976 of \$398.7 billion. Savings associations are the major source of residential credit in the United States.

The Executive Committee of the U. S. League at a meeting yesterday developed several recommendations for the Federal Government regarding the energy issue. Our League also recognizes that the housing industry itself can initiate various guidelines and programs in our every day operations which will promote energy conservation in residential structures. Our analysis of the energy problem has led us to conclude that the following recommendations should be carefully considered by the Federal Government in the development of a national energy policy.

Recommendations to the Government

- 1) Mandatory Federal standards for thermal performance in existing housing should not be adopted. Instead Federal and State agencies should cooperate with the savings business and related housing groups in their voluntary energy conservation and education programs.
- 2) Efforts of various Federal agencies in the area of housing production and energy conservation should be coordinated to eliminate conflicts.*

*Special attention is directed to inconsistencies in qualifying borrowers under HUD and FNMA/FHLMC regulations, and ineligibility of solar energy loans for sale to these secondary market entities.

- 3) The appraiser should take the energy efficiency of a house into consideration on the loan appraisal form.
- 4) The Federal Power Commission and the public utilities should cooperate to devise rate structures which reward conservation of energy.
- 5) The weatherization program authorized under the Energy Conservation and Production Act should be adequately funded in order to help low-income people save energy and costs.
- 6) The IRS Code should be amended to provide direct Federal income tax credits to homeowners who improve the energy efficiency of their homes and install energy saving equipment or systems. State and local governments should adopt tax laws which encourage home improvements or installations for energy conservation.
- 7) The enabling legislation or administrative regulations governing savings association activities should be amended to permit the following:
 - a) Selling of solar and energy-conserving home improvement loans through existing secondary market entities.
 - b) Extending additional credit to existing borrowers on the original mortgage instrument.
 - c) Investing by associations in local energy producing utilities.
 - d) Devising alternative mortgage plans which reflect escalation of energy costs.
 - e) Making loans for solar systems and other renewable energy improvements in excess of \$10,000, 15-year statutory limit for home improvement loans.
 - f) Making loans for solar and other energy-conserving improvements in excess of the \$55,000 current statutory limit for permanent loan-term loans.
 - g) Reflecting expected energy savings through higher loan/value ratios and terms.

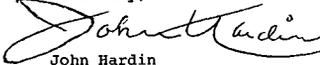
The Hon. James Schlesinger

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April 7, 1977

If you have any questions regarding these recommendations, we will be glad to discuss them further with you or your staff. The U. S. League recognizes the difficulty of the task involved in establishing a national energy policy and hope that you will find our suggestions to be beneficial.

Sincerely,

A handwritten signature in cursive script, appearing to read "John Hardin". The signature is written in dark ink and is positioned above the typed name and title.

John Hardin
President

JH:pc

U.S. LEAGUE OF SAVINGS ASSOCIATIONS,
Washington, D.C., July 5, 1977.

HON. WILLIAM PROXMIRE,
Chairman, Committee on Banking, Housing and Urban Affairs,
Dirksen Senate Office Building,
Washington, D.C.

DEAR MR. CHAIRMAN: During my oral testimony on Tuesday, June 28, on the National Energy Act, S. 1469, you requested that I submit a summary of the Federal Home Loan Bank Board's report on the progress of the Neighborhood Housing Services programs. Please find attached one copy of this summary which appeared in the April 1977 edition of the Bank Board's "Journal '77".

We respectfully request that this summary be made part of the record on S. 1469.

Sincerely,

JOHN A. HARDIN, *President.*

[From FHLBB Journal, April 1977]

URBAN AFFAIRS

In each of our last three annual reports, the Office of Housing and Urban Affairs has chronicled the steady advance of concern for the fate of many of our older urban neighborhoods. In 1976, attention focused primarily on implementing Federal legislation which requires depository institutions to disclose certain kinds of information about their residential lending practices and on developing and encouraging constructive approaches to the complex problems confronting many older urban areas.

Regulation C, issued by the Board of Governors of the Federal Reserve System to implement the Home Mortgage Disclosure Act, took effect on June 30, 1976, Initial disclosure under this statute was required by September 30, and the Office of Housing and Urban Affairs has assisted the Board in monitoring early experience under this regulation. OHUA also assisted the Office of Examinations and Supervision in taking the necessary steps to insure that compliance with these requirements would be determined during each regularly scheduled examination. At the end of 1976, OHUA was working with the Office of Economic Research to investigate research proposals to analyze and evaluate the information made available as a result of the Home Mortgage Disclosure Act.

During the year, the Office of Housing and Urban Affairs also guided the establishment by the Federal Home Loan Bank System of the Office of Neighborhood Reinvestment to assist the Board and the Members of the Bank System in urban preservation. ONR also provides staff support for the Urban Reinvestment Task Force, a joint effort by the Board, HUD, and the financial regulatory agencies. A phased expansion of Task Force activities was begun in August, culminating in December in the approval of a combined budget for the Task Force in excess of \$5 million for preservation and reinvestment efforts during the coming year.

Also in December, after several months of careful development, OHUA executed a new grant agreement between the Board and ONR to transfer HUD demonstration funds to ONR, under appropriate controls, to support Neighborhood Housing Services and Neighborhood Preservation activities.

At the end of 1976, the Urban Reinvestment Task Force had Neighborhood Housing Services programs operating in 28 cities and under development in an additional 12 cities and also had accepted 7 new Neighborhood Preservation Projects for funding. The efforts of the Office of Neighborhood Reinvestment and the Urban Reinvestment Task Force to encourage neighborhood reinvestment and preservation are clearly growing in importance and represent a significant demonstration of the ability of the savings and loan industry, in conjunction with community representatives and local government officials, to respond to the needs of urban neighborhoods in a responsible and constructive fashion.

Growing concern for the legitimate interests of consumers, increasing efforts to ensure nondiscrimination in housing finance, continuing activity to encourage opportunities for minority enterprise in the savings and loan industry,

and steady expansion of the efforts of the Office of Neighborhood Reinvestment and the Urban Reinvestment Task Force thus were the hallmarks of 1976 for the Office of Housing and Urban Affairs. These important areas will continue to present us with challenges in 1977, when we will have an opportunity to build on the solid foundation of progress achieved during the previous year.

Senator SCHMITT. Thank you. Since we have Mr. Nash here, in a panel type environment, why don't we proceed with that testimony, and then we will have some questions for both of you.

STATEMENT OF HERBERT D. NASH, CHAIRMAN, ENERGY MANAGEMENT COMMITTEE, EDISON ELECTRIC INSTITUTE, NEW YORK, ACCOMPANIED BY PAUL GREINER, VICE PRESIDENT, CONSERVATION AND ENERGY DIVISION

Mr. NASH. Thank you, Senator. My name is Herbert Nash, and I am vice president of Pennsylvania Power & Light Co., and chairman of the energy management committee of Edison Electric Institute. I have testimony which has been submitted for the record. I will excerpt from that statement, and make some other comments.

Senator SCHMITT. Fine.

Mr. NASH. EEI is the principal national association of investor-owned electric utility companies. The member companies of EEI serve 99 percent of all of the customers of the investor-owned segment of the electric utility industry, and 77 percent of the Nation's electricity users.

I am accompanied today by Paul Greiner, who is vice president of EEI's conservation and energy management division.

EEI and its member companies has for sometime been active in conservation, and have made inroads into communicating with consumers on this whole concern of energy and its efficient utilization.

We have testified before, that it is not difficult for EEI to give its full support to the concept and intent of S. 1469 as it relates to energy conservation in the home.

EEI has recently announced a nationwide program to encourage conservation which we have chosen to call the national energy watch. We are encouraging the NEW program, to be adopted by utilities all over the country. It will be voluntary program on the part of the utility and their involvement will, of course, be voluntary.

This program has three principal objectives. At the national level, to help minimize the drain on dwindling fossil fuels; in the public utility area, to reduce the need for costly new generating facilities; and for the homeowner or consumer, to help restrain the rising impact of energy bills on consumer's budgets.

A product of NEW will be a number of energy efficiency guidelines, dealing with both the thermal efficiency of residential structures and the efficiency of the heating-cooling systems and the appliances within those structures.

The details of the program are included in my testimony and I will not go into those at this time.

The principal points I would like to emphasize is that we in EEI support the voluntary aspects of the proposed legislation as opposed to its mandatory aspects. I suppose I could say as a witness here that

perhaps everyone will put his hands on his pocketbook since he is in the presence of a couple of public utility representatives, after some of the comments that have been made before my testimony.

We don't grow horns, we are people, we are concerned about our customers, and consumers, and I assure you that we are interested in promulgating the free enterprise system in this country.

We feel that flexibility is a key part that should to be included in any legislation that relates to an extensive wide-ranging insulation program.

Speaking for my company, we are interested in conducting home surveys and audits. We are not interested in doing the insulation work. We think we have in place competent installing contractors who can do this work. We are not interested in financing insulation, because we are not in the financing business. This is to be left, in our judgment, to the banks and lending institutions of our country who are adequately staffed and have a good track record in providing this kind of service to consumers.

We are not interested either in having the cost of the financing on insulation work put on customers' utility bills, because we have enough problems with our customers now about complaints of large bills, without adding an additional dollar amount to those bills, for which the customer will not see any reflection of a reduced cost.

For example, we have 50 percent of the customers which we serve heating with oil, 16 percent heat with natural gas, and 10 percent heat with coal. None of these customers would see any reduction in their electric bill for any insulation work that was done in their home and at the same time they would be paying in their electric bill for the added cost of the insulation, if the legislation were approved and the utilities had to in fact finance insulation and put it on the bill.

So we do not at all appreciate that aspect of the proposed legislation which would force us to increase our customers' perception of what their electricity costs are when in fact those costs are related to something else, in this case insulation.

I would like to talk about a couple of other things that have come up here in the discussion today, because I think they are essential.

First of all, the issue of public confidence. I think we in the industry are concerned about conservation, we want to see it happen, we think it is important as a national issue, and also we think it is important as a consumer issue. So conservation must happen. I don't think the climate in which we find ourselves in this country now is conducive to voluntary public action, because the consumer does not know who to believe about the whole issue of energy. The Senator made a comment about questioning whether the credibility of government is very high. We have heard accusations by the Federal Trade Commission about credibility of utilities. The consumer questions the energy suppliers as to their credibility at all angles.

I think if we are to have any kind of forward motion on the part of consumers to respond to what we perceive to be a national crisis, we have got to develop some air of confidence by working together as government-business-industry in order to develop a concerted story here that fits together, where we can really convince people that

this crisis exists, and that action needs to be taken, and rather than pointing the finger at one another, we need to lend support to one another and develop programs and systems which will be productive, so we get the kind of results we want.

After all, what we are really interested in is getting consumers to install conservation measures, which will help reduce their bills, and contribute to the national objective of reduced fuel consumption.

As far as the cost of an audit is concerned, my company has been involved in an audit program for the last several months, and I can give you some statistics on that, if you would like.

We have run two advertisements in one of our company divisions in an attempt to offer to consumers a free home energy audit.

Senator SCHMITT. Excuse me. Did you say free?

Mr. NASH. Free; no charge to the consumer.

Senator SCHMITT. How do you pick up the tab?

Mr. NASH. Well, when you say it is free, there isn't any such thing as free. We had this discussion in our company and the first ad did not say free, it said "at no cost to the consumer." Of course we have a cost associated with this, it is in the manpower and payroll costs of the people employed by the company.

Senator SCHMITT. They don't volunteer their services?

Mr. NASH. No, they are not doing it after hours on a voluntary basis.

But we ran the ad in the paper——

Senator SCHMITT. So that goes into your overhead, is that it, as part of the rate structure?

Mr. NASH. It goes into the operating cost.

Senator SCHMITT. It becomes part of your rate structure?

Mr. NASH. Right, part of the operating cost in the rate structure.

We ran this ad in the Harrisburg, Pa., newspaper on two occasions, first on a Sunday in April, just about the time that the President was about to make his proclamation with respect to the whole energy policy. This was Sunday the 17th of April, the weekend before. The newspaper has a circulation of 140,000, and we got something less than 200 responses to the advertisement, people asking us to come out and survey their homes.

We subsequently ran the ad on a weekday in an attempt to see whether there would be more response, and in this case we did say free in the banner in the ad, to try to get their attention and see if that would stir up greater public response.

It did not. To date, as of June 16, we have had a total of 343 responses to the ads. We have completed 209 of the 337 requested surveys. And we have found that these surveys take an average of 1½ to 2 hours to complete.

Senator SCHMITT. Excuse me. Say that again?

Mr. NASH. It takes 1½ to 2 hours to complete each survey. This is a top to bottom survey of the home. We leave a copy of the report with the consumer as to the proposed measures that can be taken to conserve energy in all energy utilization in the structure, and then the customer is encouraged to have someone in the contracting field to get an estimate to have the work actually performed.

Senator SCHMITT. Do you make any recommendations?

Mr. NASH. The antitrust aspects of life forbid us from making any specific recommendations. We refer the customer to the yellow pages of the phone book. This is one of the reasons why some of the testimony that has appeared before speaks specifically to the antitrust issue. We do not feel that in the present legal climate that we can name specific contractors to the exclusion of others, because we run the risk of antitrust suits. This is upon advice of our counsel.

These audits, of course, as I say, are top to bottom audits. We feel that it is an effective way to try to produce for the consumer an indication of what potential conservation actions can be taken.

I will repeat, we are not interested in becoming an insulation contractor or financier for these actions.

Senator SCHMITT. Do you have any followup on the 209 audits that you did?

Mr. NASH. It is a little too soon to followup. One of our concerns of course is the question of our customers now waiting for this carrot, which has been dangling in front of them in the way of a tax incentive before they take action to move forward with actually doing the physical work of installing the insulation.

Our indications are that this is in fact holding the customers back from taking action, the fact that there is potential tax advantages or tax incentives for them, so they are waiting. This is a result of actual interviews with these customers, they will wait until something more substantive is developed with respect to the tax incentive program.

Senator SCHMITT. So this experience is showing you that even with mandatory audits to be performed by utilities, it would not have an effect?

Mr. NASH. This is a voluntary response to an offer for audits. We don't know how many customers really read the newspaper, we don't know how many read the ads in the newspaper unless they are looking for something specific.

We have intentions to try other ways to reach customers to offer this service to them, to see whether we can get a better response, a billing insert or a direct mail piece to customers, or what have you.

The concern, of course, is that we will get deluged with these requests and can't respond because we do have a limited number of people available to do this service.

Senator SCHMITT. Have you estimated the cost per visit?

Mr. NASH. Well, I would say somewhere in the range of \$25 to \$50.

Senator SCHMITT. So you would agree with the figure given yesterday of \$20 to \$40?

Mr. NASH. Yes. There is about a 2-hour-per-inspection time involved, and when you figure transportation costs, payroll, plus overhead, fringe benefits, and so on, I think we are talking in that range of \$25 to \$50.

In addition, we have had a rather concentrated effort going on in our company now for over 1 year to try to get the lending institutions involved in the home renovation business, particularly as it relates to energy conservation actions.

I have copies of ads here which have been run by banks in our service area. Here is one from an Allentown bank that offers a 9½ percent rate on a 36-month loan; another one from a bank in Harrisburg that is offering such loans.

We have had a series of meetings around with these leaders of lending institutions, to apprise them of our evaluation of the energy situation, to encourage them to get involved in the whole picture, to become knowledgeable, to offer them whatever expertise we have about energy.

We have generated a lot of information, and we think home improvement work that is done on a do-it-yourself basis is a potential here, and we have run clinics to train people how to install insulation in their homes, and we will continue to do this. There are many actions that are going on.

May I speak for a moment about the question of insulation contractors and the capabilities that exist for this business as far as we are concerned from my company's point of view.

I have a copy of a survey made among insulating contractors in northeastern Pennsylvania in one of our divisions. This survey was made in February 1977, and it relates to 1976 activity. We contacted 24 insulating contractors in this division. They did 3,515 homes totally, and 1,434 homes partially. Most of these homes were involved in retrofit types of insulation, because in most cases in new construction the building contractor himself installs the insulation, rather than calling in an insulation contractor; 22 of the 24 contractors do their own financing, or have an arrangement with financial institutions to do the financing. In other words, financing is no problem for them.

We have had a good relationship with this group, and we feel that we can work with them and as business opportunities expand in this area, that they will be willing to respond with the necessary added equipment and necessary added installers in order to accomplish the work that needs to be done.

In addition to the work done by these contractors, we have cooperated with the Department of Community Affairs in Pennsylvania, who are using Federal funds in the winterization program. In this particular portion of our service territory, 1,405 homes were insulated under this federally sponsored winterization program in 1976.

So here is one small, relatively small, geographic area in Pennsylvania, and almost 5,000 homes were retrofitted with insulation in 1976.

I submit that the free enterprise system, the agencies which exist in that system in the form of contractors and lending institutions, are capable of doing the job that needs to be done on a national basis.

What we need is to build up public confidence in our systems, and also to give people the incentive, so they will move forward and actually install the insulation that is so badly needed in order to accomplish the conservation we all want to see.

Thank you.

[The complete statement of Mr. Nash follows:]

TESTIMONY ON BEHALF OF THE EDISON ELECTRIC INSTITUTEONS. 1469 - TO ESTABLISH COMPREHENSIVE NATIONAL ENERGY
POLICYBEFORE THESENATE COMMITTEE ON BANKING, HOUSING AND URBAN AFFAIRSJUNE 28, 1977

My name is Herbert D. Nash. I am Vice President of Pennsylvania Power & Light Company, and Chairman of the Energy Management Committee of the Edison Electric Institute, the principal national association of investor-owned electric utility companies. The member companies of EEI serve some 99 percent of all customers of the investor-owned segment of the electric utility industry, and 77 percent of the nation's electricity users. We appreciate this opportunity to present our views on S. 1469.

EEI and most of its member companies have been active in the area of conservation and energy management for a number of years. The Institute's officially stated view is that conservation and the elimination of waste must be at the base of all energy policy.

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Earlier this year, EEI's Board of Directors adopted a resolution which states that, "EEI and its member companies should further develop action programs to support a full commitment to conservation. EEI supports the concept of the proposed Energy Department and the objectives of eliminating waste and providing an adequate energy supply for America's needs - utilizing to the fullest extent our coal and uranium resources." Recently, EEI's President, W. Donham Crawford, pledged publicly that the investor-owned electric utility industry would take a leadership role in helping the nation conserve its dwindling supplies of fossil fuels.

Thus, as we have testified before, it is not difficult for EEI to give its full support to the concept and intent of S. 1469 as it relates to energy conservation in the home.

On June 13 in Philadelphia, the EEI Board of Directors officially approved a national energy conservation program for both new and existing residential units. In its conception, the program takes into account the considerable experience individual companies have already gathered in the development and administration of local programs. We intend with this program to develop within the electric utility industry the same capability to market conservation and energy management that we had in the Fifties and Sixties to market kilowatt hours. I think you might be interested in a brief review of its major features.

For purposes of stimulating public participation, we will promote our program under the name of the "National Energy Watch."

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N.E.W. will have three basic objectives. At the national level, the objective will be to help minimize the drain on dwindling fossil fuels. At the industry level, it will be to help reduce the need for costly new generating facilities, and at the homeowner level the primary objective will be to help restrain rising energy bills.

The baseplate of N.E.W. will be a number of energy efficiency guidelines dealing with both the thermal efficiency of the residential structure itself - insulation, infiltration, etc. - and also with the efficiency of electric systems and appliances within it. These thermal insulation guidelines are based on All-Weather Comfort Guidelines that were developed initially by the electric utility industry twenty years ago, and upgraded periodically since then - most recently in February of this year. Each individual guideline will be given an assigned point value for full compliance. Fractional compliance will earn lesser numbers of points. The objective for the homeowner, of course, will be to score as many points as possible. Homeowners whose homes score at least 80% of the total number of possible points will become members of the "National Energy Watch," and will be appropriately recognized as such by the local utility company. Owners of existing homes will qualify for N.E.W. membership if their homes score at least 80% of the total number of possible points, or if they improve their existing score by at least 20%.

To stimulate homeowner participation in the N.E.W. program, we propose many of the same incentives that are outlined in S. 1469, including the following:

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1. FINANCIAL ASSISTANCE

A number of financing plans of different types have already been established by many utility companies across the country. Among them:

+Programs in which the utility works with the banks and/or other financial institutions in the development of plans which the latter can offer independently to the homeowner.

+Programs in which the utility simply serves as a catalyst to bring the banks and the homeowner together.

+Programs in which the utility company negotiates the note with the homeowner and then sells it to the bank.

+Programs in which the utility does the financing itself at a reasonable rate of interest with the charge to the homeowner either on or off the monthly utility bill.

+Programs utilizing Federal funds as they become available.

Many variations of the foregoing plans are possible.

N.E.W. will not prescribe any single plan, but will require that participating companies have a plan of their own that is suited to their individual needs.

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2. REMODELING ASSISTANCE

As in the case of financing, there are numerous ways a local utility company can help the owner of an existing home handle his contracting and construction problems. Among some that have already been put into effect by one or more companies are the following:

- +Plans in which the utility handles the necessary paperwork but subcontracts the actual construction to an independent contractor.
- +Plans in which the utility works in "partnership" with a reputable franchised or licensed contractor who assumes responsibility for actual construction, carries the paper and assumes all liability.
- +Plans in which the utility gives instruction and other practical assistance to the "do-it-yourself" homeowner.
- +Plans in which the utility company establishes its own working capability to do the remodeling work.

Again, there are many variations of plans such as these.

And again, NEW will not prescribe any one plan as long as participating companies develop some plan of assistance that is suited to their individual operating circumstances.

3. MATERIAL AND LABOR ASSISTANCE

Predictably, the availability of materials and qualified labor will be a growing problem at the local level. Participating utilities will endeavor to maintain a current review of both material and labor sources in order to assist the homeowner in the expeditious handling of his needs in these areas.

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4. TAX CREDIT

President Carter has proposed that homeowners who "weatherize" their homes be given a tax credit of 25% for the next \$800 invested in remodeling, and 15% for the next \$1,400. If this plan, or one similar, is enacted into law, it will be incorporated as part of the N.E.W. package.

Thus, in brief summary:

I. The objectives of the N.E.W. program are these:

For the Nation: To help minimize the drain on fossil fuels.

For the Utilities: To help reduce the need for increased generating capacity.

For Homeowners: To restrain rising energy costs.
To provide additional home comfort levels.
To increase property values.

The way N.E.W. proposes to achieve these objectives is by offering the homeowner the following package:

- Assistance in financing
- Assistance in construction
- Materials and labor assistance
- Tax credits

We intend to make the "National Energy Watch" a major activity for EEI and its member companies, not only for the balance of this year, but predictably, for several years to come - as long as the need exists. We began immediately after Board approval to develop procedures for its implementation and administration and for its public promotion, both nationally and locally. We expect most of our member companies to become participants in the effort. We are proud that this is the first nationally organized residential conservation program. And we are proud that it is a voluntary program. I should note, finally, that we have already reviewed N.E.W. in concept with a number of

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utility industries trade allies and other fuel suppliers with a view to obtaining their active participation in both national and local implementation of it. The response from them so far has been very encouraging. Among the organizations we are working with are the following:

American Public Power Association
National Rural Electric Cooperative Association
National Mineral Wool Insulation Association
National Home Improvement Council
National Cellulose Insulation Manufacturers Association

Let me say that I do not predict that the job ahead will be easy. At Pennsylvania Power & Light, we have been trying to stimulate homeowners to improve the thermal insulation of their homes for the last five years. We find it very difficult. Recently, we ran two advertisements in one of our local newspapers offering a free home energy survey to be conducted by personnel in my department. The ads were a quarter of a page in size. They ran in the Sunday paper which has a circulation of over 140,000 people. The ads appeared the weekend before the President gave his energy message when there was much publicity on the whole subject of energy conservation following the most severe winter on record in northeastern Pennsylvania. All of our customers were faced with exceptionally high energy bills. Yet with all this, the ads drew only 343 coupon responses. This to me illustrates the low level of public interest on the whole subject of energy conservation at the present time. We need more incentives, and we need an aggressive marketing program. The proposed tax credits would certainly be one valuable incentive. As to the marketing program, we believe the National Energy Watch program we have described

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here will adequately fill that need.

With regard to specific details of S. 1469, I believe we have these concerns.

Section 102 proposes to give the Federal Energy Administration broad authority to establish rules, guidelines and standards for the overall program. We would hope that this authority would be exercised in such a way as to give the utility industry and its individual member companies maximum flexibility to develop voluntary programs of their own such as the National Energy Watch program I outlined a moment ago. We are convinced that such voluntary programs can be initiated much sooner and administered much more efficiently than imposed Federal programs that may lack appreciation of local operating circumstances and that may become weighted down with administrative detail.

Further, we believe that Section 103 (a) "Utility Programs," is preoccupied with procedures rather than end results. Each of the four main subparagraphs in that section begins with the language, "procedures whereby..." or, "procedures designed to..." We believe this focuses more on "how" than "what." Let us agree on the insulation ends we are trying to achieve, but then - in the interest of time, efficiency and economy - we would suggest that the methodologies for achieving those ends be left to us. Let me give you an example of what just one of those procedures would cost in terms of manpower.

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Paragraph (2) (A), Section 103 requires that utility companies, directly or through one or more contractors will inspect the residential building to determine and apprise the residential customer of the estimated cost of purchasing and installing each suggested (conservation) measure no later than January 1, 1980.

There are approximately 57 million low-rise family homes in the United States. Omitting the time required to train a competent work force to inspect that many units, and figuring that one man can inspect four houses per day at two hours per house, it follows that it would take 114,000,000 man hours just to get the inspection done by January 1, 1980. Figuring a 40 hour week, that translates into an inspection work force of 28,500 men to do the job in the proposed time. At my company alone, I estimate that I would have to add 400 people to my staff. Since I now have only 40, that means adding ten times the number now employed. In fact, it would mean a 6% increase in the employment of the entire company.

That's the estimated manpower requirements just for inspection. When it comes to actually doing the work, it becomes even more difficult. Paragraph four, Section three, "National Energy Goals," establishes it as one of the goals to insulate 90% of all American homes by 1985.

Based on the experience of some of EEI's member companies, we estimate that it takes four man-days to insulate one residential unit. If you take the estimate that there are approximately 57 million low-rise homes in the U.S., it figures out that we would need a work force of 102,600 men working forty hours a week to insulate 90% the 57 million homes in the years 1978 to 1985 inclusive.

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Clearly, the inspection requirement establishes manpower requirements that, to say the least, are substantial. Moreover, we suggest that any mandatory inspection program imposed on utilities could be construed as an invasion of privacy that many residential customers would resist. Utilities are unpopular enough without having to be the Government's insulation policeman with no choice in the matter. We are sure there is a better way to achieve the same end.

Beyond these things, we are concerned with what appear to us to be some serious omissions in the proposed legislation. In the past, individual companies have been confronted with anti-trust allegations involving the insulation of homes where the utility listed or selected the contractor. Consequently, with any legislation of the type now before the committee, immunity from such anti-trust liability should be provided. In addition, the utility should not be liable to the homeowner in the event of a poor insulation job installed by a contractor.

Additionally, since homeowner participation in any energy conservation program depends substantially on the promotion and advertising of that program, we believe that all such programs should be exempted from any and all state restrictions that exclude advertising and promotion from rate computation.

We believe also that the cost of program administration and the additional personnel required directly and exclusively to implement energy conservation programs of the type contemplated here should be a recoverable cost.

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Finally, we are concerned by the provision in the proposed legislation that stipulates that remodeling loans arranged for residential customers by utility companies shall be repaid over a period of not less than three years as part of the customer's periodic bill. To date, our experience has been that including these charges on monthly bills greatly aggravates high bill complaints and thus adds to our administrative workload. We would much prefer language in the bill to permit separate billing or other payment arrangement by the lending agency.

I have brought with me suggested modifications in the bill covering the foregoing specific points. I would be happy to submit copies of these suggestions to the committee if it is interested.

I would like to conclude by praising President Carter's bold program to alert the nation to the consequences of energy waste. I am pleased to offer our suggestions to your committee, knowing that your group and the Congress will improve on the President's beginning and initiate action that will be effective and equitable to all Americans.

In summary, allow me to say again that the investor-owned electric utility industry gives its full support to the concept and intent of the National Energy Act as it relates to energy conservation in the home. We believe our National Energy Watch program will help materially in the attainment of those objectives, and we stand ready to offer additional assistance in any practical way to further this critically important effort.

Thank you.

Senator SCHMITT. Thank you, gentlemen. I will be asking a number of questions here directed to one of you, but feel free to raise your hand or wink at me or something and let me know you would like to comment also.

First, Mr. Nash, did you ask these contractors if they anticipated a shortage of insulation supply under the present trend, or under the impetus of Federal legislation?

Mr. NASH. We did not ask that question with respect to supply. We do know that they are very busy, they have told us within the last month or so that they are booked solid as far as work is concerned, on into November of this year.

So there is activity in certain segments of the marketplace which is in fact producing a lot of workload for those contractors.

Senator SCHMITT. Are there new contractors appearing, getting into this game?

Mr. NASH. There are occasionally new contractors. In fact, I had a call from a gentleman within the last month who was interested in establishing himself in this contracting business, asking for some guidance from us to help him get established.

Senator SCHMITT. Mr. Hardin, at the present time, mortgage money is fairly available, capital is available?

Mr. HARDIN. Yes, sir, you are right.

Senator SCHMITT. If it started to tighten up, under the demands for capital that will come from any national energy program, do you see that these kinds of loans that you have been talking about would be discouraged relative to the broader home ownership loans?

Mr. HARDIN. No, sir, I don't, because we have gone through some of those periods, and I think this information that I gave you earlier was very revealing to me, that showed that our associations had increased their home improvement lending 44 percent each year since 1972.

Back in those days the money was not readily available. So home improvement lending has increased through feast and famine. So I do not see that that would be any hinderance in us promoting these loans.

The other thing you just asked Mr. Nash about, are more people going into that business, we do see more contractors taking on this type of work, and we are delighted, because we see more highly regarded contractors doing this type of improvement.

Senator SCHMITT. According to the publication the American Banker, of June 10, a lot of bankers believe they would be better off letting the utilities have the business, since the small short-term transactions have a high overhead cost and bring a lot of headaches and no profit.

Would you agree with that statement

Mr. HARDIN. You have quoted the American Bankers, and I am representing the American savings and loans. We think that is our responsibility and we are perfectly willing to accept it, and want to.

Mr. NASH. May I respond?

Senator SCHMITT. Surely.

Mr. NASH. We have had contact with many bankers, as I said, in fact, we have discussed with some of them on a private basis their

willingness to participate in some sort of financial program to try to explore what are their interests, and how can we cooperate in this sort of endeavor.

There is some reluctance on the part of the bankers to get involved in some of these loans because in some cases we are only talking about perhaps, with ceiling insulation, maybe \$250 as the cost. Experience seems to indicate that not many of those jobs get financed. Most of the people either pay cash for it, or they make some short-term arrangement. It doesn't go through a regular home improvement loan process.

One of the suggestions that was made in order to overcome this was the possibility of pooling loans, where the utility would play a role in gathering together a number of home improvement prospects or jobs, and then the bank would loan the money on a pooled basis for maybe 5 or 10 homes.

I don't know what the mechanics of that process would be, but that has been a proposal.

Another proposal that has been made with respect to the possibility of encouraging forward motion would be to offer lower interest rate loans through a tax incentive to the banks, whereby the bank would be exempt from paying Federal income tax on loans which were made for this purpose, which would in effect allow them to loan the money at 5 or 6 percent to the ultimate borrower, and they would still be able to realize their 9 or 10 percent, whatever the amount of money is they normally realize from home improvement loans.

Senator SCHMITT. I have just been winked at. Go ahead.

Mr. HARDIN. Senator, I would just like to respond to that, and say that most of the people that get a home improvement loan think of the savings and loans, because they have their home loan with a savings and loan. Banks as such have not specialized in home lending, and we have.

So when they think of anything connected with their home, they think normally first of a savings and loan. We do specialize in this type of lending, and as I have shown, we are increasing it every year. So we foresee no problem whatsoever in our industry taking on this role nationwide.

Senator SCHMITT. Are you meeting the demand presently, and can you meet it if it is increased significantly?

Mr. HARDIN. Yes; we can and we are.

Senator SCHMITT. Mr. Bardin, of FEA, presented the Administration's views yesterday and obviously they are recommending that the utilities offer lending services, financial services. He said he would expect that utilities would contract with lenders.

He argued the Federal Trade Commission and the State utility commissions could assure adequate access and fair trade.

Do you agree with those statements?

Mr. HARDIN. I agree with Mr. Nash, saying that they have a specific part they can play. They can make the survey of the house, which they are doing, and offering to do free and so forth. And as I said, in my particular part of the country, Duke Power is doing the same thing. This is the role they should play.

Then when it is found out what is necessary to bring the house up to standards, they, themselves, pick a qualified contractor, and then the lending institution, and in 90 percent of the cases we think it would be savings and loans that would come into the picture. That is where we are prepared. We have loan officers who are trained. Here is a book we have just gotten up, it goes from A to Z about insulation, solar heating, what-have-you, for our own people to educate them in this very aspect of our lending.

So I think we all have a specific part here, and we shouldn't be in the utility business.

But by working together we can solve this national problem.

Senator SCHMITT. I see a nod of agreement from Mr. Nash.

It was acknowledged yesterday by both HUD and FEA that financing of improvement loans for multifamily dwellings, apartments, is a big gap in the program that has been proposed by the administration.

Do you have any suggestions, Mr. Hardin, on how financing for multifamily dwellings could be accomplished?

Mr. HARDIN. Well, we are financing all types of loans for any type of mortgage. The bulk of our lending of course is single-family and the bulk of the home improvement has been aimed at single family, because of the amounts of the home improvement loans, the restrictions, although they have been raised. In many cases, if we as a savings and loan, have the first mortgage on the multifamily unit, then we can make an additional advance for this type of retrofitting. And we are doing so.

Senator SCHMITT. Mr. Nash, did you find any multifamily dwelling owners taking advantage of your services?

Mr. NASH. We haven't specifically offered the service to multifamily, not in this advertising campaign. But we have been working with many multifamily installations with respect to going from a master meter to individual meters for the units in an attempt to encourage conservation, because we find when a consumer pays the bill directly, rather than having it included in the rent, they tend to use less energy.

As part of that program, we have been making inspections and we do have a number of multifamily apartment type units which are being reinsulated or further insulated above and beyond what was originally installed. How it is being financed, I am not familiar with that.

I think in many of the cases, the larger of these apartment complexes and so on are financed other than through banks or savings and loans, they are in many cases financed by large insurance companies and those kind of institutions. Whether the savings and loans and banking institutions are willing to get into a second mortgage position or a second position of some sort of for improvements, I don't know.

Mr. HARDIN. We can't under our present restrictions. I would think it would be in order for some additional liberalization under 5(c) to raise the limits, particularly as it would apply to multifamily. As it now stands, we are very limited. If that could be raised, I am sure our members would make use of it.

Senator SCHMITT. That is a recommendation worth looking into.

Mr. HARDIN, continuing on here, if we deleted the section that deals with utility financing, are there any areas where the financial institutions, such as the ones you represent, cannot provide lending services such as in rural areas, for example? Is there a deficiency of lending services there?

Mr. HARDIN. No, sir. That was in my opening remarks. I believe that we cover every small town and hamlet in this United States.

Senator SCHMITT. What about the interior of the large cities, the so-called urban blight areas?

Mr. HARDIN. This is the area I was previously speaking about, where we are trying to have neighborhood housing services, where you bring together a person from the city council, a person from the police department, a person from the fire department, and a person from a savings and loan, and we feel some of our savings and loans are doing this, they are the catalyst to bring these people together.

Then you take a neighborhood and start from there with that group to upgrade it. And with the savings and loans and the banks working together, to furnish the funds. But you can't do it, Mr. Chairman, by just pouring money into a given area like HUD has done in the past, a big tall building and then they tear them down. It has to be done with the cooperation of the people. And we are the ones, I believe, that can bring those people together and we are doing it in 30 different cities right now, and we are very proud of that, and hope to do it in many more.

Senator SCHMITT. Is there a summary report of that effort?

Mr. HARDIN. Yes, sir, we would be delighted to give that to you.

Senator SCHMITT. Would you make that available to the committee?

Mr. HARDIN. Yes; we certainly will.

Mr. NASH. You bring up a very interesting issue, and I think perhaps there is a need to take a look at what is really the market for installation of retrofit insulation. I think we can characterize it in probably a series of categories. No. 1, many of the home owners in this country are elderly people, people who have bought homes in the past and are now living on a fixed income. They have one set of circumstances as far as financing, and borrowing money and so forth.

So I think there are opportunities to deal with the elderly, fixed income people, many of whom live in urban areas, possibly through volunteer kinds of activities.

I am familiar, for example, with the fact that the Boy Scouts of America have a new energy conservation thrust. Conceivably volunteerism could be used here to engage those people to come in as part of a Boy Scout merit badge or something, and volunteer some time to install ceiling insulation, or the kind of things that can be done simply in those structures.

There is the Junior Chamber of Commerce, and there are volunteer groups of people who can possibly provide services to meet the needs of one class of homeowners who may benefit most from this kind of activity.

Of course the Federal winterization program, which I mentioned, goes to the low income people. Many of those live in the urban areas of our cities.

Then, of course, I think the blue collar worker in many cases is capable of the do-it-yourself approach to this, the person who can be trained, and in his spare time put a little insulation in the ceiling, what-have-you.

And then the white collar worker, who was formerly a blue collar worker, maybe he can do some of that, too, and so on down the scale of where people are, what they can afford, and how they can manage to accomplish this job.

Senator SCHMITT. Is your utility or any other utilities trying to act as a focus for such volunteer efforts within the communities?

Mr. NASH. I don't know of any utility that is involved in this right now, but it is certainly something we are considering.

Senator SCHMITT. Are you considering training programs for people also?

Mr. NASH. We have conducted training programs, and will continue to do this. We have had reasonably good success with response from consumers for an opportunity to come out where we conduct hands-on training. We have a section of wall construction with 2 by 4's and insulating materials and a ceiling section and a water heater they can wrap insulation around to save energy losses from the unit, and the whole range of things that we offer to people to try to teach them how to do it themselves.

Mr. HARDIN. That is exactly the same thing we have in this booklet here.

The other thing, speaking of the elderly—

Senator SCHMITT. Will that booklet be made available?

Mr. HARDIN. Yes; we have a number of copies here for the committee.

Speaking of the elderly, I have recommended—and we are trying to get some legislation on this started now—that we be able to make a reverse mortgage for the elderly. Many times a person will retire with nothing but social security, and the only thing he will own of any substance will be his home. They have no mortgage on it. At this time he can't borrow on it, he barely has enough to live on. So he is faced with the problem of selling the thing that means the most to him, his home.

We should be able to make a reverse mortgage, lend him \$10,000 or \$20,000, and instead of him making payments, we send him payments, don't give him the whole \$20,000 but the first month we send him \$120, he gets social security plus a check from us.

This is a thing that I have had thousands of letters from elderly people in every State in the Union on since I made this recommendation. There are certain restrictions now, we have got to get some State laws changed, but this is the point where, take the elderly in a city, that would need to have this work done, and they are not in a position to finance it, with us or anybody else. But this would give them an opportunity to have some money to finance not only to bring the home up to standards, but for additional living expenses.

Senator SCHMITT. Interesting.

Mr. Nash, on the question of your inspections, the free inspections, if this becomes a mandatory effort, what is your estimate of the engineers or the availability of the type of qualified people to do this kind of work?

Mr. NASH. I think the written testimony includes some statistics on that. In my company we estimate if the legislation as written is passed, we would have to do this inspection job in a 2-year period, and we would have to hire some 400 people to do the inspection work. I now have 40 people in my department working on the residential market, in total. That would mean I would have to increase my staff 10 times. We have a total of 7,000 employees in my company. So you are talking about a 6-percent increase in the level of employment in the company just to accomplish this 2-year job of inspecting homes, assuming we inspected them all.

On a national basis, assuming 57 million homes to be looked at, and we do 90 percent of them, we would need 28,500 people just to do the inspection work within 2 years.

So it is a considerable effort for the utilities to respond and get the job done as it is outlined. We just could not do it physically, I don't believe.

Senator SCHMITT. One final question before I have to run over and vote, and we will be in recess at that time until I get back or until Senator Proxmire gets back.

Mr. Nash, on page 10 you suggest that the promotion of energy saving measures should be exempted from any and all State restrictions that exclude advertising and promotion from rate computation.

Do you want to comment a little further on that?

Mr. NASH. In some jurisdictions the public utility commission has passed regulations which say that no utility advertising shall be charged against the ratepayer, that it shall become a part of the charge against share owners. What we are suggesting here is that in the case of conservation measures, that an utility should be allowed to charge this as an operating cost, rather than charge it against the share owner.

Senator SCHMITT. Because it is in the public interest to do so?

Mr. NASH. Right. Ultimately really it costs a customer more if it is charged below the line, rather than above the line, because it only takes \$1 of revenue to pay an operating cost, and it takes \$2 of revenue to produce a dollar of earnings below the line, because of the tax implications. An operating expense, you divide in half, because of the tax implication. But a charge that goes against the share owner, and is not subject to that tax benefit, requires \$2 of revenue to produce the same earnings.

So ultimately it is in the best interests of the consumer as far as the actual cost in rates is concerned.

Senator SCHMITT. Do your efforts distinguish clearly between operational or procedural conservation and that that requires capital investment?

Mr. NASH. I don't know that I understand the question.

Senator SCHMITT. When you go into a home, do you distinguish for the homeowner what they can do to save energy without any capital investment, versus what capital investment can do for them?

Mr. NASH. Yes. The survey forms includes all of the activities, things that they can do themselves, things which they would have to hire somebody to do, materials they would have to buy.

Senator SCHMITT. I am thinking of actual operation, where there is no investment, versus that in which there is some investment of capital, money.

Mr. NASH. Yes, there is a distinction of what action they can take, which represents no capital investment, like living habits, the way they utilize appliances.

Senator SCHMITT. Exactly. Have you made an estimate of the average savings in homes that could come from just the procedural methods, the operational methods?

Mr. NASH. No—

Senator SCHMITT. And compared that with investment?

Mr. NASH. No, we haven't made that kind of calculation. It varies, it depends on the appliance mix, it depends on the lifestyle of the people. There are too many variables so we didn't attempt that. We have estimated for future forecasting of plant capacity needs and factored into our future forecast the impact of improved appliance efficiency based on proposed Federal regulation and its implementation at some time in the future.

We have included this kind of data in our forecasting techniques, in order to recognize potential reductions in energy consumption as a result of those kinds of things taking place.

But I can't give you a specific number.

Senator SCHMITT. We will be in recess here for about 10 minutes, gentlemen. And if you can stay, there are a few more questions I have. Otherwise we can submit them to you to answer for the record. Are you able to stay?

Mr. HARDIN. Yes.

Senator SCHMITT. We have two more witnesses this morning also. [Short recess.]

Senator SCHMITT. Let's try again. Mr. Hardin, you say in your testimony that credit incentives are never particularly effective unless consumers are convinced of real savings. You question whether subsidies will make retrofitting irresistible, and you strongly oppose the mandatory features.

What would you suggest if homeowners can't be readily convinced and the demand for home improvement loans falls significantly below targets, because a 12-percent loan is still too expensive for many Americans?

Twelve percent I am not sure is exactly the loan rate we are dealing with here, but would you care to comment on that?

Mr. HARDIN. Yes, sir, many of our associations do set a rate specifically just for these types of loans, and they are trying to encourage people to make these additions.

Our experience is, with the promotions that we are making, that most people, by reading the newspaper and looking at television, are realizing that we do have an energy crisis, and that they are responding.

This business has been greatly increased for this particular thing. And we are anticipating that this won't happen, that there will be a

great response to it. It will take some time, of course. I think as Mr. Nash said, it will take him 2 years to make these estimates of what is needed in his area.

So it can't be done overnight, but we anticipate that it will be successful.

Senator SCHMITT. Mr. Nash, one charge made against the utilities having a major role in the energy program is that the utilities have not exhibited sufficient interest in solar development.

Would you care to comment on that?

Mr. NASH. Oh, I suppose you could accuse us of that. My company happens to be involved in nine solar research installation projects. We built an energy conservation home back in 1973, finished it in 1974, equipped with solar collectors supplementing a heat pump heating system. All kinds of energy collection systems were in it, even collecting waste water from the tubs and so forth, to try to take the energy out of the water stream going down to the septic system, as part of an energy conservation attempt.

In fact, we even wrapped the septic tank with plastic pipe to see if we could get any biological energy out of the septic tank, and capture it for the exotic system which we designed.

We are in a contract with Lehigh University for solar research and wind research on the availability of both solar energy and wind power in eastern Pennsylvania. It is a 3-year project, 2 years are completed, and we know what the average wind speeds are, we know how much solar energy is available in that area.

We have contracted with five builders to build homes in our area, we paid the cost of the exotic systems, solar collection devices for domestic water heating purposes, and also for supplemental space heating purposes. The data is being collected on these homes now that they are occupied.

I think some of us have demonstrated we are interested in solar energy, we are interested in its potentialities. We are not as wild eyed, perhaps, as some people in supporting solar energy, because at least at this point in history it doesn't look a good economic choice in our area for consumers for home heating, at least. We think that perhaps for domestic water heating supplement it has a better economic potential in the short term. But we haven't given up on the whole issue of solar. We continue to move forward and are actively involved now in the Federal program on solar water heating, I think there are 2,800 installations in Pennsylvania, and we are cooperating with the Governor's Energy Council to try to get those systems installed properly and monitored, so we can collect factual data on what they are capable of producing, what the costs are and what the potential benefits are to the consumer. So we are involved.

Senator SCHMITT. Have you looked into the economic pros and cons of a lease arrangement, the utility owning the solar equipment, installing it, and leasing it for a monthly fee to the homeowner?

Mr. NASH. No, we have not looked at this at all. We have looked at a lease arrangement on the heat recovery equipment for industry and businesses. But we have not looked into leasing arrangements on solar equipment.

Senator SCHMITT. Do you know of anybody in the country, any utilities that have looked into this?

Mr. NASH. Not to my knowledge, no. There has been a study conducted by Franklin Institute in cooperation with my company and Philadelphia Electric, on the impacts of solar energy on the electric utility industry, a study which is available from the National Science Foundation. But this does not speak at all to the issue of leasing.

Senator SCHMITT. Mr. Hardin, we have a few more questions having to do with the details of the effect of this legislation on your industry. Rather than keeping you here, we will submit these questions to you and we would appreciate an answer at your convenience.

Mr. HARDIN. We would be glad to do that.

Senator SCHMITT. And Mr. Nash, there may be a couple more also for you to answer.

Mr. NASH. Certainly.

Senator SCHMITT. We appreciate very much your testimony.

We will call now on Mr. Peter Epstein, Regional and Urban Planning Implementation, Cambridge, Mass.

STATEMENT OF PETER B. EPSTEIN, PRESIDENT, REGIONAL AND URBAN PLANNING IMPLEMENTATION, INC., CAMBRIDGE, MASS.

Senator SCHMITT. Mr. Epstein, Senator Brooke sends his personal regrets that he could not be here today. He, as are many of us, is deeply involved in the Labor-HEW bill that is now on the floor of the Senate. And he, I am sure, will read your testimony with interest, as I will listen to it with interest. You may summarize, if you wish.

Mr. EPSTEIN. I have a copy of my statement that I would like to submit for the record.

Senator SCHMITT. Fine. Mr. Nichols, if you are in the room, and would like to join us at the table, that will be all right also.

Please proceed, Mr. Epstein.

[The statement read by Mr. Epstein follows:]

STATEMENT OF
PETER B. EPSTEIN, PRESIDENT
REGIONAL AND URBAN PLANNING IMPLEMENTATION, INC.

I am delighted to be here today and to have the opportunity of making a few brief comments on the proposals for residential energy conservation currently before the Congress.

I am President of Regional and Urban Planning Implementation, a research and consulting firm located in Cambridge, Massachusetts. My personal background is in the areas of housing, land use, and urban development policies, and it is from this perspective that I view the problems of reducing energy use in the residential sector. At the present time, I am directing a study for the Department of Housing and Urban Development (HUD) of financial incentives that might encourage homeowners to adopt solar space heating and hot water systems. During the past year, I co-authored a study with two colleagues, David Barrett and Charles Haar, entitled Financing the Solar Home, which examined the likely response of mortgage lenders to this promising new technology. In both these studies, we have attempted to incorporate insights obtained from homebuilders, bankers, private mortgage insurers, real estate appraisers, and housing consumers themselves and to emphasize that the design of federal supports for solar energy use must be sensitive to the way decisions on the use of incentives will actually be made within the mortgage market and by various segments of the housing industry.

There are four basic points that I would like to elaborate upon in the course of my remarks today:

First, a direct federal loan or secondary market program for

energy conservation loans would not meet any real need that is not already being served by the private market and, in either case, would be both a cumbersome and a costly approach to helping the ordinary homeowner to finance expenditures on home insulation or to subsidizing poorer families.

Second, in terms of market impact -- that is, the number of additional households prompted to weatherproof their homes or to purchase solar energy systems -- a tax credit or some form of rebate or grant will be the most effective form of federal support. However, subsidy levels may have to be set relatively high to elicit any worthwhile level of response.

Third, federal financial incentives for home weatherization may not be needed at all, except for lower income households and perhaps for multi-family property owners. If subsidies are to be made universally available, they should take the form of credits or rebates that are both taxable and refundable;* alternatively, direct financial support might be restricted to homeowners meeting strict income limitations.

Fourth, proposals to achieve various types of energy conserving improvements by federal mandate should be viewed with extreme skepticism, particularly in terms of the practicality of their enforcement and the risk of unintended and undesirable effects upon the behavior of developers, landlords and other housing market participants.

* Refundable means that someone with little or no federal income tax liability would still receive the full value of the credit rebate.

Impracticality of Direct Loan and Secondary Market Options

To begin, I would like to comment on the direct loan and secondary market type approaches which have been proposed by some as an alternative or supplement to the enactment of tax credits. Here, I believe Congress would be well advised to refrain from action altogether.

First of all, there is good reason to believe that few homeowners would take the trouble to apply for a government loan, even at below-market rates to pay for the few hundred dollars involved in carrying out a typical energy conserving improvement. In fact, less than 20% of all home improvements are financed with loans of any kind, with the rest paid for in cash, or with merchant credit or credit cards. Secondly, even if there were demand for such loans, the transactions costs would be inordinately high, in relationship to the small dollar amounts involved. Most banks don't like to make home improvement loans below a minimum of \$1,000 to \$1,500. Nor can I think of any government loan program in the housing field that typically deals in the small dollar amounts that would be involved in an energy conservation loan program. HUD's Section 312 Rehab loans average over \$7,000 in size; the Farmers Home Administration's Section 504 program offers home repair loans and grants to very low income families in amounts typically about \$2,000. Both programs have only a token level of activity at the present time. The government's major involvement in home improvement financing is, of course, through the FHA's Title I Co-insurance Program. Here again, the average loan is over \$3,000.

One element of the President's Energy Plan would facilitate the purchase of residential energy conservation loans by the Federal

National Mortgage Association (FNMA) and the Federal Home Loan Mortgage Corporation (FHLMC). In fact, there is good reason why no one in the past has bothered to create a secondary market for home improvement loans: private lenders perceive no real need for such a market. There is neither a shortage of funds nor a problem of liquidity in this area of commercial lending. Indeed, banks welcome the opportunity to make home improvement loans, for virtually any purpose, including energy conservation and even for the retrofit installation of solar systems: the default rates on such loans are quite low; the borrowers generally have a credit history of orderly loan repayment, are attached to their communities, have built-up equity in their homes, and have securable assets where collateral is required. There is one precedent for a government-sponsored purchase program for small consumer loans in Sallie Mae, which was created to acquire loans written by private lenders under the government's Guaranteed Student Loan Program. However, this precedent has limited relevance to the desirability of involving FNMA in the purchase of energy conservation loans; private lenders had little interest in making and holding student loans, which are notoriously bad risks. Moreover, even here the average amounts of principal loaned are substantially larger than the loan amounts being spoken of in connection with home weatherization or even solar energy hot water systems.

There is one situation in which a secondary market for energy conservation loans would be necessary: namely, if Congress should enact a subsidized loan program for low-income households who would not normally qualify for conventional financing. The most practical means for carry-

ing out such a program, would probably be to have the Government National Mortgage Association (GNMA) purchase the loans, with Title I approved commercial lenders acting as its agents. In addition, the existing Farmers Home Administration's network of county offices provides a mechanism for reaching the 35% of homeowners who reside outside of major metropolitan areas. Nevertheless, grants or rebates seem far more appropriate than loans as a means for assisting poorer households to deal with escalating fuel bills.

Subsidy Levels and Windfall Issue

This brings me to my second point. In respect to encouraging home weatherization or the use of alternative technologies such as solar energy, some type of simple cash payment or reimbursement -- be it in the form of a tax credit, as proposed by the President, or a grant or rebate -- clearly seems the most potent tool at the federal government's disposal. However, there is an important caveat to this conclusion. If any approach along these lines is to have a significant net effect -- and here I would underline "net" -- on the number of homeowners making any given type of investment, fairly high levels of subsidy may be required. Preliminary results from our consumer survey for HUD indicate that 35% to 40% of first costs defines the threshold at which a tax credit would induce any sizable movement in the residential market for solar energy equipment. This roughly corresponds to the percentage of costs for solar hot water heating that would be covered by President Carter's proposed tax credit. I suspect -- and here I am speculating rather than drawing upon actual research findings -- that the same may

be true of tax credits for home insulation, even though such improvements are obviously more economic and far less risky at the present time than placing solar collectors on one's roof. In dealing with the homeowner who has not already weatherproofed his home, or is unlikely to do so on his own initiative, the federal carrot may have to be sauteed in butter and garnished with parsley to arouse his appetite.

This raises an important and related issue: the question of windfalls. The most recent precedent for a tax credit directed at the homebuilding industry -- one still fresh in the minds of builders and lenders around the country -- is the fiasco of the \$2,000 credit for new home purchases made during 1975. One study by the Federal Home Loan Board indicated that only 10% of those receiving the credit were actually motivated to purchase a home by its availability; the other 90% received the benefit of the credit as a windfall for an investment they would have made anyway, even without a federal subsidy. Clearly, if a credit is worth enacting at all, it should be set high enough to achieve visible gains in the rate at which homes are actually weatherized or at which solar systems are installed.

Questionable Necessity and Equity of Credit for Home Insulation

This leads to the third question I wish to address: namely, is a credit or rebate for home insulation actually needed and who would benefit from it? My impression is that many, if not most, homeowners already believe that an investment in storm windows or insulating an attic will pay for itself in a relatively short period of time; with the exception of low income families, inertia and ignorance rather than cost are quite

likely the most important factors inhibiting those who are unlikely to act in the absence of outside encouragement or coercion. Moreover, a tax credit -- unless it is made refundable -- would provide little or nothing for those suffering most from increased energy costs. By my rough calculation, homeowners earning gross incomes of less than \$8,000 per year, have tax liabilities too small to enjoy the full benefit of a \$500 tax credit. This would exclude the bottom 27% of all homeowners.

If a federal subsidy for home insulation -- available to any homeowner regardless of income -- is justified at all, it should probably take the form of a so-called taxable rebate or a taxable refundable credit. Under this approach, recipients would treat the rebate or credit as taxable income. Thus, to use the example of a \$500 credit or rebate again, someone earning \$5,000 would receive \$435 or nearly the full value of the credit, while a relatively affluent homeowner, in a 45% marginal tax bracket, would retain only \$275.

On the balance, I would favor limiting direct subsidies for ordinary energy conserving improvements to grants or rebates for families of modest means, while taking special care to avoid the creation of overly elaborate procedures for certifying income eligibility. One approach, might be to have eligible homeowners forward a proof of purchase and a copy of their previous year's Form 1040 to the Internal Revenue Service, in order to obtain their rebate, with the accuracy of applications being audited after the fact on a random sampling basis. Compared with tax credits, rebates have the important advantage, especially for poorer families, that the subsidy is received on or about the time that the ex-

penditure is made, rather than in the subsequent year when income tax returns are filed.

In the case of residential solar energy systems, we confront a totally different situation where considerations of vertical equity and income redistribution are far less relevant to a choice among incentive options. Here we are encouraging homeowners to make a sizable investment -- typically \$1,000 to \$2,000 for solar hot water systems; as much as \$8,000 to \$12,000 for space heating -- in a technology that is just emerging from the experimental stage and to bear a variety of risks and uncertainties that have benefits for the nation as a whole. Moreover, in contrast with the proposed tax credit for home insulation, the objective of a tax credit for solar energy use is a modest one, at least in terms of targeted volumes of activities. The purpose of such a credit is properly conceived as helping to kick over the market for solar equipment and to establish the credibility of this fledgling industry, not to equip 50% of the homes in America with solar collectors over the next five years, or even as few as five or ten percent.

The Pitfalls of Mandatory Actions

Finally, I would like to make one brief point about the pitfalls of trying to achieve goals for residential energy conservation by federal mandate. For example, I understand that legislation has been introduced requiring that any existing residential property be insulated to a higher code standard before it could be sold to a new owner. Here, an instructive analogy can be drawn from the experience we have had in

Massachusetts with a state law that tried to deal with the serious health problem of older apartment units still having lead-based paints on their walls. The law required that any such walls be scraped clean -- an extremely expensive process -- and repainted prior to any new tenant moving in. An unforeseen result of this statute was that a sizable number of realtors refused to rent apartments to households with young children, for fear that they would be more likely to file complaints and have the rule enforced. The risk of this type of unintended result should be taken into account by Congress, along with the extreme difficulty of devising any kind of workable enforcement procedures, before it acts on a mandatory approach to weatherproofing existing homes and apartment buildings.

To sum up, in respect to financial support both for residential energy conservation and solar energy use, I would urge Congress to limit itself to approaches that are largely voluntaristic and that are simple to implement and to phase out, and to keep the government removed from the costly and protracted complexities of credit appraisals, property inspections, loan servicing, and default management inherent in any type of lending program. And, in connection with the weatherproofing of individual homes, careful consideration should be given to whether or not financial support is needed and appropriate, except for those families at the very bottom of the income spectrum.

Senator SCHMITT. Thank you very much. Let's go on with Mr. Nichols' testimony.

STATEMENT OF J. D. NICHOLS, VICE PRESIDENT, NATIONAL APARTMENT ASSOCIATION

Mr. NICHOLS. Mr. Chairman, I am J. D. Nichols, representing the National Apartment Association.

The National Apartment Association's interest in this bill is primarily in urging adoption of a program to promote the conversion of existing apartments from a situation where they have master meters, which means the landlord pays the utilities, to a situation where they are individually metered and the burden of the utilities is transferred to the resident.

The reason for this is probably well-known. A study produced by a joint effort of FEA and IREM shows in situations where the resident pays his own utility bill, the energy consumption is some 30 percent less than in a situation where the landlord is paying the bill.

Apparently the administration's energy bill recognizes this situation, in that it provides that in new construction individual meters will be required as opposed to the master meter.

The National Apartment Association would like to get some form of help in converting the existing units that are now master-metered.

According to this same study, approximately one-third of the existing multifamily units, somewhere in the area of 7 million units, are now served by master meters. We would like to promote this help in the form of extending the investment credit for the cost of converting these from a master meter to an individual meter.

We would also like to see some form of Federal loan assistance, with a cost conversion.

You got into a little discussion on how this was financed earlier. I would like to come back to that. I have had a little personal experience with that, and I might be able to relate some things.

House bill 7893 provides for some loan assistance in this area. In the opinion of the National Apartment Association, House bill 7893's approach will not work. The reason we feel this is there is a requirement that if you secure a loan under this bill, and you have it conventionally financed, you have to submit your apartment units to what in essence amounts to rent controls and profit controls. Not having had the benefit of federally assisted financing in the first place, owners will not submit to rent and profit controls.

We endorse S. 1304 by Senator Brooke although we would like to see an extension of the coverage to include the cost of converting from master meters to individual meters. We also would like to see it extended, where practical, to include the cost of converting from central hot water heating systems to individual hot water heating systems. This will vary from project to project; so we must be aware of the practical situation.

The National Apartment Association also endorses some program to prevent utility companies from discouraging conversion to individual meters. The utility companies, we have been exposed to, discourage these conversions in several ways. First of all, the rules and codes make conversion so expensive it is basically prohibitive. Secondly, they prohibit or discourage submetering which is often the only practical approach to attaining an individually metered situation.

Their argument on the submetering issue is prevention of profiteering on the part of the landlord in passing through, in other words, in actually tacking a profit on top of what the utility company charges them. However, we feel that legislation could prohibit any increase in cost; in other words, whatever the landlord pays to be passed on to the tenant, with no profiteering.

Basically that is our position on this issue.

If you would like to go back to the financing problem——

Senator SCHMITT. Please do.

Mr. NICHOLS. I believe all federally insured S. & L.'s are prohibited from taking a second mortgage position.

That gentleman from the savings and loan industry indicated that a great number of large multifamily projects are funded by institutional lenders, such as large insurance companies.

From our exposure to the institutional lenders, most of them have been burned so badly with apartment loans over the last 2 or 3 years that they are not interested in discussing any form of increased loan, even though it will result in lower energy costs.

Realistically it would appreciate the value of their security. They just, from our exposure to them, are not interested at this time in pursuing this in a number of areas. I am sure there are some markets in the country where they have a different opinion.

Consequently, the only practical way I know of to fund conversion or any type of energy improvements in apartments today is either fund it out of cash flow, if you are fortunate enough to have cash flow in an apartment project, or infusion of cash by the owners, or if he has bank credit available.

That is why we feel that some form of Federal assistance in obtaining these funds is imperative.

Senator SCHMITT. I appreciate that point. Does that complete your statement?

Mr. NICHOLS. Yes, sir.

[The prepared statement of Mr. Nichols follows:]

Statement of J.D. Nichols, Vice President, National Apartment Association, *
before the Senate Committee on Banking, Housing and Urban Affairs in regard to
pending legislation relating to residential energy conservation.

June 28, 1977

Mr. Chairman and Members of the Committee:

My name is J.D. Nichols and I appear before you as spokesman for the National Apartment Association. I am also Chairman of the Board of Nichols, Thornton & Sturgeon of Louisville, Kentucky, which builds, operates and manages apartments in several states.

In 1975 of the 77.6 million year-round housing units in the United States approximately 30.7 million were rental units, of which 23.6 million units were included in multi-family structures. Since 1970 the use of electricity as a source of heating and cooling has increased from 7.7% to approximately 37.6%, and the use of utility gas has become the heating and cooling source for 44.7% of housing units. At the same time reliance on oil has decreased from 26% to 9.4%. However, the increased reliance on electricity requires the use of some form of energy - oil, hydro, coal or nuclear power - to generate electricity.

According to a report by the Real Estate Research Corporation under contract with HUD, EPA, and CEQ, released in 1974, 22.4% of all energy consumed is for housing; and 57% of this is for space heating and air conditioning, 35% for operational equipment, and 10% for lighting. The report also concluded that 24% of the total annual energy consumed in the Baltimore-Washington area, for example, could be saved without significant change in life style.

* The National Apartment Association is an association of apartment owners, managers, and developers who are members of approximately sixty-five local affiliates. Its national officers are President Don B. Lawrence (Los Angeles), First Vice-President Henry Shane (New Orleans), Secretary Robert Ross (San Antonio), and Treasurer James Stygall (Indianapolis). Its national offices are located in Suite 604, 1825 K Street, N.W., Washington, D.C. 20006.

Nevertheless, the increased use of electricity and gas in apartments has focused attention on conversion from master meters to individual meters as a major factor in conserving energy. Master meters became popular in the 1950's and today one-third of all apartment buildings - mostly in the urban areas - have master meters. This trend must be reversed if we are to have any meaningful conservation program because master metered tenants use approximately 30% more gas and electricity than tenants with individual meters who pay their own utility bills.

We note that the Administration's energy bill (S. 1469) would require state public utility commissions generally to prohibit master meters in new construction. New building standards under development by the Department of Housing and Urban Development, pursuant to the 1975 Energy Conservation Act, will probably include a prohibition against master meters. In this connection we note that the Federal Housing Administration, which has taken the initiative in developing minimum property standards on a national scale, has yet to impose an individual meter requirement in any of its multi-family programs. Yet the cost of installing individual meters in new construction is estimated to involve an additional modest cost of \$200 per unit.

The principal thrust of this statement is to urge adoption of a program to encourage the conversion of existing apartments to individual meters. The cost of such conversion is estimated to be from \$100 to \$1200 per apartment unit depending on a variety of factors relating particularly to the type of construction and restrictions imposed by local utility companies and building codes.

The Administration's energy bill provides for certain tax credits for home-owners and renters but these do not lend themselves to the conversion issue. Also, there is some question whether the proposed investment credit for the installation of energy saving devices would include conversion to individual meters.

We believe that some form of loan assistance to apartment owners for this type of conversion should be considered. The House bill, H.R. 7893, approved by the House Committee on Banking, Finance, and Urban Affairs, would provide assistance

through an amendment to FHA Section 241. The proceeds of such insured loan, which could be 100% of cost, would be used for the installation of energy saving equipment as well as the conversion from master meters to individual meters, with a maximum of 90% insurance against loss to the holder of the note. The note may or may not be secured.

The program would be available for apartments which are FHA insured or are conventionally financed. With respect to the latter, the bill provides that the apartment be subjected to regulation as to rents, rate of return, capital structure and methods of operation. This latter provision makes the program completely meaningless. I cannot conceive of any apartment owners who would subject his project to Federal rent and profit control to obtain the benefits of a Federal energy conservation program. This is an economic fact of life in the apartment industry, and has no bearing on the merits of Congressional motives to pass through any financial assistance to the tenants in the form of reduced rents.

I would like to mention one additional area of potential energy savings in apartments which could be facilitated in conjunction with conversion to individual meters. In many areas of the country the energy consumed to heat hot water far exceeds the energy consumed for heating space. For example, in Louisville, Kentucky, approximately 59% of the energy consumed goes for heating hot water while 29% is consumed for space heating, and 12% for pilot lights.

We recommend that consideration be given to extending any financial assistance program to conversion from central hot water heating systems to individual systems. This may not be practical in many buildings, but to the extent that it is feasible, substantial savings in energy could be accomplished. An additional energy savings would be achieved through individual tenant responsibility for the energy consumed to meet his family's needs.

I have had only a brief opportunity to study S. 1304 by Senator Brooke which provides for low-interest Federal loans for the insulation and retrofitting of

residential and small commercial buildings. We believe that this approach has distinct advantages over the assistance afforded in the House bill. However, the purposes of the loan should be broadened to include the conversion of existing apartments to individual meters.

While we may appear biased toward apartment living, we believe that the imperatives dictated by this energy crisis require a re-evaluation of the bias, rooted in tradition, that the single family detached home deserves a preferential role in our scale of values.

The report of the Real Estate Research Corporation entitled, "The Costs of Sprawl," referred to earlier in this statement, produced a revealing cost analysis. Some of its findings: high density housing uses 50% less transportation, 55% less roads and utilities, 44% less energy, 35% less water, and results in 45% less air pollution and 35% less water pollution. I recite this only to underscore the importance of insulating and retrofitting apartments in the development of a national energy program.

We also recommend that the Committee reject any sanctions against sellers or purchasers whose dwelling units may not meet yet-to-be imposed Federal standards for energy efficiency. Such sanctions, according to one House version, would take the form of denying financing from Federally-insured depository institutions. We should wait at least until we have tested the mechanisms, not yet in the formative process, before concluding that their failure to accomplish their goals merits punishment of those who do not avail themselves of their supposed benefit.

The determination as to whether an existing building complies with yet-to-be designed energy performance standards involves areas of judgment that are inconsistent with the concept of sanctions, which because they are punitive must require a maximum degree of certainty.

We are convinced of the urgency of the national energy effort and we believe that the American people share this concern. Nothing is more calculated to cool this sense of urgency, in our opinion, than the insertion of the jarring note of

sanctions in a program that could only reach fruition through the voluntary efforts of all Americans.

On the role of public utilities in this energy conservation effort, we are not certain whether this Committee has the required jurisdiction. Nevertheless, we question the desirability of imposing on public utilities the role of financing and installing energy saving improvements and equipment. However, public utilities are in a position to advise home and apartment owners and tenants on appropriate methods of conserving energy, inspection services, and information on materials, contractors and financing. We suggest this as a more appropriate role for utilities at least in the initial phases of the national energy effort.

Public utilities have played a major role in discouraging the shift from master meters to individual meters in that they often issue rules making such conversion to individual meters extremely expensive and sometimes impossible. Utilities also generally prohibit sub-metering which is often the only practical method of converting to individual metering. Appropriate language should be employed to prevent owners from over-charging tenants.

Senator SCHMITT. First of all, Mr. Nichols, you mentioned that you favored individual hot water heaters. Is there experimental evidence that that will save?

Mr. NICHOLS. Well, there are two things. The same situation that the FEA and the IREM study showed, where the landlord is paying for the hot water, people are not as inclined to save.

Just to relate a personal experience, we found a number of residents in one of the areas in which we operate, Louisville, where the winters are very dry, some of our residents got the bright idea that they turn their shower on hot and let it run all day while they were at work and that would humidify the air and put moisture in it.

It didn't cost them anything, so they didn't care. It is that simple.

Second, you have in a central hot water heating system a circulating system which is just a pump that circulates the hot water to the various units.

The heat loss created by that circulation amounts, as an average—again there is a lot of variance in the situation—but generally speaking, from our own investigation, about 25 percent of the cost of heating hot water is involved in the heat loss in the circulation system.

A good portion of the time you don't need to circulate it, during the evening hours, for example. We found that it is not practical to cut the system off. If you do, you may have one individual out of a hundred who works the night shift, and he wants to take a shower at 3 o'clock in the morning. If it takes him 20 minutes to get hot water, he is not very happy. So you can't turn it off.

The individual system would eliminate that problem.

Senator SCHMITT. What is the relative capital investment? It is considerably larger, isn't it, over-all?

Mr. NICHOLS. In initial construction, no, that is not necessarily true.

When you get into high rise structure, which I am not familiar with, I am not capable of commenting on that.

The type of apartment structures I am familiar with, the garden type, in buildings ranging from 16 to 36 units, it is probably less expensive to install individual systems. However, because of code regulations, once you pass a certain size, it increases the cost considerably.

The big savings, again, would be in the resident paying for his own hot water and then he has a considerable interest in not wasting hot water.

Senator SCHMITT. Mr. Epstein, is the thrust of your testimony that you would like to see an increasing role, Federal role, in the investment in solar equipment by home owners?

Do you think that will provide a sufficient kick over the next few years to develop a viable industry, to bring the GE's and Westinghouse's and Admiral's and Kenmore's into the business?

Mr. EPSTEIN. I believe there is a legitimate Federal role, but that it should be subject to realistic expectations. What we are trying to accomplish in the shortrun through solar energy is not an instant reduction in barrels of oil consumed per day on a national basis;

rather the objective is to generate sufficient market activity that the industry can obtain some degree of credibility, that service and installation capabilities begin to emerge in the prime local markets, and that, 5 years from now the industry finds itself pretty well able to sustain its own growth.

Senator SCHMITT. Were you here this morning when the FTC testified?

Mr. EPSTEIN. I was, yes.

Senator SCHMITT. Do you have any comments relative to their concerns about unrestrained activity or relatively unrestrained activity by the utilities in home assessment, installation, and financing of conservation measures?

Mr. EPSTEIN. I am not really competent to speak about the intricate issues of regulations, consumer protection, and possible restraint of trade which are raised by the prospect of getting the utilities involved in these activities. You might be interested to know, however, that in the course of our current survey work, we have taken a peripheral look at the question you raised earlier, Senator, about the possibility of getting the utilities involved in the leasing and installation of solar energy systems.

Many of the developers with whom we talked around the country, emphasized that they would love to see this happen; if the utilities were actively marketing solar systems, the builder would have an intermediary to whom he could look to really assess the technology, and whom he could rely upon to still be around to service and maintain the equipment should problems develop down the road. A number of developers pointed out to us that it was originally the utilities who sold the homebuilders on electric heat, by offering special discounts for equipment and actually designing mechanical layouts for the builder to incorporate into his plans.

On the other hand, there is a serious question about whether utilities will perceive residential solar use as a threat or as a potential business opportunity. The picture appears to be a mixed one, with the compatibility of solar with the operation of any given utility basically being a function of the utility's load characteristics. As you probably know, most solar systems require some kind of conventional auxiliary back-up system for extended periods of bad weather. The key issue, from the utility's perspective, is whether or not the backup systems of the solar users will draw electric power at periods of peak demand. Here, the answer depends in large part on whether the utility's demand peaks during the summer or the winter months, during the evening or during the day, and whether its customers are predominately commercial, agricultural, or residential.

It's also important to note that a strong motive for consumer interest in solar energy systems is to attain some degree of independence from utilities. Preliminary results from our survey work indicate that consumers would be skeptical about utility involvement in this area.

Senator SCHMITT. Is that a general skepticism about utilities? Does that apply to the individual utility that a consumer deals with, the fellow who comes by and reads the meter or services the appliance they may have?

You know we find in the surveys about public opinion of Congress, everybody hates Congress, but they generally like their Congressman.

Do you see that kind of thing in your survey work?

Mr. EPSTEIN. I have to admit that here my opinions are more impressionistic. It is quite possible that if an individual utility actually involved itself in merchandizing solar equipment, promoted it in a credible way, offered good service contracts, that the type of skepticism to which I referred would prove to be an irrelevant factor.

In fact, there has been a history of utility involvement in leasing appliances to homeowners, although I gather that a lot of them have retreated from that involvement. However, in the case of solar, you are in effect asking someone to lease the roof of his house from the utility—a totally different proposition from leasing a hot water heater or a refrigerator.

Senator SCHMITT. Finally, I guess, Mr. Epstein, this is most appropriately asked of you. Would you comment on whether you think that the proposed Federal program and the incentives that go with that program are a windfall for those who fail to act on their own to provide for better conservation or solar equipment. Is it unfair to those who have acted through patriotism or through their own initiative?

Mr. EPSTEIN. In my prepared testimony, I referred to the recent experience with the 1975 tax credits for new home purchase, a precedent that certainly alerts us as to the risk of unjustifiable windfalls. The actual outcome will have a lot to do with what the actual level or subsidy provided is, and with whether or not it is sufficient to get any real movement in the market.

If you set an incentive at a level that is so low that you only attract another 10 or 15 percent of consumers who wouldn't ordinarily have made the purchase, then you are rewarding the bulk of the recipients for something they planned to do in any event. There is obviously some level of support at which you will see a large degree of movement, but that level might involve the Government in exorbitantly high levels of subsidy.

I also would emphasize again that the question of windfalls is really less germane to the appropriateness of an incentive for solar energy than it is to a credit for home insulation, which is widely regarded as economic at the present time. In my view, there is little reason to be concerned about a windfall going to somebody who is basically willing to experiment with something new and try it out, to be the first on his block and lead the way for the less venturesome to follow in the years to come.

Senator SCHMITT. I tend to agree with that, Mr. Chairman.

The CHAIRMAN. First, I want to thank Senator Schmitt for his graciousness and generosity in spending his time here. I know it was difficult for him because there are demands on his time.

Senator SCHMITT. I found it quite enlightening and quite enjoyable. I hope we can do it more often.

The CHAIRMAN. It was very helpful to the committee.

Mr. Epstein, you indicate inertia and ignorance are the major problems we face as a nation with respect to the energy program. I would agree with you wholeheartedly. I think most of the witnesses that have appeared here would agree. Certainly the FEA people agreed with that notion. That is why they feel it is necessary to mandate some action, if you are going to get action, you can't rely on the volunteeristic, as you put it, procedures if you need action urgently and need it now.

And that is why they would require utilities to take the kind of initiative they have suggested in the legislation we have before us.

Why do you feel that that kind of an approach is counterproductive, and that we simply can't do anything except rely on the volunteer good will of people, since their voluntary response to the President's pitch for energy conservation has gotten such feeble results so far?

Mr. EPSTEIN. I didn't mean to be categorical on the subject of mandatory approaches, but simply to note that the history of the housing industry provides examples of numerous attempts by Federal or state governments to accomplish a very desirable result simply by fiat, only to produce very undesirable side effects—the "cure is worse than the disease" syndrome. You have to be very alert and sensitive to this.

The CHAIRMAN. The example you gave of the lead paint situation is very good. The trouble is in that situation, of course, the landlords behaved, or the owners behaved as you would expect them to behave to maximize profits. In this case if people want to maximize profits, utilities, it seems to me they would get vigorously into the insulation business. They have access to the buyer, which is superior to their competition. For another, they would be exempted from the regulations that hold down their return on their electricity or gas, whatever they sell. On this there would be no limit, they wouldn't be subject to regulations.

So they would have a sharp incentive for getting into the business in a vigorous way.

The Federal Government is telling them to go right ahead and do it, requiring them to do it.

Mr. EPSTEIN. In commenting on the utilities, I speak with some trepidation, since I am venturing beyond any area of expertise to which I can lay claim.

A number of witnesses today have already indicated the complex issues in terms of the regulatory status, rate bases, and competition that are involved. I would only say there well may be a very desirable role for the utilities in terms of educating the public to energy conservation; quite possibly they should be required to conduct energy audits of their customers' homes and provide estimates of the costs and savings of carrying out various types of improvements. But I would be very skeptical of involving them in the banking business and the whole range of activities involved in credit appraisal, loan servicing, and claims management, especially when the dollar amounts may range from several hundred dollars up to, at most, a thousand dollars. And, in any event, they may not be needed in the majority of cases, since the typical homeowner, once he is educated

to the payoffs of weatherproofing his home, is perfectly capable of paying for the improvements from his own resources, and in many, if not most, cases, will probably prefer this to an expensive type of debt financing.

The CHAIRMAN. I notice you say there is no shortage of funds, nor of liquidity at the present time. You say that in your statement. We have heard, however, that a new demand for loans will increase the need for a secondary market and that if we are going to have a vigorous effective national program, in which tens of millions of homes that are not insulated get into the act, we may well need this kind of secondary market.

What is your response to that?

Mr. EPSTEIN. I believe it would be premature to enact legislation merely on the basis of what is a remote possibility. As I indicated in my testimony, and as I believe the gentlemen from the Edison Electric Institute and the League of Savings Associations also noted earlier, there is good reason to believe that most people will pay for the typical energy conservation improvement with cash rather than going to a bank for financing.

The CHAIRMAN. Because the amount is so small?

Mr. EPSTEIN. The amount is relatively small, and I am not sure of these figures, but I think some figures I have seen from the Federal Reserve Board indicated it costs \$30 to \$50 for a private lender to put a loan on the books, and as much as \$2 to \$3 a month to service it. So you really are running into a substantial overhead cost for a very small transaction.

The CHAIRMAN. That is a good point.

Mr. Nichols, you say that FHA has yet to require the use of individual utility meters in any of its multifamily apartments.

Have you discussed the reason for this policy with FHA and do you know the reason they have not acted yet to ban the use of master meters in new construction?

Mr. NICHOLS. No; I have not discussed it with the FHA.

The CHAIRMAN. You say that the utilities have played a major role in discouraging the installation of individual meters and often prohibit submeters.

Could you be more explicit on that, about what the utilities have done, and their rationale?

Mr. NICHOLS. Basically they have just said you can't submeter in a number of areas, just made a blanket statement that that is not permissible. Their rationale, I assume, would be a fear that owners would be profiteering on the submeter situation.

In our area they say we are not permitted to submeter under any circumstances. In many many cases that is the only practical way, the only economically feasible way to get a situation where the resident pays his own bill.

The CHAIRMAN. Then you have a real incentive for holding down costs and acting so that you do, keeping the thermostat turned down in the winter and up in the summer.

Mr. NICHOLS. I don't know whether you were here when I commented on the experience we had with some residents in our area, where we are subject to very dry winters.

The CHAIRMAN. Where is that?

Mr. NICHOLS. This is in Louisville.

The CHAIRMAN. They had a terrible winter last year in Louisville.

Mr. NICHOLS. Yes, very expensive, terrible. But anyhow someone had the bright idea that they would moisturize their apartment by turning their shower on during the day and letting it run. That was their humidifier. That was very expensive. But it didn't cost them, so they didn't think about it, it was free humidity.

The CHAIRMAN. The administration witnesses yesterday acknowledged several times that the multifamily area is one of the weak points in their energy proposals.

Do you know why they decided not to include conversion of existing buildings to individual meters in their program?

Mr. NICHOLS. I have no idea.

The CHAIRMAN. We will check it out; I am glad you brought it up. You have made a good case.

Thank you very much, gentlemen. I apologize for having to be absent, I had an amendment that I had to call up on the floor.

I appreciate very much your testimony.

The committee will stand in recess until 10 o'clock tomorrow morning.

[Thereupon, at 12:55 p.m. the hearing was recessed to reconvene at 10:00 a.m. the following day.]

NATIONAL ENERGY CONSERVATION POLICY ACT

WEDNESDAY, JUNE 29, 1977

U.S. SENATE,
COMMITTEE ON BANKING, HOUSING AND URBAN AFFAIRS,
Washington, D.C.

The committee met at 10:10 a.m., in room 5302, Dirksen Senate Office Building, Senator John Sparkman presiding.

Present: Senators Sparkman, McIntyre and Brooke.

Senator SPARKMAN. Let the committee come to order, please.

Senator Proxmire was not able to be here this morning. He asked me if I would substitute for him. The Senate is already in session. We don't know how soon we may be called over, so I think we'd better get started.

First we start off with a panel: Mr. Henry Lee, director, Energy Policy Office, Commonwealth of Massachusetts; Mr. John Stevens, vice president, New England Electric Systems, Westborough, Mass.; and Mr. Michael Johnson, assistant chief of congressional liaison, National Association of Regulatory Utility Commissioners, Washington, D.C.

We're very glad to have these gentlemen with us and we'll just start right off. Each one of you I believe has filed a statement. Let me say your statement will be printed in full in the record of the hearings. You may proceed as you see fit. You can read, summarize, or discuss your statements.

First, we will hear from Mr. Lee, director of the Energy Policy Office in Massachusetts.

STATEMENT OF HENRY LEE, DIRECTOR, ENERGY POLICY OFFICE, COMMONWEALTH OF MASSACHUSETTS

Mr. LEE. Thank you, Senator. I want to thank you for the opportunity to come here to Washington today to speak in favor of the President's energy plan as it affects buildings in general and housing in particular.

As we have said earlier before other congressional committees, we in Massachusetts have a few changes to suggest in the President's energy plan, but we have absolutely no quarrel with the philosophy and goals of the President's proposals.

What I'd like to do is to go over some of the items that are contained not only in that plan but also in some of the other bills that have been presented, particularly the bill presented by our Senator from Massachusetts, Senator Brooke, S. 1304, and some of the provisions in the House bill which I will call the Ashley bill, House bill 7893.

In terms of the utility-insulation program, we suggest that you authorize the Governors of each State to choose which agency or agencies they think should administer the residential energy conservation program as proposed both in Representative Ashley's bill and Senator Brooke's bill. Such authorization will add flexibility and efficiency to the program to meet the needs of each State.

Congress has already mandated two State energy conservation programs and a State-run low-income housing weatherization program. It is essential that you now give to the Governors the ability to mesh these programs with new ones proposed by the President in order to eliminate duplication of effort and to address the unique problems of each State effectively.

Our most serious energy problem in Massachusetts is our excessive reliance on oil for home heating—70 percent of our homes are heated by oil, which is delivered by over 1,000 local oil dealers. If our State is to seize the opportunity for energy savings which could result from a program of oil furnace tuneups and insulation, our oil dealers must be included. We can accomplish this entire task more easily under the supplemental State plan approach of H.R. 7893 or the State coordinated energy auditor program suggested in Senator Brooke's legislation, S. 1304. The utility program should be part of the program, not the whole program.

Lieutenant Governor O'Neill has already recommended to the Senate Subcommittee on Energy Conservation and Regulation that the EPCA and ECPA program authorization be merged and given a joint appropriation level of \$100 million through 1980. This is an increase of what we would logically expect of only \$10 million a year from 1979 to 1980. It is essential that the State obtain adequate funding to complete the work we have already begun to these programs. I believe the States could also accept the task of drafting and coordinating the insulation program by simply channeling the ECPA supplemental moneys to the program and providing a special discretionary fund for the administration of the program, either HUD or FEA, to be used where needed.

I have two caveats to that point. One, I'm making the above-statement in line with the type of program that was outlined by the President, not the kind of program that I'm going to talk about later. Second, I would think the discretionary funds could be used not only for special projects that need discretionary money but also to centralize some of the costs that can be centralized such as training and computer work.

The role of utilities—I think Mr. Stevens will talk about some problems that utilities face. I would just like to state that we would greatly prefer to develop a State insulation plan to incorporate the participation of all energy suppliers in the publicity campaign. We have no problem with the idea of mandating that each State plan include provisions which require the utilities to offer audits and to offer to arrange financing. We would agree with the House Subcommittee on Power and Energy that restrictions should be placed on the utilities getting into the actual installation of insulation. However, we agree with Senator Brooke that the utilities do not

have the experience or expertise in home improvement loans to warrant draping the entire program on their shoulders and we think the approach taken in the Ashley bill to allow utilities to arrange low-interest loan activities, if the utility qualifies as a "loan service administration agency," is a more flexible, constructive approach than banning the utilities' participation.

The third point I'd like to make is about the definition of buildings covered by the insulation program. We would advocate that definitions in the Brooke bill, which includes small commercial establishments and the definition in the Dingell bill which includes multi-family homes, should be put into the legislation passed by Congress.

On weatherization, I would just like to reiterate that Massachusetts continues to support Federal weatherization programs. The approach of uniform standards for the three existing weatherization programs, combined with a guarantee of sufficient labor to perform the work, and an eligibility criteria on 125 percent of the poverty level, would be a significant improvement.

In terms of rental homes, we don't have any brilliant remedy to offer that will provide irresistible incentives to landlords and tenants alike to use less energy. In fact, it's a problem we have been mulling over for 2 years and we are so stumped by the problem that I think mandatory insulation and fuel burner efficiency standards may be necessary eventually to spur weatherization of rental units. However, these standards should not be put into effect until sufficient financial incentives are available and until the impact of such standards on the urban housing stock is evaluated. I also would hope that rental units would be made eligible for most every program we come up with. I'm not sure this will be enough, but I think we have to do at least this.

Financial incentives. Massachusetts has previously advocated the creation of low interest loans to help homeowners who may earn too much to qualify for weatherization assistance but who still earn too little to benefit from tax credits. The Ashley and Brooke bills offer financial incentives for the moderate income resident. We would like to suggest, as well, yet another approach to aiding the homeowner. The concept of the housing improvement program, HIP, could be expanded to offer urban homeowners an opportunity to make energy-conserving improvements in their home and be eligible for direct reimbursement of a percentage of the value of the improvements done. The program requires an expert appraisal of what improvements are worth the investment and a followup visit to check that the improvements were properly done before the homeowner receives reimbursement. The advantages of the HIP approach are: (1) close supervision of the improvements; (2) opportunity for the homeowner to make the improvements him or herself, and receive financial credit for the work; and (3) a direct payment of money that people can receive in hand as a reward for their labors. We recommend that the committee take a close look at the HIP program as a potential vehicle for consideration along with other suggested financial incentive programs. I think if we did adopt a program like this you would need to appropriate some more money because I

think it has to be enforced and run at the local level. I don't think that you can run it at the State level. The State can coordinate the program but I don't think they can run it. I think the program also has the advantage of being directed at our urban areas for one of the problems we have come across is that it's in the urban areas where conservation hasn't caught on at least in comparison to the suburban or rural areas.

I would like to make two more comments. Massachusetts can devise and implement a strong consumer protection plan if the Federal Government will help us to distinguish between the good guys and the bad guys. In our opinion, none of the existing legislation places enough emphasis on the development of product quality and installation standards for energy conservation materials and equipment. Hot disputes are raging over the definition of what constitutes insulation, what are the proper techniques for installing insulation, and what gadgets actually do save energy. If we are to embark on a massive campaign to convince people to save energy, we must be ready with some good answers to these thorny questions. We recommend that the FEA be required to develop at least product quality ratings for insulation materials and equipment, as well as guidelines on proper installation methods.

I would like to make a final observation. There is presently a fascination in energy conservation circles with the audit concept. I think this obsession suffers from overkill and there is no need to audit each home. The project conserve model of written material, individualized for each home is about as in depth as you need in most cases. This may not be the case with commercial buildings. The reason many people have not insulated has little to do with whether they have received a \$50 personalized audit. It has to do with market incentives. It has to do with the lack of a media campaign. A \$50 personalized audit program in Massachusetts will cost a minimum of approximately \$100 million and could run as high as \$150 million. For this reason financing mechanisms and tax credits, along with a good public education program and the type of audits I have mentioned before, are so critically important.

I think I will stop right there and allow either questions or my colleagues to present their testimony. Thank you for this opportunity.

Senator SPARKMAN. Well, thank you, Mr. Lee.

[Complete statement follows:]

STATEMENT OF HENRY LEE, DIRECTOR OF THE MASSACHUSETTS ENERGY POLICY OFFICE

Mr. Chairman, I thank you for this opportunity to testify in favor of the President's energy plan, as it affects buildings in general, and housing in particular. As we have said earlier, before other congressional committees, we in Massachusetts have a few changes to suggest in the President's energy plan. But we have absolutely no quarrel with the philosophy and goals of the President's proposals.

Massachusetts advocates more efficient use of energy wherever economically feasible. We have applied early and often for funding under energy conservation programs created by Congress, and I am proud to say that our State energy conservation program is one of the most advanced in the Nation. Still, the President's proposals, with certain important amendments, can enhance our existing work enormously.

UTILITY/INSULATION PROGRAM

We suggest that you authorize the Governors of each State to choose which agency or agencies they think should administer the residential energy conservation program, as in H.R. 7893 and S. 1304. Such authorization will add flexibility and efficiency to the program, to meet local needs, without eliminating the role of public utility commissions.

Congress has already mandated two State energy conservation programs, and a State-run low income housing weatherization program. It is essential that you now give Governors the ability to mesh these programs with new ones, proposed by the President, in order to eliminate duplication of effort and to address the unique problems of each State effectively.

Our most serious energy problem in Massachusetts is our excessive reliance on oil for home heating. Seventy percent of our homes are heated by oil, which is delivered by hundreds of local oil dealers. If our State is to seize the opportunity for energy savings which could result from a program of oil furnace tune-ups and insulation. Our oil dealers must be included in this program, in order for it to work in Massachusetts. We can accomplish this entire task more easily under the supplemental-State-plan approach of H.R. 7893, or the State-coordinated energy auditor program suggested in Senator Brooke's legislation, S. 1304. The utility program should be part of the program—not the whole program.

Lt. Governor O'Neill has already recommended to the subcommittee on energy conservation and regulation that the EPCA and ECPA program authorizations be merged, and given a joint appropriation level of \$100 million through 1980. He made this recommendation in order to obtain adequate funding to complete the work that States have agreed to do under those programs. I believe the States could also accept the task of drafting and administering the insulation program by simply channeling the ECPA supplemental moneys to the program and providing a special discretionary fund for the administration of the program (either HUD or FEA), to be used where needed.

ROLE OF THE UTILITIES

Utilities in our State have expressed reluctance to assume the responsibilities given to them in the President's energy plan. The electric utilities in Massachusetts heat very few of the residences to which they supply electricity. As auditors, they could be placed in the ticklish position of evaluating a competing energy supplier's heating equipment. And if customers without electric heat were to pay back an energy conservation loan via their electric bill, they would see their electricity bill rise, while an oil or gas company would reap any benefit of goodwill associated with the reduced heating bill.

We would greatly prefer to develop a State insulation plan to incorporate the participation of all energy suppliers in the publicity campaign. We have no problem with the idea of mandating that each State plan include provisions which require the utilities to offer audits and to offer to arrange financing. We would agree with the House subcommittee on power and energy that restrictions should be placed on the utilities getting into the actual installation of insulation. However, we agree with Senator Brooke that the utilities do not have the experience or expertise in home improvement loans to warrant draping the entire program on their shoulders and we think the approach taken in H.R. 7893, to allow utilities to arrange low-interest loan activities, if the utility qualifies as a loan service administration agency is a more flexible, constructive approach than banning the utilities' participation.

DEFINITION OF BUILDINGS COVERED BY INSULATION PROGRAM

We advocate changing the definition of "residential building" contained in the President's energy plan. We support the inclusion of small commercial establishments, and we support the definition recently adopted by the House subcommittee on power and energy. That definition would include the double and triple deckers which constitute such a large part of our urban housing stock. These units, and small commercial buildings, are excluded from the definition in the energy plan.

WEATHERIZATION

Massachusetts continues to support Federal weatherization programs. The approach of uniform standards for the three existing weatherization programs, combined with a guarantee or sufficient labor to perform the work, and an eligibility criteria on 125 percent of the poverty level, would be a significant improvement. Both Federal and State funded public housing should be included in the weatherization programs, unless a separate program, such as is suggested in S. 1304 and H.R. 7893, is established to aid public housing.

RENTAL HOUSING

We have no brilliant remedy to offer that will provide irresistible incentives to landlords and tenants alike to use less energy. In fact, we are so stumped by the problem that I think mandatory insulation and fuel burner efficiency standards may be necessary, to spur weatherization of rental units. However, these standards should not be put into effect until sufficient financial incentives are available and until the impact of such standards on the urban housing stock is evaluated.

FINANCIAL INCENTIVES

Massachusetts has previously advocated the creation of low interest loans to help homeowners who may earn too much to qualify for weatherization assistance, but who still earn too little to benefit from tax credits. The Ashley and Brooke bills offer financial incentives for the moderate income resident. We would like to suggest, as well, yet another approach to aiding the homeowner. The existing housing improvement program (HIP) could be expanded to offer urban homeowners an opportunity to make energy-conserving improvements in their home and be eligible for direct reimbursement of a percentage of the value of the improvement done. The program requires an expert appraisal of what improvements are worth the investment, and a follow-up visit to check that the improvements were properly done, before the homeowner receives reimbursement. The advantages of the HIP approach are: (1) Close supervision of the improvements; (2) Opportunity for the homeowner to make the improvements him or herself, and receive financial credit for the work; and (3) A direct payment of money that people can receive in hand, as a reward for their labors. We recommend that the committee take a close look at the HIP program as a potential vehicle for consideration along with other suggested financial incentive programs.

CONSUMER PROTECTION

Massachusetts can devise and implement a strong consumer protection plan if the Federal Government will help us to distinguish between the good guys and the bad guys. In our opinion, none of the existing legislation places enough emphasis on the development of product quality and installation standards for energy conservation materials and equipment. Hot disputes are raging over the definition of what constitutes insulation, what are the proper techniques for installing insulation, and what gadgets actually do save energy. If we are to embark on a massive campaign to convince people to save energy, we must be ready with some good answers to these thorny questions. We recommend that the FEA be required to develop at least product quality ratings for insulation materials and equipment, as well as guidelines on proper installation methods.

I would like to make a final observation. There is presently a fascination in energy conservation circles with the audit concept. I think this obsession suffers from overkill and there is no need to audit each home. The project conserve model of written material, individualized for each home is about as in depth as you need in most cases. The reason many people have not insulated his little to do with whether they have received a \$50 personalized audit—it has to do with market incentives. It is for this reason that financing mechanisms and tax credits are so important.

I believe that the audit provisions of ECPA with some changes to induce utility involvement, will avoid duplication, save money and will be effective.

Senator SPARKMAN. Mr. John Stevens, vice president, New England Electric Systems, Westborough, Mass., we would be glad to hear from you.

STATEMENT OF JOHN STEVENS, VICE PRESIDENT, NEW ENGLAND ELECTRIC SYSTEMS, WESTBOROUGH, MASS.

Mr. STEVENS. Thank you, Senator.

I appreciate the opportunity to be with you today because this is a subject area that's going to affect the utilities greatly.

I would like to say at the outset that, like Mr. Lee, we do support the concept of the insulation proposals as outlined in the National Energy Act. We believe that conservation must be the keystone of any energy plan. I would add, after listening to Mr. Lee, that I agree with about 95 percent of what he had to say.

The National Energy Act, as written, would require a utility to inspect one or two family residences to determine if the designated insulation standards are being met; and, if not, arrange for the installation by either doing the job or having the job done. We would also have to make or arrange for a loan to finance the installation and to permit repayment of the loan over a period of time as part of the normal utility bill. The act provides that the State regulatory bodies would determine the guidelines for each area and that any utility that failed to comply could be heavily fined or barred from rate increases until full compliance has been achieved.

In the case of utility financing, several problems exist. First, the utility would need adequate funds either produced by loans from banks or the Federal Government since we don't have that kind of cash simply laying around. With the utility then acting as the lender, a large amount of business would be pulled from the lending institutions designed to handle such situations and, in most cases, more than willing to get into this business. We would be forced into competition with them, a competition that could be unfair to consumers, as probably any losses which we incurred from the program would probably be rolled into service rates or picked up by the Government.

The act would force a utility into the position of general contractor, a role undesirable to my company, the fuel oil dealers of Massachusetts, and I'm sure insulation contractors and banks.

The existing insulation contractors are well qualified to carry out this work and need only to be brought together with the customer to get the job done. The same holds true for existing financial institutions. They have been and are capable of completing their obligation without the interference of a utility.

Furthermore, under the act, the utility company will be required to carry out the inspection of existing dwellings. As Mr. Lee points out, a significant amount of dollars in manpower additions would be needed. In our system alone in Massachusetts, we estimate that 146 additional employees would be needed to complete half of our customer surveys prior to the January 1, 1980 date. Such surveys are now provided at a minimal cost by insulation contractors or at no cost as part of the installation cost. However, the costs of these people would be passed on to the rate payers.

The approach we see outlined in the bill sponsored by Senator Brooke, S. 1403, is more desirable, primarily because it allows for a lot more flexibility at the local and state level. It takes the role of surveying and places it with the appropriate local or State agency certified to enforce current building codes. It allows the individual to deal with a contractor of his choice, and quite important, since much of it is done this way, it allows the individual consumer to perform the insulation work himself. It lets the Federal Government provide funds and then appropriate agencies carry out the financing arrangements. As part of this, we would, as a utility, be integrally involved in training surveyers that were needed. We can provide them with our knowledge gained during the promotional period of the 1960's on how inspection should be done and what benefits will be realized by the consumer because of added insulation, storm windows, doors, et cetera. We will, if necessary, be a catalyst to bring the contractor and prospective home owner together by either direct contact or providing lists of known reliable contractors and material suppliers.

As noted in my longer prepared statement, we have done some surveying of our customers' knowledge on insulation and attitudes toward the proposed program. As a brief summary of the results, I would say four things stood out.

First, people as individuals don't think they are wasting energy. They believe energy is being wasted, but they think it's being done by somebody else and not them.

Second, a lot of people, almost half the people who now either own or have a house of their own through a mortgage, are now planning on adding to their existing insulation. Many people perceive, and wrongfully so in most cases, that they now have adequate insulation because of a lack of education that Henry referred to earlier, not knowing what good insulation is. Fourth, they don't like the idea of a mandatory program. We asked the question based upon the Federal Government and the utilities getting into the act together, and they don't know at this point in time whether it's the Federal Government or the utilities that they object to, but at least the combination thereof is something they don't look forward to.

Herein, I think, lies the basis for valuable utility participation in a national insulation program. As Henry pointed out, we can, through advertising and educational programs, raise the public's knowledge and concern regarding what good insulation can do for them. We have been doing this and are willing to step up our efforts.

In summary, the utility companies do not belong in the finance business or the contracting business. If needed, we are willing to be a go-between by providing information relative to where such loans may be arranged and, if absolutely necessary, incorporate the payments into our bill.

We believe that any program for national insulation must accomplish the following—most of these points are included in S. 1304. They must provide good surveys either onsite, or as Henry points out, by mail, for consumers without adversely affecting a utility who does not supply the heating medium.

Second, they must provide a means for low interest capital for the poor.

Third, they should allow good policing by an agency with the existing authority for consumer protection.

Fourth, they should provide for easy payback as part of the mortgage or other normal payment.

Fifth, they should provide a way to keep the utilities out of the competition with contractors and financial institutions.

And, sixth, they should allow the utilities to carry the message for the need of adequate insulation to the public, and this means probably advertising, and we have to look at some of the State regulations which in fact prohibit all forms of advertising by some utilities in some States. This is not true in Massachusetts. If they are not allowed to advertise, it would be very difficult for them to carry the message.

I thank you for the opportunity to be here. I would be glad to take a shot at any questions.

Senator SPARKMAN. Thank you very much.

[Complete statement follows:]

STATEMENT OF JOHN R. STEVENS, VICE PRESIDENT, INFORMATION AND CONSUMER AFFAIRS, NEW ENGLAND ELECTRIC SYSTEM

I am John R. Stevens, Director of Consumer and Information Services for New England Electric System, which through its subsidiaries provides retail electric service to over 1,000,000 customers in Massachusetts, Rhode Island and New Hampshire.

I would like to state at the outset that we support the concept of the insulation proposals in the National Energy Act. We believe that conservation must be the keystone of any energy plan.

The National Energy Act, as written, would require a utility to inspect one or two family residences to determine if the designated insulation standards are being met; and, if not, arrange for the installation by either doing the job or having the job done, to make or arrange for a loan to finance the installation and to permit repayment of the loan over a period of time as part of the normal utility bill. The Act provides that the state regulatory bodies would determine the guidelines for each area and that any utility that failed to comply could be heavily fined or barred from rate increases until full compliance has been achieved.

In the case of utility financing, several problems exist. First, the utility would need adequate funds either produced by loans from banks or the Federal Government. With the utility, then acting as the financier, a large amount of business would be pulled from the lending institutions designed to handle such situations and, in many cases, more than willing to get into the act. We would be forced into competition with them, a competition that could be unfair to consumers, as any losses from the program would probably be rolled into service rates or picked up by the government.

The Act would force a utility into the position of General Contractor, a role undesirable to my Company, the fuel oil dealers, and I am sure the insulation contractors and banks.

The existing insulation contractors are well qualified to carry out this work and need only to be brought together with the customer to get the job done. The same holds true for existing financial institutions. They have been and are capable of completing their obligation without the interference of a utility.

Furthermore, under the act a utility company would be required to carry out the inspection of existing dwellings. significant manpower additions will be needed. New England Electric System will require approximately 156 additional representatives to accomplish the surveys prior to 1/1/80. However, the costs of these people would be passed on to the rate payers.

The approach we see, as outlined in a bill sponsored by Senator Brooke, S. 1304, is more desirable. It takes the role of surveying, and places it with the appropriate local or state agency certified to enforce current building codes.

It allows the individual to deal with a contractor of his choice, or perform the installation himself. It lets the Federal Government provide funds and then appropriate agencies carry out the financing arrangements. Except for low income people, we would hope this would be a last resort and primary financing would be done by existing financial institutions. As part of this, the utility may be integrally involved in training surveyors. We can provide them with our knowledge gained during the promotional period of sixties on how inspection should be done and what benefits will be realized from any increased insulation, storm windows and doors. We will, if necessary, be a catalyst to bring the contractor and prospective homeowner together by either direct contact or providing lists of known reliable contractors and material suppliers.

As noted in my longer prepared statement, we have done some surveying of our customers' knowledge on insulation and attitudes toward the proposed program. As a brief summary of the results, I would say:

1. People don't think they are wasting energy.
2. A lot of people plan voluntarily to add insulation.
3. They don't like the idea of a mandatory program.
4. Many perceive, and wrongly so in some cases, that they have adequate insulation.

Herein I think, lies the basis for valuable utility participation in a national insulation program. We can, through advertising and education programs, raise the public's knowledge and concern regarding what good insulation can do for them. We have been doing this and are willing to step up our efforts.

In summary, the utility companies do not belong in the finance business or the contracting business. If needed, we are willing to be a go between by providing information relative to where such loans may be arranged and, if absolutely necessary, incorporate the payments into our bill.

We believe that any program must accomplish the following:

1. Provide good surveys without adversely affecting a utility who does not supply the heating medium.
2. Provide a means for low interest capital for the poor.
3. Allow good policing by an agency with the existing authority.
4. Provide for easy payback as part of a mortgage or other normal payment.
5. Provide a way to keep the utilities out of the competition with contractors and financial institutions.
6. Allows the utilities to carry the message for the need of adequate insulation to the public.

Senator SPARKMAN. Now, Mr. Michael Johnson, Assistant Chief of Congressional Liaison, National Association of Regulatory Utility Commissioners, Washington, D.C.

STATEMENT OF MICHAEL JOHNSON, ASSISTANT CHIEF OF CONGRESSIONAL LIAISON, NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS, WASHINGTON, D.C.

Mr. JOHNSON. Thank you, Mr. Chairman.

Mr. Chairman, I want to express on behalf of the National Association of Regulatory Utility Commissioners our gratitude for an opportunity to present our views here today before this committee.

We have filed with you a statement, a rather brief statement, and I'm not going to read it since it will be entered in the record as you indicated. We have also filed with the committee as an appendix to the testimony some amendments which we propose be considered favorably by the committee.

I must depart from some of the views expressed here, and in so doing I find myself in an anomalous position. NARUC is a voluntary association of the regulatory utility commissioners of the 50

state and territories, and the District of Columbia. These are individual commissions. Each of them has its own set of problems, its own set of biases and prejudices, political origins, views and so forth. They exist in climates where insulation is not as necessary as it is elsewhere and in certain States where insulation and where home heating are absolutely essential. The State I come from—and I'm a member of the Public Utility Commission of Pennsylvania—is very eager to have some kind of program that will work adopted at the earliest possible time and implemented with a great sense of urgency.

In Pennsylvania, for example, and in many of the Middle Atlantic States who share with us the rigorous climates, 55 percent of the residential homes are heated by natural gas. I regret that our Senator, Senator Heinz, is not here this morning, but in his home area, Allegheny County of which Pittsburgh, the State's second largest city, is the county's principal city, almost 95 percent of the homes are heated by natural gas. We had a dreadful experience this winter. Added to the already high unemployment that we did have was another 750,000 unemployed at one point or another during this recent crisis last winter. So we know what the shortage of such a critical fuel as gas can do to a community, to a society, to an economy, to the health and welfare of the people.

Now for many years the utilities of Pennsylvania, and indeed other States in our area, have preached the gospel of insulation and pointed out its virtues. I dare say that the impact upon the public awareness was de minimus. It was very minimal. And we believe—some of us believe—and in this instance I speak for Pennsylvania perhaps—that there must be some mandatory features incorporated in this legislation. Otherwise, it will be a very glorious effort with a result hardly commensurate with the oratory that went into its passage.

I differ with my colleague from Massachusetts representing the utilities who speaks of the industry, the home improvement industry, as if it were a well established bona fide, ongoing industry that recognized its social responsibilities as well as its legal responsibilities.

Mr. Chairman, I want to point out that in Pennsylvania, for example—and we have checked and found that this is true of many other states—the home improvement industry is one of the most difficult, perhaps dangerous industries to deal with. It's an industry which requires in the main little skill for many of the functions that are performed. It is an industry which in Pennsylvania has ripped off the consumer to a degree that is almost unbelievable. Ten years ago we enacted for the first time in Pennsylvania, far after most other States already had done so, our first Installment Credit Control Act, the Goods and Services Installment Credit Act of 1967. In preparation for this we investigated many of the practices being carried on. We found that in the home improvement industry, particularly after the war when servicemen had bonuses and separation pay, when wages were relatively high compared to previous times, it was a simple matter to convince a home owner, particularly in the rural areas, that he needed siding, that he needed to have storm

windows and so forth. We discovered that not only was the work shabbily performed; in many instances it was never even completed and the people were without recourse. We discovered something else that is quite frightening since both of my colleagues have referred to the great cost involved in this program. In the home insulation business—and I say that this perhaps exists today in the home improvement industry, out of every dollar, 50 percent, and in some instances more than that—goes for the payment of promotion and commissions to the salesman and the balance then is applied to the work that's to be performed.

Now there need to be safeguards against this kind of thing and where the states are unwilling to do it—and as it is, the states in many instances have been unable to do it—these practices, these vicious abuses still continue. A program which contemplates dealing with some 15 million homes in the United States that are under-insulated according to the information that's provided to us represents a marvelous opportunity for those who seek to abuse citizens who are defenseless, in great need, without adequate resources, to sign on the dotted line and then be stuck with work that isn't adequate. So, indeed, standards do need to be prepared.

But I want to point out, Mr. Chairman, that the bill is perhaps a little overambitious. We have in Pennsylvania, for example, through the devices of a very innovative Secretary of Community Affairs, Mr. Wilcox, and with the use of Federal funds from 13 different programs, insulated or weatherized or winterized some 25,000 homes over the past 3 or 4 years. And two simple things were done. We had attics insulated and we had the homes made secure against the invasion of cold air through cracks in the walls and caulking of windows and doors, etc. The program did not involve day-night thermostats nor retrofitting the furnaces. It did not contemplate replacing constantly burning pilot lights with electrical ignition of the flame. It did none of these things and yet in these homes that had a minimal amount of work done our records indicate—and the research was minimal because only 25,000 homes were involved—that savings in the utilization of gas—and that's what was involved—ranged from 25 to 55 percent with an average of almost 40 percent savings in the amount of fuel used.

The program is really necessary. It will improve the quality of life. It will improve opportunities for better health and comfort. It will conserve badly needed scarce energies and it will—something that hasn't been stressed—open opportunities for the employment of many people. In Pennsylvania alone we estimate that over a 7-year period we would add approximately 30,000 jobs in the State which has a 9 to 10 percent unemployment rate. In other States it would result in even greater employment benefits.

This, of course, includes the manufacturing of the insulation. When you begin to add other devices such as thermostats, you increase opportunities for even greater employment.

One thing troubles us a great deal, though. The savings of natural gas, the only energy source outside of electricity which is regulated by any regulatory body, would apparently become part of a national

pool. We think that unless we can have added to the bill provisions to let the States that do an effective job keep the gas allocations that they can save by insulation, the Government would be depriving the States with the necessary incentives—indeed, they would be depriving the utilities with the incentives to go ahead.

Now as to who ought to do this. While the Federal Government must adopt standards, set them forth and provide for their enforcement, the implementation must be carried out by the States. Where you're dealing with regulated utilities and fuels, the State regulatory bodies are naturally the ones to do this job.

I understand that I have exceeded my time, but I do hope that the committee will pay some regard to the amendments that we have proposed, particularly the development of an advisory committee which would incorporate representation from major States so that they could have input into this program. Thank you, Mr. Chairman.

Senator SPARKMAN. Thank you very much.

[Complete statement follows:]

STATEMENT OF THE NATIONAL ASSOCIATION OF REGULATORY UTILITY
COMMISSIONERS

Mr. Chairman and members of the committee, my name is Michael Johnson. I am the Assistant Chief of Congressional Liaison for the National Association of Regulatory Utility Commissioners, commonly known as the "NARUC." I am also a Commissioner of the Pennsylvania Public Utility Commission.

I am accompanied at the witness table by Paul Rodgers, NARUC General Counsel.

The NARUC is a quasi-governmental, nonprofit organization founded in 1889. Within its membership are the governmental agencies of the fifty States and of the District of Columbia, Puerto Rico and the Virgin Islands engaged in the regulation of utilities and carriers. The mission of the NARUC is to improve the quality and effectiveness of public regulation for the benefit of the American consumer.

The members of the NARUC appreciate your invitation to make their views known on Part A of Title I of S. 1469, a bill proposing the National Energy Act, which concerns energy conservation programs for existing residential buildings.

The NARUC fully supports energy conservation programs for residential buildings.

The NARUC as early as September 20, 1973, at its 85th Annual Convention in Seattle, Washington, unanimously adopted a resolution endorsing and supporting "the initiative of the Michigan Public Service Commission to encourage gas and electric utilities to offer the installation of home insulation as part of their gas service" and further resolving that "any program to better insulate American homes, which are generally under-insulated, be applicable to existing and new homes and be available to consumers on the broadest possible basis; and where technically feasible, gas and electric utilities should incur cost of service and investments to conserve, as well as distribute, existing supplies of natural gas and electricity, respectively. . . ." Convention Proceedings, pp. 195-197.

The NARUC position on this matter was expanded by a resolution unanimously adopted by the NARUC Executive Committee on February 28, 1974, urging "that, as a further step in the nationwide energy conservation program, the appropriate agencies of the Federal and State governments concerned with conservation of energy should promote the use of insulation in homes that are heated by oil, coal, or other fuels not subject to regulation by the State regulatory utility commission to no less degree than they have been promoting the insulation of homes heated by natural gas or electricity. . . ." NARUC Bulletin No. 11-1974, p. 20.

The NARUC was one of the first public bodies to endorse in principle the proposal of December 17, 1976, by William G. Rosenberg, then Assistant Administrator for Energy Resource Development of the Federal Energy Administration, that Conservation Investments by Gas Utilities be Considered a Gas Supply Option.¹

The Pennsylvania Public Utility Commission has also endorsed in principle the Rosenberg proposal and, accordingly, has instituted an investigation into the feasibility of fuel conservation plans by electric gas and steam heat companies, including one for utility financed insulation of customer homes heated with gas. NARUC Bulletin No. 13-1977, p. 26, and 20-1977, p. 2.

The Southeastern Association of Regulatory Utility Commissioners (a regional affiliate of the NARUC), at its 61st Spring Conference in Biloxi, Mississippi on May 18, 1977, unanimously adopted a resolution requesting State commissions to direct all electric and gas utilities in their respective States: to develop cost-effective home-insulation practices appropriate for climates in their geographical areas; and to aggressively promote insulation practices by providing case-by-case assistance to consumers seeking information regarding recommended insulation levels and sources for insulation loans. NARUC Bulletin No. 22-1977, p. 21.

In view of this State activity as well as that of other individual State commissions, the NARUC does not believe that there is justification for the Federal Government to prescribe residential energy conservation plans to be offered by utilities subject to State regulation. Instead, we respectfully urge that Federal participation in this area be restricted to:

(1) The enactment of "finders-keepers" legislation which will permit a State to retain the natural gas saved by its conservation efforts, thereby providing a powerful incentive for States to promptly devise and vigorously implement conservation programs; and

(2) The enactment of Subparts 2 and 3 of Part A of Title I of S. 1469 and such other legislation as is necessary: to afford tax credits to homeowners to install insulation and other approved conservation measures; to stimulate residential energy conservation loans and other forms of assistance; and to establish a date in the future beyond which residential buildings may not be sold or rented unless they are energy efficient.

However, if the Congress decides on Federal participation as proposed by Subpart I of Part A of Title I of S. 1469, we respectfully urge that it be amended to provide for close consultation between the Administrator and the State regulatory community who will bear the burden of implementation and administration. This may be best achieved by the establishment of a State Regulatory Advisory Committee as proposed in the appendix to this statement.

Rules adopted by the Administrator for energy efficient housing should only prescribe minimum standards so that they will not impair State flexibility in implementing energy conservation measures which are responsive to local conditions. We have provided an amendment for this purpose.

Also, if a State regulatory authority does not participate in the national energy conservation program in the beginning and the Administrator is forced to assume control, the Act should permit subsequent State participation by the filing of an approved plan. An amendment for this purpose is also stated in the appendix.

In conclusion, we believe that the orders of the Administrator should be subject to judicial review by an aggrieved party.

Thank you for your attention.

APPENDIX

The NARUC respectfully proposes the following amendments to Subpart I, Part A, Title I, of S. 1469, a bill proposing the National Energy Act.

(1) Section 102(a), page 10, line 7, is hereby amended by striking "and the heads of such other" and inserting in lieu thereof, "the State Regulatory Advisory Committee and the heads of such other Federal and State."

(2) A new sentence is hereby added at the end of Section 102(a), page 10, line 9, to read as follows: "Such rules shall not impair the flexibility of any State regulatory authority to formulate and implement residential energy

¹ See letter from NARUC President J. Kalinski to Mr. Rosenberg, dated Jan. 3, 1977, as reported in NARUC Bulletin No. 2—1977, pp. 21—22.

conservation measures which are responsive to local conditions, so long as there is compliance with such rules which shall prescribe only minimum standards."

(3) A new Subsection (e), page 13, is hereby inserted at the end of Section 102 to read as follows:

"(e) The Administrator shall establish a State Regulatory Advisory Committee. The Committee shall be appointed by the Administrator, and shall be composed of five State commissioners from different States each of whom shall be experienced in energy conservation programs for residential buildings, nominated by the national organization of the State commissions, as referred to in sections 202(b)(2) and 205(f) of the Interstate Commerce Act, as amended, and four other members representing other interested groups. A vacancy in the membership of the Committee shall be filled by the same process of selection as applied to the last member holding such membership. The Administrator shall submit to the Committee all rules, regulations, policies, programs and amendments to same which are proposed pursuant to Subpart I, Part A, Title I of this Act and afford such Committee a reasonable opportunity to prepare a report on the feasibility, reasonableness and practicability of each such proposal. Each report by the Committee, including any minority views, shall be published by the Administrator and form a part of the proceedings for the promulgation of such proposals. In the event that the Administrator rejects the conclusions of the majority of the Committee, he shall publish his reason for rejection thereof. The Committee may propose to the Administrator, for his consideration, rules, regulations, policies and programs which are within his jurisdiction to adopt. Members of the Committee shall be compensated at a rate to be fixed by the Administrator not in excess of the maximum daily rate prescribed for GS-18 under section 5332 of title 5 of the United States Code for each day they are engaged in the actual performance of their duties (including traveltime) as members of the Committee, and pay such members travel expenses and per diem in lieu of subsistence at rates authorized by section 5703 of title 5 of the United States Code for persons in Government service employed intermittently. Payments under this section shall not render members of the Committee employees or officials of the United States for any purpose."

Justification: The opportunity for Federal-State cooperation will be maximized by the establishment of the State Regulatory Advisory Committee. Analogies to this proposal are found in the Technical Pipeline Safety Standards Committee created by Section 4 of the Natural Gas Pipeline Safety Act of 1968 (49 U.S.C.A., Sec. 1673), and the Federal-State Joint Board created by Public Law 92-131 which amended the Communications Act of 1934, as amended [47 U.S.C.A., Sec. 410(c)].

(4) Section 104(a), page 16, line 13, is hereby amended by striking "prior to one year after enactment of this Act." (Note: What advantage is there to cutting off the submission of alternative programs?)

(5) Section 105(a), page 18, line 23, is hereby amended by adding at the end thereof: "Such order shall remain in effect until such time as the State regulatory authority obtains approval of its plan under section 102(c)."

(6) Section 105, page 19, is hereby amended by adding at the end thereof a new Subsection (e) to read as follows:

"(e) All approvals, disapprovals and other orders of the Administrator shall be subject to review by an appropriate United States District Court upon petition by an aggrieved party."

Senator SPARKMAN. I'm going to ask Senator Brooke to interrogate the witnesses. He's going to have to leave very shortly and it seems that a lot of this testimony is centered in Massachusetts. I think it would be fitting for him to lead off the questioning.

Senator BROOKE. Thank you, Mr. Chairman.

Let me first thank all three members of this panel, the very distinguished members of the panel. They have been very helpful and very informative and I assure them that their testimony will be of great assistance to us as we mark up this important legislation.

My first question would be to Mr. Lee, director of the Massachusetts State Energy Office. Mr. Lee, the very useful testimony that you have offered this committee will probably help explain to my colleagues on the committee why I seem to have a slight bias in favor of relying on State energy offices. It's because I'm chiefly familiar with the work of your office which is clearly capable of managing and creating an effective energy conservation effort that I feel confident that this is the proper vehicle for this program.

Now I'm eager to pursue several points with you. First, given your skepticism about the need for full-scale audits, what information role would you foresee under a State-run program for utilities, home heat suppliers or even bankers? As some testified here yesterday there are trained property inspectors on some savings and loan pay-rolls.

Mr. LEE. First of all, I want to thank you for your kind words.

In answer to your question, when we tried Project Conserve in Massachusetts, we reached 15 percent of the homes. This was a questionnaire which asked about specific characteristics of the home and then sent back to them in the mail a printout as to what they could do to save energy and how much these actions save in terms of dollars and cents and finally how much they would cost. We backed this program up with a very good media campaign to get people interested in it and over 150,000 homeowners in the State participated, out of about a million single family home owners.

In followup surveys we found that approximately half of them, or 75,000 took action to further insulate or conserve energy.

I think one of the things you have to do with information is find out where are the areas conservation is not taking place. We found those areas to be primarily the urban or semiurban locations such as Greater Boston or some areas like our economically declining cities. We should aim the information program at two areas initially, attic insulation—we found a lot of people have storm windows in our State but a lot of people don't have sufficient attic insulation—and also aim the program at oil furnace tuneups. We used the media, specifically television, utilizing public spots; we did it and we did a good job. We think the consumer has to be informed of the kind of actions they should take. We found many people who wanted to insulate their attics but they didn't know where to buy the material.

This type of information dissemination can be done by integrating the existing State programs with some of the private deliverers of energy. We have talked with the oil retailers and they are very interested in doing this. We are also going to try a pilot program to do this in the southeastern part of our State, hopefully with ERDA funding—if ERDA doesn't come through, we'll do it with our FEA money next year. We want to try to have the private energy deliverers and the State working together and distributing information on specific conservation techniques which have to be followed to save energy. Maybe the crux of the program should be furnace tune-ups and attic insulation, emphasized through a media campaign. I think by working with the broadcasting associations you can establish a media campaign that will cost you a minimum amount of money.

Senator BROOKE. Now if this committee were to channel any Federal funds or subsidies, including secondary financing, only to existing lending institutions, could your office design a satisfactory loan program using, if the Government so chose, a partnership between conventional lenders and other agencies or businesses that you might wish to have distribute funds?

Mr. LEE. I think that a provision which—it was in your bill—could work, and I think that the State could coordinate it. I think that our response from the banking industry has been favorable except on the aspect of low-interest loans. We are finding in urban areas 14 to 15 percent interest fees for every conserving investment, while in more wealthy suburban areas we'll find interest charges of 10 to 12 percent. There is a form of redlining on home improvement loans. We could get the banks to participate but whether we can get them to participate at the level we want them to is the key question.

Senator BROOKE. How could you assure proper consumer protection in credit practices if you did create this partnership?

Mr. LEE. Well, I think that's a very good question and it's something that we have been doing a lot of thinking about, especially in the area of wall insulation, such as blown-in insulation. We have had a number of serious complaints in our State of abuses, where manufacturers don't put in the fire retardant material, or the urea-formaldehyde is installed at temperatures which are too cold.

I think you should start off with a strong consumer education program. I think you should begin to set up regulations and standards and I think those standards should be incorporated in the State building codes, and if these do not work, then you're going to have to get on the job of trying to get the States—to regulate the industry. I don't think the States want to be forced into such a regulating role by the Federal Government. I hope we don't get to that point.

Senator BROOKE. I was going to address that to something Mr. Johnson said, but I really was talking about consumer protection for loans.

Mr. LEE. Excuse me. Well, I think that the question is can you provide sufficient financial incentives to that group of people above the 125 percent of the poverty line and below the level impacted by the tax credit bills, and I don't think there's been anything in the President's program that addresses that group. I think there is a provision in your program that addresses this problem. I was in Canada last week and they have undertaken a rebate type of program and a loan program. The loan program does not work at all and they are offering 8 percent loans. While the rebate program has been very successful.

I think unless you get interest levels down, and unless you promote these loans, you will have some problems. I don't think people are going to buy 14 percent loans. We see that some of the programs like this run in other States or cities—such as in the city of Seattle and in Michigan—about 80 percent of the people didn't even take the financing. They just went and bought the stuff from the utilities.

Senator BROOKE. That was because of the high loan interest rate?

Mr. LEE. Right.

Senator BROOKE. Could an office like yours set up and administer a statewide program like the direct reimbursement program that you suggest?

Mr. LEE. We could coordinate it. I think it should be administered primarily on the local level because I think they have a better knowledge of the problems in their area. I think that when you get down to dealing with individual homes, which you have to do in such a program, you're going to have to administer at the local level and you're going to have to provide funds to help the local people do that. I think my office can coordinate such a program and I think we could do it effectively. In fact we are trying to set up a system to do it right now.

Senator BROOKE. Now I, too, think we should set up a certification system to guide state business and individual consumers, and would you be willing to give us for the record your detailed proposals as to what items or services should be included under such a program?

Mr. LEE. I will.

Senator BROOKE. In general, I would like to know what it is you feel is needed to motivate homeowners to insulate or retrofit, and I think high prices and tax credits we anticipate will not suffice, except for all but the poor and the near poor.

Mr. LEE. I will provide that for the record.

Senator BROOKE. Mr. Stevens, I'm particularly pleased that the New England System is represented here today because the more I work with the utility industry, the more I realize the extent to which your company represents the most progressive in the conscience sector of your industry. Your thoughtful testimony this morning bears out my continuing good impression and I'm sure the committee will find your views very helpful.

It's not often that we can get the State energy policy agency and the utilities working together and agreeing on 90 percent of almost anything, but it's heartening to see that you do in this area.

I would like to know whether in the event the utilities are asked to participate in a plan of energy audits the New England Electric System could recruit and train the needed inspectors and, if so, I'd like to know how long it would take you to gear up.

Mr. STEVENS. There's no question that we could, but I think the question is how long it would take. Back in the sixties when we were promoting electric heat we had enough people around to handle roughly 90 percent of the homes that are collectively heated in our service area. To do a major job like this it would probably take us 6 months to recruit, train, and have adequate inspectors in their operating field. The cost of that would be very large. It would not be permanent employment. It would be temporary employment and I think something we'd probably prefer not to do.

Senator BROOKE. Could a self-administered questionnaire be as useful as a full inspection for energy auditing purposes?

Mr. STEVENS. I think from an economic point of view, yes, it could. I think in covering all the bases, the answer is "No." But it's our estimate that a good, full, in-house inspection will probably cost the consumer somewhere between \$50 and \$75.

One of the things that we found—and this gentleman from Pennsylvania referred to a program which had attic insulation and caulking of homes—the average cost of that is only running \$300 to \$500 and when you add a \$75 tab for an inspection on top of that the consumer has the tendency to feel he's being ripped off and rightfully so, because you really don't need an inspection to do that. What you need is to sell the public on the value of those kind of simple steps.

Senator BROOKE. If a full-scale inspection were charged to homeowners, how much do you estimate it would cost?

Mr. STEVENS. Well, I guess my estimate would be in that \$50 to \$75 range per home.

Senator BROOKE. Would that vary regionally?

Mr. STEVENS. Yes. There's no question it would. In areas with newer construction, I think it would be somewhat easier to do the inspections than it would be in some of the older construction in the cities that Henry mentioned such as Boston and Bedford which are very difficult to get in the crawl space and get around and find out what's in there. So I would think in new areas such as Arizona and California, it would be easier.

Senator BROOKE. Because we have old stock housing in New England generally, where in Alabama they have all the new housing in the country and where the economy is booming and ours is not, it probably costs still less so they would benefit even more by this. That's correct.

Now you indicate some resistance to being charged with responsibility for consumer credit procedures now required of conventional financial institutions. Why is that?

Mr. STEVENS. Well, it's two-fold. First of all, we are not in that business. We don't know anything about it and we have to develop an expertise to get involved. Secondly, some set of standards would have to be developed to protect the consumer for our consumer financing which is in fact I don't think is the proper role for the existing regulatory commissions. It is a more proper role for the existing banking commissions because it is not a utility business any longer; it's a banking business. We also have—many companies have objections simply based on use of capital for this rather than for the necessary construction that has to go on.

Senator BROOKE. Now I was very much interested in the survey results that you reported in your statement. Given the disappointing results of your survey, can you elaborate on the kind of information you believe we need to motivate home owners to make energy conservation investments?

Mr. STEVENS. Yes. I think through a combined media program supporting the efforts of the energy policy office or whoever in fact is the state agency involved in this program that an economic message as to the benefits to the individual consumer is the story that we've got to get before the public and that I think is the one thing that will make the public act, when they actually see some value in doing this. Some of this has been done. Henry has already proved that he could get 15 percent of the people to fill out his conservation

form and that form by the way was a very thick, time-consuming document to fill out. If that can be simplified in an insulation program only, I think that the 15 percent can be dramatically improved upon.

Senator BROOKE. Do you see any problem in assuring quality in the conservation materials and labor that may be supplied by the free market if there's a rapid increase in insulation and retrofit activity?

Mr. STEVENS. Yes, I do.

Senator BROOKE. What consumer protection measures do you recommend?

Mr. STEVENS. I think we've got to have standards developed as to the quality, quantity and methods of application. I think that we've got to have spot checks of the industry as to installation. I think we have to have rapid followup to consumer complaints and it may be that if that does not work we need a licensing process for home insulation installers.

Today, in the service area of Massachusetts that we serve, we have some 70-plus insulation contractors, all of whom have been and for quite a while—at least the 70 that we have worked with—since the 1960's. There are others there that we could not comment on the quality of their work, but there are at least 70 that we feel relatively confident in their ability to do their job and protect the consumer.

I think it's like any expanding market. In a way it's like the solar market. There's a great potential for fraud on the public and some kind of checking system must be developed and I think that standards and spot inspections are probably the way to begin.

Senator BROOKE. Finally, Mr. Johnson, I'm familiar with some of the abuses that you mentioned in your testimony and some of your fears and your admonitions of counsel to this committee as to what it ought to do. When I served as attorney general it was somewhat after that period where we had a lot of GI purchases of homes and I remember the period of home insulation contractors that you mentioned and there were some abuses. In fact, that was one of the reasons that I instituted in Massachusetts a consumer protection division within the attorney general's office because people, as you say, were being ripped off. But I think it's not a blanket or general indictment of the insulation construction business or contracting business. I think we have seen a lot of improvement in that area and I don't have the same fears now, but I do believe that we ought to do everything possible, as you suggest, to assure that the consumer is protected against possible rip-off by contractors and protect the consumer in every way we possibly can.

Do you have any specific measures that you would want to suggest to this committee that they ought to utilize or include in this legislation for that protection?

Mr. JOHNSON. We have a number, and one of the recommendations that we offer is setting up an advisory committee in which the States would be able to participate. We think that there can be input or specific safeguards, Senator.

Senator BROOKE. Don't you think the State energy policy agencies could do that?

Mr. JOHNSON. I beg your pardon?

Senator BROOKE. Don't you think the State energy policy agencies in the various States could do that?

Mr. JOHNSON. I do not, sir. We have in Pennsylvania, and I know in other States, perhaps 8 to 10 different agencies concerned with this problem. In Pennsylvania we have a Governor's Energy Council. That is fragmentation of responsibility. The chief problem that the consumer will be confronted with is having some place to go with his complaint. That's one of the reasons why we look with favor upon a strong role played by the utility. The utility is not going to go away, but the home improvement company may disappear tomorrow.

Senator BROOKE. The State is not going to go away either in most States and I can't—I'm sure they vary. I think we are fortunate in Massachusetts to have an exceptionally well qualified and committed State agency that handles these problems, but you all still have attorney generals in your States. Most of you have consumer protection agencies. You have better business bureaus. You have many other agencies that are established to protect the consumer against the kind of fraud and abuse that you mention. I don't see why you feel that utilities can better do that job of protecting the consumer than would a duly constituted authority of the State.

Mr. JOHNSON. You need all of these agencies, including a State energy program and facility, but you need somebody to implement this. Now there's no one closer to the customer than the utility. I'm not a particular defender of the glory of the public utilities because I don't have that reputation on our commission, but nevertheless, I do know the role that they can play.

Senator BROOKE. I hope you're not, because you told me you were a regulator of a utility. I don't like to see the regulator so closely tied to the regulatee that they are one and the same. So when you tell me you're a commissioner who regulates a public utility in Pennsylvania and you have a national organization, I can't expect that you would be one and the same. I think you do regulate those utilities; is that not correct?

Mr. JOHNSON. Well, we endeavor to, sir. It's not easy, though.

Now may I point out, Senator—this may not be directly responsive—

Senator BROOKE. Your charges are bad in Pennsylvania and your regulators are bad in Pennsylvania and your agencies are bad in Pennsylvania? I'm sorry Senator Heinz could not be here. I just want to say for Senator Heinz that he regrets he couldn't be here this morning, Mr. Johnson, but unfortunately he did have a conflict. There are so many different things going on at the same time, but he is very much interested in this problem.

Mr. JOHNSON. Yes, we know. We talked with the Senator and we appreciate his support of the program.

Senator BROOKE. Good.

Mr. JOHNSON. I guess that maybe we have been hurt so badly this past winter that we are already driven with a sense of urgency from

which we can't escape. We want it done right away. When we have 11 people in Western Pennsylvania dying because of the curtailment and termination of gas and electricity, you become quite aware of the great problems. When you have 500,000 people inside of 2 weeks time or 3 weeks time being thrown out of work and you find that your unemployment compensation debt rises from \$800 million to a billion and a half in just over the span of one winter, our State recognizes the great need for some immediate action.

Now, sir, the FHA, through its auxiliary programs on home improvement, did make available very readily moneys for the improvement of homes, but that is not to say that the homes were improved. The money was expended. The people had to pay those bills. And we estimate in Pennsylvania—and I don't want to knock Pennsylvania because I know that this is true of many other States that perhaps don't want to admit it—a very large portion of the work that was done was wasteful, poorly done, and in many instances never completed. This is in spite of the safeguards, consumer protection and so on.

Now as we are able in the various jurisdictions throughout the country to regulate the kind of pipe which can carry water into a home, the kind of electric wiring that must be utilized in new construction and many other building codes which are mandatory, we believe that standards dealing with insulation can just as easily be adopted and embedded into the building codes of the communities if done by the community or by the county or by the State or if need be by the Federal Government. But I submit, sir, some protection must be embedded in this act. Otherwise, we will have been spending an awful lot of money with very, very little reward.

Now I want to say further to Mr. Stevens, we have resistance and this goes to the whole question of education. My good friend, the energy director for Massachusetts, places so much dependence upon a vigorous educational program, where we have resistance from the utilities, from the banking institutions, from Wall Street itself which is afraid that they will be siphoned off from the general moneys that are available to finance the building programs of utilities—that siphoning off that money for weatherization will impede the construction of new facilities, electric and gas works and water works.

So we have this resistance and that resistance is expressed throughout the State, throughout the country by these agencies. It's all right to come here and say they support this, but back home they resist the efforts. We have an ongoing procedure now adopted by our State commission and thus far the testimony offered by the utilities is we can do this on a voluntary basis and by education and so on. The record does not support success for the efforts that they have put into it thus far and they have spent hundreds upon thousands of dollars in education, staffers in bills, and full-page ads which the rate payers are paying for. It's got to be something much more than just that alone.

Senator BROOKE. Thank you, Mr. Johnson. My time has long since expired, and the chairman has been most generous in allowing me to interrogate out of order because of another commitment.

I would just like again to thank the panelists, Mr. Chairman, and to say that I think they again have been very helpful.

I would like to point out that we are not trying to thrust upon the utilities nor should we thrust upon the utilities a responsibility that they really are not, in my opinion, equipped to do.

The utilities can do what they do best, and that is provide utilities at a reasonable cost, hopefully, to the consumer, and educate the consumer as to the need for conservation. I think then they will have performed their job, and performed their role well.

I just do not see the utilities in the banking business, for example. I can't see them in the financing business; I can't see them in the home insulation contracting business. I can't see them packaging the services for the consumer. But I do think they have a role. The mere fact you said, Mr. Johnson, the utilities will always be there, we hope they will always be there. But that doesn't necessarily mean that they are the ones that should do this particular job. I think the State agencies and other agencies can do it, I think they are equipped to do it, and I think they can do it best. But I do agree that we have got to build into this legislation every possible protection for the consumer, protection on loans, protection on the insulation, right down the line. I don't think anyone disagrees with that at all.

Maybe your advisory committee might be good, but we might even need more, we may need to go further than just an advisory committee in insuring protection for the consumer.

But we have got to get on with this job of conversation. I commend the administration for submitting the plan. We need a national energy policy, and the root of that policy has got to be conservation. I think we are agreed on that. Having said that, it is just a question of who can do it best as far as the actual insulation of homes, and I am not only talking about the poorer homes, but the middle-class and upper-class homes as well as the poor, the high cost homes as well. I think we can do this, one, through education by the utilities, and then working through state agencies, but that is a matter the committee will ultimately have to decide.

Your testimony has been very helpful, I am very grateful for it.

Senator SPARKMAN. Thank you, Senator Brooke. I knew you would do a thorough job and I appreciate your doing that.

The way I view this situation is that it calls for cooperation among the Federal Government, the State government and the local governments. Do you agree with that?

Mr. JOHNSON. Yes, sir.

Senator SPARKMAN. It seems to me, I am thinking back now, do you remember the old home improvement loan plan?

Mr. JOHNSON. I certainly remember them. I don't know about my colleagues, but I do.

Senator SPARKMAN. They are too young.

Mr. JOHNSON. As a matter of fact, I have neighbors who are still paying off these loans that they took 30 years ago.

Senator SPARKMAN. I thought that was a very fine program.

Mr. JOHNSON. From the financing point of view, sir.

Senator SPARKMAN. And it seems to me that some such plan as that could be worked out with reference to conservation of energy.

If I remember correctly, the individual arranged the loan with the bank, made application to the Federal Government, and if the Federal Government approved, it would guarantee to the bank that that loan would be repaid. It was a very useful program.

That was in the days of F. D. R., wasn't it?

Mr. JOHNSON. Yes, sir.

Senator SPARKMAN. It was in the early part of his administration, if I remember correctly, probably about the time of the Home Owners Loan Corporation, one of the greatest institutions that the New Deal brought into being.

I was a young lawyer at that time, practicing law, and the two Senators from my State were called upon to designate two persons in each county, one to look after the title research, the other to be the appraiser.

One day I received a wire from my two Senators asking me to serve as county appraiser. Well, I was brandnew at the job, they did give us some instructions, but I often think back to those days and I think what a terrific job was done at a time when the country was in the depth of a depression, and I have often thought that was the number one thing that President Roosevelt did soon after he came into office that helped pull us out. It was most instrumental in pulling us out of the depression.

And I remember the home improvement loans, I saw a great many of them go through, and have the work done with the Government guaranteeing it.

It seems to me we could develop a program somewhat of that type. To my way of thinking, it would be a better type than calling on the utilities themselves to set up a lending agency within their companies.

Anyhow I think it can certainly be worked out, I think it ought to be worked out. I also believe that there ought to be a tax incentive given to people. My understanding is the Finance Committee is considering that. I believe someone told me it is under consideration there now. With that, I think a good program can be worked out.

But getting back to the two bills that are really before us, the bill that Senator Jackson introduced in the Senate and the bill that Lud Ashley, with a host of cosponsors, introduced in the House. I have not studied them carefully but I do understand that they take a different approach.

As between the two bills, which would you prefer, or do you think there ought to be something worked out in consolidating the two? Do you have any opinion?

Mr. STEVENS. In my opinion, having read both bills, I would certainly prefer the Ashley bill, which is a less mandatory, less structured program than the Jackson bill, and runs much more along the lines of Senator Brooke's bill, 1304.

I think this is the method that the utilities, and mine in particular, would prefer to see. It gives the States a great deal more flexibility in the implementation of the program, it also gives the individual a good deal more flexibility.

Senator SPARKMAN. What would be your opinion?

Mr. LEE. I think that we would also tend to favor the Ashley proposal in terms of the structure, and how the program would be administered. I think there are provisions in the President's plan that can be merged with the Ashley proposal.

I think your suggestion, Senator, of bringing those two bills together is a very good suggestion. I just think it is very important that the Governors be given the flexibility to set up the program and run the program as they see fit to meet the needs of their particular State.

Massachusetts, for example, is 70 percent heated by oil, and is very different from Allegheny County, which is 95 percent heated by natural gas.

The only way you can get that consideration is to work the program through the governors.

Mr. JOHNSON. I am inclined to believe that the major bill ought to be the administration's bill, introduced by Senator Jackson, with modifications taken from the Ashley bill, and the bill reported by Congressman Dingell's subcommittee.

No one has a totally perfect approach to this problem and there are many suggestions that have not been incorporated into either bill.

You were very helpful in reminding me of the great work done during the New Deal days.

Let me add, sir, I am sure you did not forget, because you were there, as I was, the great work done in the public works programs, where people who were unemployed were pressed into work.

Senator SPARKMAN. The WPA, PWA.

Mr. JOHNSON. And one further one, the CCC program. I remember as a young man marching in protest with some college students, colleagues of mine, against the CCC program, because we considered it a form of militarism.

But today as I ride around the beautiful country that we live in, there is evidence abounding today of the great contributions done by those boys who were taken from the slums, brought out to the country, parks, highways, and playgrounds to the benefit of people and this Nation forever, perhaps.

I remember protests against the PWA and the WPA being held on the steps of city hall in Pottsville, Pa., and right next to that city hall is a beautiful post office built by the PWA. It is still there serving the people. It is perhaps one of the nicest buildings in that city today.

So the one thing that neither bill really provides is the utilization of a mass of unemployed people who can easily be trained to do this work.

We have done it in Pennsylvania. The 25,000 homes were winterized with this kind of labor that was recruited among the unemployed. The work has been regarded on the floor of the House at least by the Congressman from Pittsburgh, Mr. Moorehead, as one of the outstanding examples of a crash effort to save the homes and the lives of people.

One further thing, Senator, that we have overlooked in our discussion here today, and that is the savings in fuel costs to the people.

Our Governor estimates, with his economic advisers and his energy people, that the costs of a home insulation program on a lesser scale than the one recommended by the Jackson bill, can be amortized, within the first 3 years by savings in fuel bills alone. So while on the one hand we do put a burden on the person who is going to have his home weatherized, we nevertheless provide him, through the savings in his bills, with a way of paying for it.

The final thing I would like to stress is that indigenous to any program that is going to work, particularly where natural gas is concerned, is the integrity of the finder's keeper's program. If the billions of cubic feet of gas that could have been conserved in Pennsylvania could have been diverted to industrial use, half the people that were unemployed would not have been unemployed. And that to me, sir, is a very important consideration, equal to almost anything that we have in either proposal.

Senator SPARKMAN. Let me say I remember the CCC days. In fact there were three CCC camps at my home, two were placed upon the mountain where they built parks, a very fine park system. Another one was placed down in the lower areas, just outside the city limits, for the purpose of doing farm work, terracing and drainage, things of that kind. They did a tremendous job.

I remember the WPA and the PWA. I remember the jokes that used to be thrown at the WPA. But there was also a program that Mr. Ickes developed, along with the President, and that was the combined PWA and WPA programs.

You may not know it, but the very fine National Airport that we have here in Washington was built by that kind of a program.

By the way, the engineer who designed the building was a good friend of mine from Alabama, Sumter Smith, and I think you will find his name over the door out there.

While I am reminiscing, I might say I remember very well when President Roosevelt announced his intention, his order, to build National Airport, by dredging it out of the Potomac River. There had been a great deal of discussion around here on the question of getting an airport. They advocated Congress select a site out pretty close to where Andrews Air Force Base is now and another one in the Dulles area. But one morning the country was rather startled, Congress particularly, and the Republican side of Congress especially, when they woke up to find out that President Roosevelt had issued an Executive order to dredge the Potomac River, fill in, and build National Airport there. There was a great deal of grumbling and growling about it. He answered that by saying that he did it almost on the spur of the moment, because he woke up in the night drenched in perspiration and chilled because he said he had a terrible nightmare. Now in those days, where the marina is near the Pentagon, that was the airport. Hoover Airport, and there was a road that ran through it, and if a plane was coming in you had to close the gate to keep the automobiles out. It was just kind of a dishpan thing. So I can see why he would have that terrible dream.

But anyhow, it was based on that, and we have the National Airport as a result of it. But it was a tremendous program. School

buildings went up all over the country as a result of the PWA, sometimes tied in with the WPA.

We had a Secretary of Interior named Harold Ickes. I am sure you remember him. And he really pushed that combined program, and that did a tremendous amount of good.

So the Federal Government, particularly when you tie it in with the State government and with local governments, can do a tremendous job, and I think they can do a tremendous job in bringing into effect a program relating to conservation.

We have another panel we want to hear from, and that is a consumer panel. So if you gentlemen will give up the table, we will ask Susannah Lawrence, executive director of Consumer Action Now, and Tom Stanton, Housing Research Group to come up to the table, please.

Ms. Lawrence, we have your statement. It will be printed in the record. You may handle it as you see fit, either read it or summarize it or discuss it.

**STATEMENT OF SUSANNAH LAWRENCE, EXECUTIVE DIRECTOR
CONSUMER ACTION NOW, WASHINGTON, D.C.**

MS. LAWRENCE. I think what I will do is go through and highlight the main points this morning, and then be open for questions.

First of all, I would like to tell you a little bit about our organization.

We have been working since 1970 primarily in the area of consumer information and for the last 2 years we have concentrated our efforts on energy conservation, and renewable energy resources.

Senator SPARKMAN. Excuse me. I have been waiting for Senator McIntyre to come. He is really supposed to be holding these hearings, and I am going to have to leave. Senator McIntyre, this is the second panel. We have just finished with the first panel.

Senator McINTYRE. I just finished with the first panel in small business, and now they are doing the second panel there.

Senator SPARKMAN. Good.

Senator McINTYRE [presiding]. Thank you very much, Mr. Chairman.

Senator SPARKMAN. Thank you.

Senator McINTYRE. Today we conclude 3 days of hearings on several proposals to assist citizens in fully insulating their homes, and to make financing available for solar energy systems.

The President has proposed that 90 percent of all existing homes be fully weatherized by 1985. It has been estimated that by achieving this insulation goal, we can save the equivalent of 500,000 to 1 million barrels of oil per day. In addition, Federal officials have projected that 1.2 million to 2.5 million homes can be equipped with solar energy by 1985.

One witness, FEA Deputy Administrator David Bardin, testified before this committee on Monday that a large proportion of energy conservation can be achieved at a cost equal to a range of \$2 to \$7 per barrel of oil saved. At these costs, conservation is the least ex-

pensive increment we can gain in domestic energy supply. It is a painful and inescapable fact that we need more domestic energy, and that we will have to pay a higher price for that energy in the future. But while we are investing \$13 per barrel for needed new oil, we would be foolish not to invest \$2 to \$7 for each barrel we can save.

In the long run, the solutions to our energy problems lie in renewable sources of energy. Therefore, the solar energy provisions of this legislation may, in time, turn out to be the most important topic of these hearings.

Last week I introduced S. 1760, which includes most of the provisions of a bill introduced in the House by Congressman Ashley, H.R. 7893. The Ashley bill is the most comprehensive bill that I have seen so far to provide financing mechanisms for energy conservation and solar energy. It closely parallels, but improves upon, the residential energy conservation provisions of the President's energy plan. Its cost to the Federal Government is very small, but its potential for energy conservation and energy production through solar energy is substantial.

However, I firmly believe this committee must consider the additional step of providing direct grants or interest subsidies for solar energy, in tandem with financing mechanisms. Any subsidy program should be structured so that the benefits are delivered to consumers at little cost and with little paperwork and redtape. The program should be aimed at the broadest possible segment of the public, with emphasis on those who are most heavily burdened by rising energy costs, and should prevent any double dip of benefits for those who might use a Federal tax credit for solar energy.

One bill before this committee, S. 395, introduced by Senator Hart, would provide interest subsidies for solar energy systems. Another bill, introduced by Congressman Drinan in the House and which I have introduced in the Senate, would provide direct grants for solar energy in combination with loans.

I hope those witnesses who are familiar with solar energy will address these issues.

Will you proceed, please, Ms. Lawrence. Again the constraints of time are heavy upon us, so try to hit the high spots and all of your statements will be included in the record in their entirety.

Ms. LAWRENCE. I will continue from where I left off.

Our feeling about the utility aspects of the administration's proposal and the Ashley proposal is that we do think that the utilities provide a unique way of getting high quality information to consumers about what makes sense in terms of conservation, what makes sense in terms of pricing, in terms of available technology, in terms of the order in which conservation measures should be implemented to make the best use of their money.

We do feel, however, that it is not logical to bring utilities into the direct financing of conservation investments. It sets up problems of competition with local contractors, great regulatory burdens for the local public utility commissions, and we are not sure that all of those public utility commissions are able to deal with that regulatory burden.

I think that the key point here is information, the dissemination of information. I don't mean blurbs in utility bills that say "Conservation is good for you," but specific information as to how to conserve and what to do and who the consumer can turn to.

We would like to also encourage the committee to follow the House's lead in providing low interest loans through the Government National Mortgage Association for conservation investments. We are familiar with a program in Dayton, Ohio, which has had great success with a low interest loan program. The program began in 1975. In 1976 private lenders in that community made \$900,000 worth of loans for improvements, home improvements, whereas the city made \$1.6 million in loans, and 50 percent of those loans were for energy conservation investments.

Since that time, because of that program, at least one Dayton bank is now offering home improvement loans at 7.5 percent interest.

I think that is an interesting point to underline, the possibility of, through programs like this, actually encouraging lower interest rates for conservation loans from the private investment community.

We would also, however, like to point out that the administration proposal and the House Banking Committee proposal overlooked what we believe is an important goal or important strategy, and that is low interest loans for solar energy investments.

Almost every study that I have seen on this subject pinpoints the problem of the high cost of capital as being a major stumbling block to the use of solar energy.

I think at the very least it would be logical to expand the program proposed for GNMA for conservation loans to include solar loans as well.

But I would say this is only half a strategy. I think much more logical would be to structure a more far-reaching low interest loan program that would provide loans not only for residences, but for neighborhood and community projects as well. I say this because I think solar energy, particularly bioconversion and wind, is suitable for systems that service neighborhoods and communities. And there is a lot of work going on now among small communities around the country who have taken a lead on this and are starting to do some very interesting things in this area.

I think it would be a good idea to go back and look at the token program that was passed last year as part of ECPA, and use that as a basis, amend it, make it into a really far-reaching low interest loan program.

There is another flaw in all of the proposals I have seen in terms of energy conservation and solar in new buildings; there is a total lack of attention paid to the issue of passive design.

By that I mean using the structure itself, through proper ventilation, through proper siting, through south-facing windows, to cool and to heat the building as much as possible by natural means, without mechanical assistance.

There has been very little attention paid to this in all government programs, and basically it is a problem not so much of technology,

but of lack of education and awareness on the part of builders and local home owners, cities and municipalities as to what the real possibilities are for energy construction by design.

There should be a system of training seminars, courses in passive design for builders and local officials. HUD should include these in every program they have for giving loans or giving assistance to communities. They should be obligated to emphasize the need for conservation and passive design.

There should be a system of grants, perhaps, or low interest loans to builders for demonstration homes using passive techniques, and also solar technology. And perhaps even a national contest of some sort for innovative passive design, just to bring this whole concept to the attention of the public.

We are also concerned that adequate consumer protection is provided. The only thing available now in terms of solar systems is a HUD minimum property standard. I think that is available now, and I am not sure it has been published yet, but it will be shortly. But at present the only people who are going to be trained to use that program are the FHA inspectors. Now if it is to be used, it has to be made available for mortgage assessors, local building code officials, and State energy offices.

I would hope there would be some attention given to that by the committee. I don't think HUD is opposed to doing it, but no one has done anything to see that this training is provided to others besides FHA inspectors.

I also share the concerns of the panel that preceded me as to where the consumer is going to find the installer who knows what he is doing in terms of insulation, how is the consumer going to know what is good insulation versus bad insulation, or whether this contractor is good or not.

I think the State energy offices at the very least should have lists of licensed contractors. They did that in Dayton, Ohio; perhaps other cities do not have that kind of licensing, but I think that method ought to be examined and promoted. There should be a licensing procedure for home insulation and other conservation measures. I can't stress enough how much we feel that one of the best ways of protecting consumers is a really aggressive Federal information outreach program. That really has never gotten off the ground. The seeds have been there, the Project Conserve, which they are using in Boston, the energy extension service idea, the agricultural extension service, but there has to be really an aggressive effort to go out to consumers and to present them with information that tells them what is good, that tells them what to look for, and really sets out in a logical fashion and in understandable terms what they need to know when purchasing conservation or renewable resources energy measures.

[The complete presentation of Ms. Lawrence follows:]

STATEMENT OF SUSANNAH LAWRENCE, EXECUTIVE DIRECTOR,
CONSUMER ACTION NOW, INC.

Thank you for the opportunity to testify before you today.

Consumer Action Now has been working since its inception in 1970 to provide consumers with information and suggestions for action which assist them

in making choices in the marketplace which positively affect their environment. While in the past our efforts have covered a wide range of topics, for the last two years we have concentrated the efforts of our Washington office on energy conservation and renewable energy resources. Our sister organization, the Council on Environmental Alternatives, is engaged in research and educational projects on energy, consumer health care, and nutrition.

There are two key ingredients to successful adoption of a national energy plan by consumers: information and the proper economic signals. The economic signals include not only higher prices for energy but also the willingness of the government to ease the burden of high first costs of investments in conservation and renewable energy resources.

The Administration's proposed utility plan attempts to meet these needs in part; it brings up, however, a host of other problems. It can provide:

- Access to consumers;
- an established financing mechanism; and
- an entity with a continuing interest in rented properties and properties which change hands frequently.

The attendant problems are more complex. As utilities are presently structured, energy conservation on the part of customers is in conflict with their profit making requirements. To surmount this obstacle they must either charge high rates of interest or put their conservation program into the rate base. Either of those tacks puts the consumer on the defensive. There must be adequate assurance that the consumer has access to other forms of financing if high interest rates are charged. Allowing costs into the rate base raises real equity questions about those who have already insulated or are insulating on their own.

The Administration proposal puts all of the burden for policing this program on to the local Public Utility Commissions. It seems to us that this regulatory function is both ponderous and difficult; we are doubtful as to its possible success. The comments of the FTC, yesterday, have reinforced those doubts.

We think that the approach taken by the National Weatherization Act reported out of the House Banking Committee makes more sense. It uses the unique capability of the utility to reach thousands, millions of people without putting them in competition with local contractors and without raising all the specters of the financing schemes. There is real evidence that information is the key ingredient here as shown in the Michigan experience where the utility was required to supply information to consumers and to offer a financing arrangement. Many people did follow the advice given, but very few used the financing program.

It seems logical and advantageous to make use of the information dissemination possibilities open to utilities to provide consumers with the most up to date information on conservation measures, renewable resource measures, and on the national programs that are being set up to encourage consumers to conserve.¹

We encourage the committee to follow the House lead in providing low-interest loans through GNMA for conservation investments. It is our hope that those loans would be offered at 7 percent to 7½ percent or lower. The city of Dayton, Ohio, has had great success with a low-interest home improvement loan program. Since 1975, the city has operated a revolving fund for low-interest home improvement loans using Community Block Grant funds. In 1976 private lenders made \$900,000 in such loans while the city program processed \$1.6 million in loans. 50 percent of those loans were for energy conservation investments. Since that time, because of the success of the program, at least one Dayton bank is now offering home improvement loans at 7.5 percent. The loans offered by the city ranged from 1 percent to 7 percent or 8 percent interest depending on need.

Both the Administration proposal and the House Banking Committee proposal overlook a truly important area for low-interest loans, specifically solar energy. Almost every study that has been done on the subject, the latest being that completed for the Joint Economic Committee, pin point lack of low-

¹ We also urge the committee to seriously consider mandatory conservation standards at point of sale. These would not go into effect right away but would be the stick to accompany all the Federal carrots.

interest capital as being a major stumbling block to the use of solar energy. We approve the tax credit proposals that seem to be moving easily through the House, but that is only a small part of what is needed. I do not think that anyone would dispute that tax credits are only available to a small part of the population, particularly if they are not refundable, yet applications of solar energy make sense for moderate and low-income investors. At the least, the program proposed for GNMA purchase of conservation loans should be expanded to include low-interest loans for solar investments. I have submitted with my testimony a proposal for such a program and a schedule of what monthly payments would be in 9 cities based on the figures of the JEC report. In 5 out of 9 cities the fuel savings at today's prices would more than cover additional costs due to the solar system. This is using electric heat pumps for comparison, the cheapest alternative in most locations.

This strategy would also lock out, however, another promising area of funding for solar projects, that is the neighborhood or community scale systems. Wind and bioconversion would seem particularly applicable to this sized project. The 519 East 11th Street project in New York is an example of what might be done on the community level with low-interest monies. That effort combined rehabilitation of a tenement, energy saving investments in conservation measures, solar hot water heating and wind generated electricity, and will soon include a solar greenhouse. At the very least there must be an all out effort on the part of HUD to transmit successful experiences of this kind to municipalities seeking Block Grant funds and to encourage them in similar programs.

Another possibility would be to go back to the token program that was finally passed last year in ECPA to examine various incentives to encourage renewable energy technologies and amend that, making it a full-fledged program to provide low-cost financing.

There is another serious flaw in all the proposals being considered. There is no attempt to hasten the adoption of design features which could begin now in all new construction to significantly cut energy costs. I am referring to what is called "passive design" which means that the structure itself, through its position on the site, through ventilation, addition of areas of thermal mass, south facing windows and other features uses sun and wind to naturally heat and cool the building. This concept is inseparable from energy conservation and should be a consideration in all HUD assistance programs. There should be seminars and training courses to bring together 'passive' experts and builders. We would suggest a system of grants of low-interest loans to builders for demonstration homes using passive techniques and active solar technologies. A national contest for innovative passive design would also help bring this concept to public attention.

Consumer protection is another area of major concern to us. The only available solar systems standard is the HUD Minimum Property Standard. At present only FHA inspectors are scheduled for training in the use of these standards. If these standards are to be useful outside of federally funded buildings, such programs should be offered to mortgage assessors, State Energy Offices, and building code inspectors.

State Energy Offices should also be directed to make lists of licensed contractors who are competent to install insulation. This is the procedure followed by the city of Dayton. Licensing procedures should be examined to see that they are adequate.

I cannot stress enough our conviction that there must be a well-organized federal outreach program for consumer information on conservation and renewable energy investments. Some of the programs that began in this area have died—others still are not under way—Project Conserve and the Energy Extension Service in particular. Much greater attention needs to be given to this area.

Such programs must address all aspects of the problem, must include not only information about on the shelf technology but also systems that can be built by homeowners, co-operative groups, community projects. Passive design must be stressed and regional differences taken into account. Local demonstration of systems is of prime importance, of course; and it would be effective to provide assistance to municipal and state governments for such demonstrations on their public buildings much in the same way as the Administration proposes for Federal Buildings.

CONSUMER ACTION NOW RECOMMENDS: SOLAR INCENTIVES FOR
BUILDERS/DEVELOPERS

INDIRECT INCENTIVES CREATE A BETTER MARKET FOR SOLAR HOUSES

1. Activate a tandem plan to provide low-interest mortgages for buyers of solar homes.¹ This would encourage builders/developers because they would be more confident of a good market for the houses they build.

Tandem plan involves:

(a) Ginnie Mae (GNMA, or Government National Mortgage Association), which is part of HUD and is financed by federal funds.

(b) Fannie Mae (FNMA, or Federal National Mortgage Association), a mortgage investment corporation that is federally chartered but privately owned and managed.

Under a tandem plan for solar housing, Ginnie Mae makes a commitment to buy mortgages on solar-heated homes for 7½ percent or the current FHA interest rate, whichever is lower. Fannie Mae makes a commitment to buy these mortgages from Ginnie Mae at a price that will yield Fannie Mae the market rate of return on its investment.

In effect, for mortgages on solar houses, Ginnie Mae subsidizes the difference between the 7½ interest rate and the going market rate. (For details, see page 3.)

Results.

(a) Homebuyers are encouraged to buy solar houses because (1) they can get lower interest rates, and (2) fuel savings would result. See page 4 for estimated savings in 9 cities.

(b) Homebuilders and developers are encouraged to build solar since they know that the attractive interest rates and fuel-cost savings will make the houses easy to sell.

(c) The only cost to the federal government is the interest rate differential (at present about 1 percent) during the period when the solar house is owned by its initial purchaser, an average of about 8 years. Subsequent purchasers of the house would pay the regular market interest rates for their mortgages.

(d) Both Ginnie Mae and Fannie Mae, organizations with experience in past tandem programs, are active participants in a program that helps the U.S. save energy.

(e) No new administrative machinery is required.

DIRECT INCENTIVES GIVE FINANCIAL HELP TO BUILDERS/DEVELOPERS IF THEY
BUILD SOLAR

2. Make low-interest construction loans available to builders/developers who build solar-heated housing. Most regular construction loans are for relatively short periods of time (6-9 months) and earn relatively high interest rates (currently 10-15 percent per annum).

SOLAR TANDEM PLAN: HOW WOULD IT WORK?

1. Buyer of a solar-heated home would get a loan from a lending institution (savings and loan association, commercial bank or mortgage banker) for 7½ percent, a rate which today is approximately 1 percentage point below the current market for home mortgages.

2. Lending institution would then sell the mortgage to Ginnie Mae at face value. (The lender retains the loan-servicing function, which is profitable enough in itself to be an incentive for making the loan in the first place.)

3. Ginnie Mae may sell the mortgage or hold it. If Ginnie Mae decides to sell (usually at auction), the mortgage will be sold to the highest bidder, which may or may not be Fannie Mae. In past tandem programs, Fannie Mae has purchased a relatively minor share of the mortgages.

4. Fannie Mae would, however, be required to buy the mortgages from Ginnie Mae if other buyers do not come forward. The price paid by Fannie Mae would be below face value, and would be low enough to allow it to earn the market-rate yield on its investment.

5. Since tandem programs have been used before, no new administrative mechanism or experience would be required.

¹ Based on a suggestion by Norman Lutkefедder of FEA's Task Force on Solar Energy Commercialization.

HOW WOULD A SOLAR TANDEM PROGRAM AFFECT MONTHLY PAYMENTS AND FUEL SAVINGS IN RESIDENCES?

[Basic house: 1,500 ft², well insulated, 10 pct down payment, \$40,000 average national price]

City	Degree days ¹	Monthly payments (principal plus interest)		Additional monthly payment due to solar	Fuel savings per month ^{1, 3}
		Nonsolar house ²	Solar house ^{1, 3}		
Miami, Fla.....	214	\$289.89	\$280.82	\$9.07	\$1.20
Phoenix, Ariz.....	1,785	289.89	295.60	5.71	11.76
Charleston, S.C.....	2,033	289.89	306.69	16.80	13.63
New York City.....	4,871	289.89	347.33	57.44	55.62
Columbia, Mo.....	5,046	289.89	339.94	50.05	35.10
Manhattan, Kans.....	5,182	289.89	339.94	50.05	30.56
Burlington, Vt.....	8,269	289.89	380.59	90.70	98.84
St. Cloud, Minn.....	8,382	289.89	365.81	75.92	76.78
Bismarck, N. Dak.....	8,851	289.89	362.11	72.22	89.54

¹ Based on data in the Economics of Solar Home Heating, prepared for the Joint Economic Committee, Congress of the United States, Mar. 13, 1977. Detailed calculations available upon request. Total price of solar house varies from \$42,000 in Miami to \$57,500 in Burlington, Vt.

² \$36,000 mortgage (national average); 8½ percent interest for 25 yr.

³ 75 percent of heat supplied by solar system; 7½ percent interest for 25 yr.

⁴ Less.

⁵ Electric heat pump, 1977 rates.

CONCLUSION

In 5 out of 9 locations, fuel savings at today's prices (using electric heat pumps, which are least expensive alternative for new houses in most locations today) would more than cover the additional monthly payments required for the solar house.

In the other 4 locations, additional monthly payments exceed fuel savings by only \$1.82 to \$19.49. Buyer will have more valuable house, and if fuel prices increase at 10 percent per year (as assumed in the MITRE study, among others), fuel savings will take up this slack within 5 years or less.

Therefore: Tandem plan is a good idea. It will make solar mortgages very attractive to homebuyers, and will therefore be a strong incentive to builders and developers.

WHAT IS THE FEDERAL HOME LOAN BANK SYSTEM?

HOW CAN IT PROVIDE LOW-INTEREST LOANS TO SOLAR BUILDERS/DEVELOPERS?

FHLBS was created by act of Congress in 1932 to provide a source of secondary housing credit for the savings and loan industry. It is supervised by the Federal Home Loan Bank Board (FHLBB) and includes 12 Federal Home Loan District Banks. Each of these banks is owned by its members; included in the membership are all federally-chartered and over 2,000 state-chartered savings and loan associations, some mutual savings banks and a few life insurance companies.

There are two ways that the FHLBS structure could be used to provide low-interest loans to builders/developers:

(1) Pass legislation providing that S&Ls which make low-interest solar construction loans will be able to obtain those funds through their Federal Home Loan District Banks. The U.S. Treasury reimburses these District Banks for the income they lose when they provide the low-interest funds to the S&Ls. Congressional appropriations are required to pay the interest subsidies. Interest rate on S&L loans to be determined jointly by HUD and FHLBB.

(2) Issue an executive order mandating that the FHLBB shall borrow from the U.S. Treasury money that would be used exclusively as a revolving fund for low-interest construction loans to solar builders/developers. (FHLBB is authorized to borrow up to \$4 billion from the Treasury, subject to executive order. This capability has been used only once: \$1.5 billion for a temporary housing stimulus program in 1975. The \$1.5 billion has been repaid to the Treasury.)

Under this proposal, FHLBB borrows from the Treasury at the government rate, i.e., the rate of interest paid by Treasury when it borrows. (This rate is

currently about 5 percent for 6-month Treasury bills.) These funds are then made available to the 12 Federal Home Loan District Banks, which in turn lend them to their member S&Ls on condition that they (a) use the money only to make construction loans to solar builders/developers, and (2) charge an interest rate that is not more than 1% above the government rate. FHLBB adjusts this rate monthly (or more frequently, if desired) to reflect changes in the money market.

As the short-term construction loans are repaid, the revolving fund is replenished and the cycle continues.

Like other incentives proposals, this one should have a "sunset"—3-5 years, at which time the money in the revolving fund would be repaid to the Treasury.

Senator McINTYRE. As a homeowner, I think the utilities seem to be doing the best job on that. The little brochures they send with their bills, which is very readable. Just last week I made sure it didn't get thrown away and took it in and studied it. It showed the hot water heater, it showed what the real big users are.

Ms. LAWRENCE. I think there is a real opportunity to funnel new information through the utilities. As the FEA evaluates conservation measures, as ERDA develops and demonstrates new measures, that information should be disseminated. The utilities can be used for more sophisticated information than they are putting out now.

Senator McINTYRE. The effort seems fragmented to you?

Ms. LAWRENCE. Yes.

Senator McINTYRE. As an organization, are you primarily interested in solar, or the more exotic types of energy?

Ms. LAWRENCE. Our primary interest at this point is energy conservation, coupled with solar.

Senator McINTYRE. That is interesting, because yesterday and today we are having meetings with the small business people, and yesterday we talked about the well-head tax, the fact that the House was floundering around as to whether or not they were going to let that rebate go down the drain, and we wouldn't get the benefit in the areas that use a lot of heating oil. Time after time the people out in the field are telling us there are so many things that could be done to improve the operation of a home heating oil system. I don't quite understand what they are talking about, the flame, the size of the boiler, but you would think that industry would be hard at it to improve and make their boilers more efficient, make the whole process more efficient, but apparently they are not. And these people are not able to get their voices heard, they are not able to get through to ERDA at all.

One of the problems is ERDA doesn't know how to treat one man with an idea. I would hope you wouldn't let that get out of your sight either.

Now, Mr. Stanton.

**STATEMENT OF TOM STANTON, HOUSING RESEARCH GROUP,
CENTER FOR STUDY OF RESPONSIVE LAW, WASHINGTON, D.C.,
ACCOMPANIED BY CHARLIE DONALDSON, COUNSEL**

Mr. STANTON. Mr. Chairman, thank you for the invitation to testify today on part A of the National Energy Act. I am Thomas H. Stanton, director of the Housing Research Group, Center for the

Study of Responsive Law. With me is Charlie Donaldson, an attorney with our group.

We are pleased that the administration is serious about energy conservation. The President has set a goal of bringing 90 percent of American households up to minimum Federal insulation standards by 1985, and this is an impressive goal. But the administration has not done its homework. After last winter the problem is not to encourage consumer demand, but rather to assure we have the necessary supply of insulation materials.

In our written testimony, we make three basic points. First, to meet its goals, the administration must break the existing bottlenecks in production of insulation materials without increasing insulation prices to exorbitant levels.

Second, given that the primary bottleneck is in production, rather than distribution of insulation, and given the special need for quality control in a market of great demand and short supply, utilities should be used to provide quality control rather than actual sales or financing of insulation.

Third, the shortage of insulation materials at least until the end of 1978 provides an opportunity to devise an effective energy conservation program, including essential safety and consumer protection measures.

MR. STANTON. Mr. Chairman we would like to introduce into the record the testimony given by the National Bureau of Standards witnesses before other congressional committees and other materials to be printed.

Senator McINTYRE. Without objection it is so ordered.

[Complete presentation of Mr. Stanton follows:]

STATEMENT OF THOMAS H. STANTON, DIRECTOR, HOUSING RESEARCH GROUP*

Mr. Chairman, members of the Senate Banking Committee, thank you for the invitation to testify today on Part A of S. 1469, the National Energy Act.

The new Administration is impressive in its determination to act to conserve energy in American homes. The President has set the goal of bringing 90 percent of all American households up to minimum Federal insulation standards by 1985.

Our testimony will make three basic points: (1) To meet its goals, the Administration must break existing bottlenecks in production of insulation materials without increasing insulation prices to exorbitant levels; (2) Given that the primary bottleneck is in production rather than distribution of insulation, and given the special need for quality control in a market of great demand and short supply, utilities should be used to provide quality control rather than actual sales or financing of insulation; and (3) The shortage of insulation materials at least until the end of 1978 provides an opportunity to devise an effective energy conservation program, including essential safety and consumer protection measures.

I. THE NATIONAL ENERGY ACT MUST TAKE ACCOUNT OF SCARCITY AND HIGH PRICE OF INSULATION MATERIALS

Fiberglass insulation amounts to about 80 percent of home thermal insulation materials. As the Federal Trade Commission and other have pointed out, the fiberglass industry is highly concentrated, dominated by three firms.

In addition to fiberglass, cellulose insulation is also important. The Community Services Administration, for example utilizes cellulose in the low-

* Members of the Housing Research Group contributing to this testimony were Charlie Donaldson, Donaldson, Peter Maler, David Browne, and Curt Troutman.

income weatherization program. To serve as an insulating material, cellulose must be treated with a flame retardant, generally boric acid. Many observers point out the multiplicity of cellulose firms and ease of entry into the cellulose insulation market.¹ These observers neglect to point out, however, that the production of borates is concentrated in the hands of three firms, of which U.S. Borax occupies about 75 percent of the market.

Our brief survey of markets in California, Colorado, Virginia, and Georgia, reveals shortages of both fiberglass insulation and of the borates essential for cellulose insulation. If the Administration is to meet its home insulation goals—without artificially creating exorbitant prices for insulation—the bottlenecks in the fiberglass and borate industries must be broken. The Administration has failed to address this issue squarely.

A. The production of fiberglass (the most common home insulating material) is dominated by three companies

Three companies, Owens-Corning Fiberglass, Johns-Manville, and Certain-Teed, dominate the fiberglass industry. Owens-Corning is the largest, with about half of the domestic market, while Johns-Manville and Certain-Teed each have about 25 percent of the market. Because of difficulties in transporting fiberglass, imports are negligible.

As the Federal Trade Commission points out, there are serious barriers to entry into the fiberglass home insulation industry, including cost, competitive technology and technical know-how. The FTC quotes one potential entrant to the market, who calculated it would take about ten years and investment of about \$80 million for his company to develop the needed technology and enter the industry with one plant.²

The fiberglass industry is operating at or near full capacity. Our brief survey of the market indicates that in fact fiberglass insulation may already be unavailable to smaller users. Both industry and government observers agree that fiberglass producers will be unable to increase their production significantly before the end of 1978.³

Predictions of expansion of production after 1978 depend on at least two important assumptions. First, fiberglass production is dependent upon access to energy sources, and natural gas in particular. Stanley Matthews, President of the National Rock Wool Insulation Association, testified that 40 percent of the industry's capacity was shut down this past winter due to the natural gas shortage.⁴ The fiberglass industry cannot expand unless access to natural gas is assured, except on the basis of costly and time-consuming conversion to other energy sources.

The second assumption is even more important: Predictions of expansion of fiberglass capacity to meet sharply increased demand assume that fiberglass companies want to greatly expand capacity. The industry witnesses before the House Housing and Community Development Subcommittee themselves raised this issue.⁵ Excess production capacity plagued the fiberglass industry in the early 1970s. Industry has no desire to invest in greatly expanded capacity, only to face a sagging market a few years later (when the tax credit expires and the Administration reaches its 1985 retrofit goals). This fear of a temporary "surge" in demand for insulation products also deters potential market entrants from taking advantage of the Administration's program.

As the Congressional Budget Office points out:

"... manufacturers' will not want to build to meet a sudden demand and then have their factories idle after the demand is met. A more efficient strategy (from the producers' point of view) is to build capacity sufficient to satisfy the new demand over a period that corresponds to the useful life of the plants

¹ "Supply Response to Residential Insulation Retrofit Demand," submitted to the Federal Energy Administration by ICF Incorporated, June 17, 1977, p. 11.

² Testimony of Robert Reich before the Housing and Community Development Subcommittee of the House Committee on Banking, Finance, and Urban Affairs, May 25, 1977, p. 809 of the Hearings.

³ Testimony of Guy O. Mabry, Vice President of the Insulation Operating Division of Owens-Corning, and Stanley L. Matthews, President of the National Mineral Wool Insulation Association, Inc., before the House Housing Subcommittee, *Ibid.*, pp. 588 and 618; Report of the Council on Wage and Price Stability, p. 9. ICF Incorporated, in a report to the Federal Energy Administration, cites unnamed industry sources for a slightly more optimistic prediction, *op. cit.*, "Supply Response," p. 17.

⁴ Hearings, *Ibid.*, p. 619.

⁵ *Ibid.*, pp. 588, 618.

consumer with an idea of the quality of installation, and can also give the utility company an assessment of contractors' work. A method must also be devised to allow utilities a means of testing insulation for flammability and general conformity to safety and quality standards.

B. Given insulation production bottlenecks, utility companies should not provide installation and financing services to consumers

The Administration proposes that utility companies offer installation and financing of insulation as well as quality control. Given the dominant position of utility companies in the market of most communities (because of their unique direct access to all households), this anti-competitive step should not be taken unless there is a good reason.

The apparent justification for utilities to distribute and finance insulation (and other energy conservation measures) is that only the resulting extensive market coverage will allow the nation to meet energy conservation goals by 1985. We find this justification as yet unproven. Indeed, the impending bottleneck, as we have seen, is in production of insulation materials, not in distribution or financing. The Congressional Budget Office, staff of the Congressional Joint Committee on Taxation, and the Council on Wage and Price Stability all question the proposed insulation tax credit because of its stimulation of demand in the face of insufficient supply. The shortage of supply is accurately projected to the end of 1978; no evidence has been provided that the shortage will not continue, possibly fostered artificially by producers seeking to maximize profits in an oligopolistic market.

If the bottleneck is in production of insulation, and not in distribution, there is no sound reason to allow utilities to provide insulation and financing to consumers. This is especially true given the lack of evidence that utilities will in fact find distribution of insulation to be in their best financial interests, except at very high prices.

Finally, the utility as distributor destroys much of the value of the utility as quality controller if a utility has a stake in selling insulation, it has a stake in energy audit revealing great consumer need for insulation, as well as an interest that energy audits after installation reveal no defects in materials or workmanship. In short, the utility would certainly lose its valuable role as an independent controller of quality. So long as supply bottlenecks remain, the utility should promote conservation, but not actually sell or finance installation.¹³

III. THE PROJECTED SHORTAGE OF INSULATION MATERIALS PROVIDES AN OPPORTUNITY TO DESIGN AN EFFECTIVE ENERGY CONSERVATION PROGRAM, INCLUDING ESSENTIAL CONSUMER PROTECTION

A. The administration should mandate safety and effectiveness standards for insulation; the National Bureau of Standards must develop testing methods

The National Bureau of Standards (NBS) is currently studying possible side effects of a national insulation program: fire hazards, moisture, and material degradation. We attach for the Committee's consideration testimony prepared by NBS officials for other committees of Congress, in which these issues are raised.

The NBS Recommended Criteria for retrofit insulation materials¹⁴ are insufficient to protect the public against fire danger. As Jack Snell, manager of the NBS energy conservation program, has testified: "There are some presently marketed materials for which existing standards and test methods are not available or adequate."¹⁵

Foamed plastic insulation presents probably the most serious deficiency in the NBS "Recommended Criteria" fire safety requirements. Foamed plastics such as polyurethane and polystyrene can burn intensely once ignited and can produce significant amounts of flammable gases, toxic fumes, and smoke. When installed in an exposed fashion for non-insulation purposes, these plastics

¹³ The House Housing and Community Development Subcommittee has made a reasonable exception to this rule for rural utilities.

¹⁴ NBS, "Recommended Criteria for Retrofit Materials and Products Eligible for Tax Credit, NBSIR 75-795 (updated April 1977).

¹⁵ Testimony before the House Energy and Power Subcommittee, May 9, 1977.

have resulted in a number of fatal fires. The tragic 1970 dance hall fire in France in which 145 teenagers died is one notable example. Toxic gases from foamed plastic materials (used in the exposed cell padding) are believed responsible for the 42 deaths in the recent cell block fire in a Tennessee jail. Despite these known hazards, existing fire testing methods and standards do not adequately measure the fire safety of foamed plastic materials. NBS Acting Director Ernest Ambler has recognized this fact in recent Congressional testimony.¹⁶

For another example of inadequate safety criteria. Consider the question of permanency of fire retardants. The NBS "Recommended Criteria" for retrofit materials include the important caveat: "No general test method exists for evaluating the flame resistance permanency of all chemical retardant insulations."¹⁷ And even where a test method does exist, for example for cellulosic insulation, it may not assure adequate performances.

ERDA tests demonstrate that fire retardant additives often separate from the cellulose materials. Fully 13 of 19 analyzed samples of the fire retardant chemical had separated from the cellulosic matrix; quantities of the additives were found at the bottoms of the containers."¹⁸ Therefore there is a need for standards concerning permanency of flame retardant in all types of insulation, based upon tests of actual installation conditions.

To its credit, NBS publicly states the need for developing these (and other) test methods and standards for insulation materials. It is working with both industry and other government agencies to develop the necessary fire performance criteria. NBS has recently estimated that "[p]lanned studies can produce interim acceptance fire performance criteria in one year."¹⁹ In our view, however, NBS's one-year estimate is unduly optimistic unless Congress instructs NBS to place a far higher priority on developing the needed fire safety criteria.

In view of the potential fire hazard, we urge the Committee to make fire safety standards mandatory for insulation installed under the residential energy conservation plans.²⁰ We also urge a greatly accelerated NBS research program to develop testing methods and standards that will assure the permanent fire safety of all types of insulation. In this regard, it would be useful for the Congress to set a timetable for a series of progress reports from NBS, as well as a final deadline.

B. The administration should conduct a thorough evaluation of homes weatherized by the Community Services Administration, to assure that general standards of safety are met

In our interviews with Community Services Administration (CSA) weatherization program officials, we were impressed with their dedication. Yet the problems of fire safety with cellulose insulation appear serious enough to warrant an in-depth technical evaluation of the insulation provided by the CSA weatherization program. We urge this Committee to mandate such an assessment, and to call for a complete report to Congress within six months.

C. The administration should utilize the period of insulation shortage to devise an effective program for apartment buildings

The nation's 30 million rental units should not be ignored in the energy conservation program. Yet, the proposed conservation incentives are not well-suited to many apartment situations. The individual tenant has little enthusiasm for insulating a landlord's building, even with the tax credit. The landlord, on the other hand, is often able to pass energy costs onto tenants, and may have little incentive to insulate. Moreover, the energy conservation investment tax credit, available to commercial building owners, may be unenticing to landlords with large depreciation deductions or otherwise already sheltering taxable income.

¹⁶ NBS, "Outline of Talking Points for Dr. Ambler's Summary Remarks" (before the Subcommittee on Energy Conservation and Regulation, Senate Committee on Energy and Natural Resources, June 21, 1977), p. 2.

¹⁷ *Ibid.*, p. 11.

¹⁸ Survey of Cellulosic Insulation Materials." January 1977 (ERDA 77-23, UC-95d)).

¹⁹ NBS Acting Director before the Senate Subcommittee on Energy Conservation and Regulation, June 21, 1977, p. 8.

²⁰ At present, the Administration's National Energy Act leaves to the discretion of the Federal Energy Administration whether to mandate safety and effectiveness requirements for measures taken under the residential energy conservation plans. [See Section 102(b)(1)].

One proposed solution has been individual metering of tenants, to discourage energy consumption. Yet, while discouraging energy consumption, the meters will do little to promote improvements in the energy efficiency of the apartment building itself.

The Committee may wish to instruct the Administration to report on the implications of mandatory energy conservation standards for apartment buildings. If the relevant production bottlenecks are broken, and if mandatory standards are to be applied (as proposed by the House Energy and Power Subcommittee), apartment buildings may be a good place to start.

D. The administration should prepare a strategy for preventing shortages and price increases caused by the anticompetitive market position of important producers of energy conservation materials

While some producers of energy conservation materials apparently operate in a competitive market (for example manufacturers of storm windows and thermostats), others do not. Above, we have given the examples of the fiberglass and borate producers. Further research and the passage of time may reveal more.

Needed is a concentrated effort to assess possible bottlenecks in production and artificially high prices before they become the hallmark of the Administration's energy conservation program. Then there must be a careful and effective strategy for countering those problems, through anti-trust actions, by subsidizing entrants to the market, or other government actions. We urge this Committee to mandate development of such research and countermeasures, and to insist upon them before embarking on further incentives to increase consumer demand. If bottlenecks persist, much of the tax credit and other subsidies will flow out of consumers' pockets into the hands of the concentrated producing industry, and the Administration will be prevented from meeting its energy conservation goals.

OUTLINE OF TALKING POINTS FOR DR. AMBLER'S SUMMARY REMARKS
INTRODUCTION AND OVERVIEW

The National Bureau of Standards (NBS) supports the President's National Energy Plan and the energy conservation measures contained in the Committee print we are discussing this morning. We observe that uniform measurement technology, standards, and accurate technical information are essential bases for the millions of decision makers upon whose actions the very success of these measures depends.

The mission of NBS, expressed in its enabling legislation, is the development and use of measurement technology, standards, and data for the public benefit. Our laboratory and field researches support consumers, industry, and Government alike. We have had considerable experience in the area of energy conservation over the last six years. Much of what we have done is described in my written testimony, and with the Chairman's permission I would like to submit that for the record and briefly summarize a few points.

Each of the measures being discussed this morning—existing residential buildings, consumer products, schools and hospitals, and Federal buildings and operations—deals with a significant element of the national economy. The proposed conservation measures are based on technology of demonstrated effectiveness for saving energy. In general, the overall picture regarding standards for materials and installation practices is adequate. However, it is our general experience that whenever specific changes are made such as more or new insulation in housing, we have to be careful to avoid unintended side effects.

For example, again considering insulation, let me share our concerns with several side effects that could result from increased insulation requirements and use. These concern fire safety, moisture, and degradation.

The fire hazard due to exposed foam plastic insulation has been amply demonstrated in laboratory tests. The situation has been recognized and as a result all model building codes now require that foam plastic insulation materials installed in walls or ceilings of residences be covered with at least a half inch of gypsum board or its equivalent. However, the situation with respect to installation under floors, such as in basements or crawl spaces is not clear

and may require further remedial actions in codes and/or standards. Relevant to this, new test methods remain to be developed to replace the tunnel test procedures in the existing American Society of Testing and Materials (ASTM) Standards E-84 to accurately and adequately characterize the fire hazard of these materials.

Further, fire risks in a building can be increased significantly by almost any insulation material if improperly installed, for instance in contact with a source of heat. For example, the City of Denver has petitioned the Consumer Product Safety Commission (CPSC) to examine this hazard. They have cited 18 cases where they believe improper installation of insulation materials has caused fires. Also, the National Fire Incident Reporting System of the National Fire Prevention and Control Administration (NFPCA) reports a number of cases where insulation was the first material ignited in a chain of events leading to a fire.

A second possible side effect of these measures is potential moisture buildup and the requirement for greater protection against condensation by use of ventilation or vapor barriers. Otherwise, there are unwanted consequences of fungal growth, odors, and harmful effects to interior and exterior finishes and furnishings. A typical family of four in a three-bedroom house disperses into the air about 3 gallons of moisture a day. Obviously, serious damage and potential hazards to health can result if no provision is made for this moisture to escape.

Another example of unwanted consequences concerns material degradation. Our own studies of a particular foam insulation represent a good case in point. In situ measurements of this foam in the NBS test house showed a constant linear rate shrinkage over a period of 26 months and it had not leveled off. Total linear shrinkage at that time was 8.1 percent. Although this material had very low thermal conductivity when measured in the laboratory, under the conditions of shrinkage experienced in the field its effectiveness in use is seriously diminished.

We are presently working with the Federal Energy Administration (FEA), the Energy Research and Development Administration (ERDA), the Department of Housing and Urban Development (HUD), the Federal Trade Commission, the American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE), industry, State governments, model code groups, standards organizations, and others in addressing these technical issues and in developing the needed standards and implementation mechanisms such as model codes, test methods, field inspection tools, training materials, and so forth.

I do not regard these problems as insuperable. They will require the cooperation of many different groups which I am confident will be achieved.

This concludes my summary remarks. Thank you.

STATEMENT OF ERNEST AMBLER, ACTING DIRECTOR, NATIONAL BUREAU OF STANDARDS

Mr. Chairman and members of the subcommittee, thank you for this opportunity to testify here today on S. 1469, the President's energy proposal, known as the National Energy Act. I am accompanied this morning by Dr. Jack Snell, Manager of our Energy Conservation Programs at the National Bureau of Standards (NBS).

The National Bureau of Standards urges enactment of the President's energy conservation proposals as contained in the National Energy Act, and stands prepared to contribute significantly to their implementation.

Each of the areas under discussion this morning—existing residential buildings, consumer products, schools and hospitals, and Federal buildings and operations—deals with a significant element of the national economy. Effective implementation of the measures proposed by the President for these areas will require an intensified effort by all concerned.

By way of overview, I would like first to say a few words about NBS and the history of our involvement in energy conservation, and then review Parts A, B, C and G of Title I in light of our experience.

National Bureau of Standards.—Energy conservation has been a priority program at NBS for most of this decade.

NBS has developed, over a period of years, technical competences in many areas of technology germane to energy conservation. Specifically, these include building research, fire safety, and consumer products. NBS is chartered (15 USC 272) to provide technical bases for standards, performance criteria, measurement technology, and technical assistance to other agencies of Government—local, State, and Federal—to industry, and to consumers. NBS serves as the Department of Housing and Urban Development's (HUD) technical arm by Secretary-to-Secretary agreement; has a Memorandum of Understanding with the Energy Research and Development Administration (ERDA); and Interagency Agreements with the Federal Energy Administration (FEA), Community Services Administration (CSA), and the Department of Defense (DOD) for support of programs in energy conservation.

In FY 1977 we expect this program to be a roughly 150 work-year effort including some \$13 million, principally other agency funds.

PART A—ENERGY CONSERVATION PROGRAMS FOR EXISTING RESIDENTIAL BUILDINGS

Part A of Title I of S. 1469 is entitled Energy Conservation Programs for Existing Residential Buildings. Nearly 20 percent of the total energy used in the United States is for heating and cooling buildings. Many buildings needlessly waste as much as half of the energy they consume. Provisions aimed at reducing energy waste in buildings are essential elements of a comprehensive national energy policy.

I shall comment only on Subpart 1 of Part A entitled Utility Program. The Utility Program is built around the voluntary installation by residential utility customers of suggested "residential energy conservation measures." The success of this program will depend on the energy savings and cost-effectiveness of the suggested measures; the availability of standards and good installation practices to apply them properly and safely; and the availability of the technical data and other promotional and educational materials needed for communicating convincingly to the Nation's 74 million householders the personal benefits and national importance of their investing in these voluntary measures.

Effectiveness of Energy Conservation Measures.—Section 101 lists "residential energy conservation measures" from which the Administrator of FEA may by regulation suggest for buildings by category and location. All these measures have demonstrated effectiveness in reducing energy waste in existing buildings. For example, NBS has conducted a series of experiments on a wood frame residence here in Washington to evaluate actual energy savings from several of these measures. These included reducing air leakage through caulking and weatherstripping; adding storm windows; and installing insulation in the floor, ceilings, and walls. The addition of storm windows reduced heating energy requirements by 25.2 percent. The installation of insulation in the walls, ceilings, and floor reduced heating energy consumption by 33 percent. The total reduction in heating energy achieved by all stages of the retrofit on this house was 58.5 percent.

NBS has also conducted field studies of the furnace efficiency modifications specified in the Act. These studies on oil burners in New England showed fuel savings potentials of 14 percent from firing rate reductions with modifications made to burner installation and firing rate reductions to properly match heating requirements. NBS computer analyses have indicated energy savings ranging from 4 to 13 percent by substitution of automatic ignition for a pilot light in gas-fired furnaces. Energy savings of 4 to 8 percent are achievable by blanketing gas and electric hot water heaters with appropriate types of additional insulation.

With regard to another specified measure, the clock thermostat, NBS in 1973 measured energy savings of 10 percent from nighttime thermostat setback from 75°F (24°C) to 65°F (18°C) in a townhouse in our environmental chamber. Several computer studies and field experiences of others have shown similar findings.

These and other experiences attest to the effectiveness of the measures proposed in Section 101.

With regard to installation of solar components and systems, standards are being developed in the context of the National Solar Heating and Cooling Demonstration Program. Our laboratory and field studies confirm the statement made recently by Sheldon Butt, President of the Solar Energy Industries Association, that determined conservation efforts should accompany the development of solar energy for buildings. Obviously, smaller heating and hot water demands would require smaller and less expensive solar hardware.

The principal thrust of the President's program is to achieve major reductions of energy use in existing buildings between now and 1985. Nonetheless, the need for reduction of energy waste in new and existing buildings and the rise of energy prices are expected to continue through the end of the century. It will be very important to develop improved efficiency energy conservation measures and the criteria needed to assure their effectiveness. NBS is working closely with ERDA and others in this regard. We must assure that these programs do not discourage innovation. Guidelines or special provisions for innovative technologies need to be developed. We expect the FEA procedures for the Utility Program will take advantage of the potential benefits of these new technologies.

Applying the Technology: Availability of Standards, Know-How, and Practices.—As I pointed out earlier, the success of this program will depend upon how effectively the available conservation measures are applied. Do-it-yourselfers, contractors, technicians, architects, and engineers must have guidelines, procedures, and standards to apply these techniques successfully.

In assessing the state of the art in applying energy conservation measures it is convenient to consider four elements in the application of such measures. These are: (1) guidelines or standards to which materials or equipment are designed and manufactured; (2) the means an industry or the building community uses to be assured that materials and equipment produced meet these requirements; (3) the procedures and mechanisms to assure that energy conservation materials and equipment are properly installed and tested; and (4) adequate knowledge, practices, and test methods to assure the continued effectiveness of these measures over their useful lives.

NBS has been working with FEA, ERDA, and others for several years in addressing needs in each of these areas. Let me say a word about each of them relating this experience specifically to Section 102 of Part A. This section requires the Administrator to develop rules for the content and implementation of residential energy conservation plans defined in Section 101.

In anticipation of proposed legislation concerning retrofit tax credits in 1975, FEA requested NBS to recommend the criteria to be used for considering materials and products eligible for tax credit. As a result, in November of 1975, NBS published NBSIR 75-795, Recommended Criteria for Retrofit materials and Products Eligible for Tax Credit. There are several things I should mention about this report. It represents a snapshot of a rapidly changing situation in terms of materials standards and practices. NBS is presently under contract to revise and expand this set of criteria for the FEA weatherization program. The availability of the revised criteria for public review and comment has been announced in the Federal Register. Later this week NBS is holding a public meeting to review public and industry response to these criteria. These and other materials will be used in establishing a final suggested measures list to be published by FEA in developing the rules specified under Section 102 of the proposed legislation.

Unquestionably, available insulation materials and procedures can be used to meet much of the demand that will be stimulated by the President's goals. Existing standards are adequate for many of these materials, particularly certain types of mineral fiber, mineral cellulose, and organic fibrous materials as noted on Table 2 of NBSIR 75-795. Further, materials which meet the American Society of Testing and Materials (ASTM) standards for organic fiber and organic cellular insulations and which also conform to the fire safety requirements outlined in NBSIR 75-795 are suitable for use. Materials meeting these standards meet minimum requirements for heat flow resistance, fire safety, and quality.

Unfortunately, many currently marketed materials and insulation practices do not meet these requirements. Moreover, the fire safety recommendations in NBSIR 75-795 were not based on extensive test data and need to be evaluated.

For example, the fire hazard due to exposed cellular plastic insulation has been amply demonstrated at the University of California and the Underwriters' Laboratories among others, even for materials that pass the presently accepted flammability test. There have also been some fires involving loss of life in buildings resulting from exposed cellular plastics. Because of these fires and due to Federal Trade Commission (FTC) action, the foam plastic industry now recommends that cellular plastics be covered by a fire barrier equivalent to ½ inch of gypsum board. The model building codes have also been changed either to accept this prescription or to validate the use of the chosen material based on its performance in a room fire test.

There is a need to provide a technical base on which to establish the significant fire risks due to the installation of the various kinds of insulation in new and existing housing, to determine the laboratory test methods best suited to evaluate the material with respect to these hazards, and to specify the test criteria which the material must pass before it can be approved for insulation of buildings.

Insulation may increase the fire risk by (1) increasing ignition possibilities, including smoldering ignition; (2) contributing to fire growth in an enclosure; (3) providing a path for fire to spread throughout the building; (4) reducing the fire endurance of a fire rated wall if it is combustible; or (5) adding to the generation of smoke and toxic gases. The extent to which the insulation can potentially contribute to any of these hazards depends on the type of material, method of application, location, and whether it is exposed or protected. For example, cellulosic, glass fiber, and plastic foam insulation materials can undergo smoldering combustion. Underwriters' Laboratories currently recognizes this problem for loose fill shredded wood and paper materials, although no generally acceptable test method is available to determine this important property.

The main types of insulation that need to be considered are: (1) mineral wool, (2) glass fiber, (3) shredded wood and paper, (4) urea formaldehyde, (5) polyurethane, and (6) polystyrene. The material may be in any of the following forms: boards, blocks, sheets, blankets, batts, felts, loose fill (poured or blown), or foamed in place (poured or sprayed). The insulation may also have combustible or noncombustible facing. The insulation may be concealed or exposed.

Planned studies can produce interim acceptance fire performance criteria for questionable materials in one year. Presently, NBS scientists and engineers are working with ASTM Committee C-16, a special committee of the Building Research Advisory Board, and colleagues in FEA, ERDA, the General Services Administration (GSA) and industry in reviewing current standards and outlining efforts required to assure effective materials standards, test methods, and recommended practices are available for thermal insulating materials. This effort parallels and will contribute substantially to subsequent revision of NBSIR 75-795. Also in response to recent requests from industry, NBS is developing plans for a joint NBS/ERDA study of the thermal, fire, and durability performance of insulating materials. This program will include development of test methods and measured data on the response of various insulation materials to moisture and to degradation, and will provide performance criteria for innovative insulating materials and systems. Further, these efforts will involve development and use of facilities to produce data on the "as-built" performance of complete wall, floor, or ceiling sections. In November 1975, NBS published Building Science Series No. 77, a report on the Acoustical and Thermal Performance of Exterior Residential Walls, Doors, and Windows. This document reported laboratory tests conducted by Owens-Corning Fiberglas Corporation on thermal transmission, air leakage, and sound transmission losses of a limited number of full-scale wall sections. The planned studies will result in development of commercial test methods for all types of insulating materials and systems and their effectiveness in actual building elements.

NBSIR 75-795 presents criteria for the other energy conservation measures listed in Section 101 with the exception of furnace retrofit devices. Standards for these either presently exist or are under development, and should be available in time for reference in this program.

The next major area of concern in assuring effective application of energy conservation measures are the technical practices and institutional mechanisms for assuring that manufactured materials and products meet these standards. In the area of thermal insulation, industry has requested the Department of Commerce (DoC) to provide a program for the accreditation of testing laboratories that furnish technical data or facilitate certification for its products. Under its National Voluntary Laboratory Accreditation Program (NVLAP), DoC has published (March 10, 1977) its preliminary finding that a need for accredited laboratories exists in this area. The NVLAP process (15 CFR Part 7) would result in the establishment of criteria and procedures for laboratory accreditation within 15 months and with the expectation that most testing laboratories in this field would be accredited by DoC inside 2 years. NVLAP provides the means of effective implementation of standards and test methods and for their extension and improvement as operating experience is fed back to standards-writing bodies. NBS is presently exploring possible opportunities for acceleration of this program in helping the insulation industry respond responsibly in this critical period of greatly increased demand for their products.

Further, NBS is working with ASTM Committee E-06 and its Subcommittees in developing improved test methods for the thermal and air leakage performance of windows and as well for air infiltration in new and existing buildings.

The third important area of concern in assuring effective implementation of energy conservation measures is installation practices. Technical information on proper installation of most insulation materials is available. However, the effectiveness of most insulation materials is highly dependent upon how faithfully these procedures are followed in practice. There are few simple or effective mechanisms for field quality assurance of insulation effectiveness in retrofit. Installation of attic insulation can be inspected visually Bag or wrapper counts can be used to assure that appropriate quantities of material have been applied. However, exterior wall and often crawl space installations pose more difficult problems. Available thermographic techniques are costly. Heat flow meters are very time consuming and highly subject to operator error interpretation.

Under FEA sponsorship NBS has developed and FEA is soon to release a serviceman's guide for nozzle size modifications on oil burners. NBS and others have developed handbooks with suggested practices for a variety of others of the retrofit measures being considered. Further, the American Society of Heating, Refrigerating and Air Conditioning Engineers is developing a standard for energy conservation in existing buildings. I believe that document should include, at least, suggested procedures for installation quality assurance of energy conservation retrofit measures.

In the final analysis the most effective means of assuring satisfactory results from retrofit measures is the good name and integrity of the installing contractor.

The last major area in assuring effectiveness of energy conservation measures is actual in-service performance over the lifetime of the energy conservation measure. Most materials or products contained on the list of suggested measures in Section 101 have been in use for many years and a great deal is known about the durability and reliability of these items. This is not the case for innovative materials or new insulating systems or equipment. NBS will be working closely with FEA, ERDA, and others in developing performance measures and collecting laboratory and field data to assure that the intensive application of building retrofit measures in the coming decade does not itself stimulate major repair or re-insulation requirements.

Public Information and Education.—Data, illustrative examples, and general information and educational materials will need to be made available to building owners and occupants for their use in decisionmaking about these various energy conservation measures. Few people will be willing to invest or even apply for the incentives being suggested unless or until the benefits to them have been demonstrated clearly. This points to an essential need for measured data on actual achieved energy savings (and cost reductions) from installation of suggested energy conservation measures. We believe this is an area where the credibility of Federal information is extremely important.

Another important area of sensitivity in this regard is the information provided to building owners and occupants for their use in actual decisionmaking about these measures. I am referring specifically to the means used by homeowners in determining which combinations of these energy conservation measures makes most sense for his particular household or home. We have abundant data demonstrating the wide range of energy usage in identical dwellings resulting from differences in occupancy and behavioral patterns as well as the particular details of design and construction. Further, individual families will have their own preferences and comfort ideocyncrasies. Simple national or even regional prescriptive solutions may not be effective in meeting individual needs.

The NBS, HUD, and others have in recent years published documents aimed at consumers and intended for their use in making these decisions. Two specific examples are the NBS Consumer Information Series document, "Making the Most of Your Energy Dollars," and the HUD publication, "In the Bank or Up the Chimney." Further, FEA has experimented with a variety of other mechanisms for assisting homeowners in making choices about energy conservation measures.

PART B—ENERGY EFFICIENCY STANDARDS FOR CONSUMER PRODUCTS

Part B of Title I is entitled Energy Efficiency Standards for Consumer Products. It would amend Part B of Title III of the Energy Policy and Conservation Act (EPCA) to substitute reliance on voluntary efforts to meet industry-wide average energy efficiency targets for consumer products other than automobiles with a program of mandatory energy efficiency standards prescribing minimum levels of performance.

NBS has had considerable experience in the area of energy efficiency of consumer products. In late 1973, the Department of Commerce launched a program which sought the voluntary labeling for energy efficiency and cost of operation of major appliances by manufacturers. The program had been finalized for four appliances, room air conditioners, refrigerators, refrigerator-freezers, and freezers.

In 1975, the Department of Commerce, in addition to this labeling program, proposed energy efficiency targets to be voluntarily achieved by 1980.

The Department programs for voluntary labeling and voluntary compliance with energy efficiency standards were for all practical purposes terminated by the enactment of EPCA on December 22, 1975, which established a new program to be managed by FEA and FTC. At the present time we have provided FEA with test procedures for all products listed in EPCA except for furnaces and certain vented space heating devices which by nature are related to furnaces. They will be forthcoming soon. In all, taking into account that different test procedures are required for given products having different fuel sources, we have supplied about 30 test procedures.

FEA was given responsibility in the area of energy efficiency targets. Similarly, in the present efficiency target program we have supplied targets to FEA for the first 10 product areas, a total of 26 targets. We will supply them for the remaining 3 product areas in the near future.

Under EPCA as amended by P.L. 94-385, the Energy Conservation and Production Act (ECPA), the National Bureau of Standards was assigned a responsibility in addition to developing and recommending test procedures. That responsibility was to develop the energy efficiency improvement targets. While no final targets have yet been published, the EPCA maintains a target compliance date of 1980. This target date means that all tooling changes, design modifications, etc., necessary to produce products which could meet the voluntary standards would have to be in place by the end of 1979. Industry needs time to redesign, retest, and retool; three years not being uncommon. The delays caused by the enactment of EPCA and the absence of published final targets at this date make the time available for significant changes by industry to meet the energy saving requirements perilously close.

Further, it is essential that consumer demand for more efficient products, usually at a higher cost, be sufficient to warrant compliance with the voluntary efficiency improvement targets. No company would be willing to voluntarily produce products that it cannot sell.

Consumer demand can be enhanced by the labeling of consumer products that display their energy efficiency and cost of operation, thereby creating a market for more efficient products. Since no labels are yet available, this cannot be done and time continues to pass. For these reasons we feel the President's proposal for leaving the time schedule up to the Administrator and providing him with the option of including certain products is excellent.

The amendment to EPCA proposed by the President leaves intact the responsibility of NBS to provide FEA with test procedures. We welcome this continuing responsibility. We have been informed by officials at FEA that they will continue to use NBS assistance.

PART C—ENERGY CONSERVATION PROGRAM FOR SCHOOLS AND HOSPITALS

Part C of Title I is entitled Energy Conservation Program for Schools and Hospitals. It would amend Title III of the Energy Policy and Conservation Act by including a new part which provides Federal assistance for energy conservation retrofit of existing schools and hospitals through State energy conservation programs. There are very significant opportunities for energy savings in these types of institutional buildings. Schools and hospitals account for roughly 1/3 of commercial building energy use. Our own work gives some evidence of the potentials.

The list of energy conservation measures included in Section 391 of proposed Part C contains a number of important means for reducing energy use in such buildings. However, this is not an inclusive list. There are numerous other measures that could have as significant impacts on reducing energy use. NBS stands prepared to assist FEA in developing suitable performance criteria for the measures on the list as well as for other energy conservation measures States may wish to adopt.

Also, the FEA guidelines should include standards for general safety and effectiveness of suggested measures, standards for installation of these measures, and other such requirements as the Administrator determines to be necessary to assure the effectiveness of energy conservation measures included in State plans. We believe such provisions with respect to schools and hospitals are as important as such provisions are to residential applications (see Subsection 102(b) of Part A).

The American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) is developing a standard for energy conservation in existing institutional buildings (ASHRAE 100.5P). A draft for public review and comment is scheduled for publication in July. NBS would be pleased to assist FEA, ERDA, and others in reviewing and possibly adapting this standard for use or reference in the Administrator's guidelines.

PART G—FEDERAL ENERGY INITIATIVES

Part G of Title I is entitled Federal Energy Initiatives and contains proposals for energy efficiency in Federal buildings and operations. Certainly, the Federal Government should set an example in the use of new technologies such as solar heating and cooling, as well as other energy conservation measures. Subpart 3, entitled Demonstration of Solar Heating and Cooling in Federal Buildings, provides a mechanism for FEA to assist Federal agencies in undertaking solar heating and cooling demonstrations in their buildings.

We presume this program will be coordinated closely with ERDA's efforts in implementing P.L. 93-409, the Solar Heating and Cooling Demonstration Act. That program has already supported a number of Federal building solar heating and cooling demonstrations. This provision will extend that experience to embrace a broader number and range of such demonstrations.

Further, we assume that many of the products of and experience from the ERDA demonstration program would be useful to FEA in implementing this program. For example, several such demonstrations that we at NBS have been involved with include the GSA Demonstration Office Buildings in Manchester, New Hampshire, and in Saginaw, Michigan, and technical assistance to the Veterans Administration.

NBS has the responsibility, under P.L. 93-409, to develop definitive performance criteria for solar hot water, heating, and combined heating and cooling systems as part of the National Solar Heating and Cooling Demonstration

Program for ERDA and HUD. NBS has already produced interim criteria for solar hot water and heating systems and test methods for rating of solar collectors and storage devices. ASHRAE has just recently approved standards for the latter based on this NBS work. Further, NBS has developed interim performance criteria for solar heating and cooling systems in commercial buildings that should be useful to both FEA and other Federal agencies applying for assistance under this program.

NBS is prepared to support FEA in developing guidelines for this program and in providing technical assistance to FEA if requested in assessing the performance of demonstration systems. This may be important since a number of significant problems have occurred with several solar heating and hot water systems currently in operation.

Most of these problems involve durability/reliability. For example, five out of seven collector types being used to heat a commercial building at the National Aeronautics and Space Administration Langley, Hampton, Virginia, showed more than a ten percent deterioration in collector thermal performance after exposure (under "no-flow" conditions) for three to nine weeks. Other problems include outgassing of materials inside collectors which causes reduced heat output, glass breakage, and leakage in liquid systems; and the possibility of health and safety problems associated with toxicity or flammability of heat transfer fluids used.

Problems of this sort typically are encountered in the early phases of development of a new industry. Demonstrations such as this one are useful in shaking out these problems and developing effective standards and guidelines for practice for more rapid commercialization of new technologies.

SUMMARY

The principal thrust of my comments is that the proposed energy conservation measures are badly needed, they are of demonstrated effectiveness and, with prompt attention to certain inadequacies of available technology, they can be implemented to contribute substantially in meeting the President's goals for energy conservation. The National Bureau of Standards has solid competences in measurement and standards technology, particularly in the areas of building research, fire safety, and consumer products needed in resolving the technical problems I have identified. It will take intensified efforts on the part of all of us—Government, industry, and energy end users—to get this job done.

STATEMENT OF JACK E. SNELL, MANAGER, ENERGY CONSERVATION PROGRAMS,
INSTITUTE FOR APPLIED TECHNOLOGY, NATIONAL BUREAU OF STANDARDS

SUMMARY

The National Bureau of Standards (NBS) supports the Administration's proposals for energy conservation in existing buildings contained in the National Energy Act and can contribute significantly to their implementation.

The proposed conservation measures are based on available technology of demonstrated effectiveness. Provision can and should be made to encourage use of other available measures, and to stimulate innovation of even more efficient technology as well.

Effective application of available technology is essential. This requires, and my testimony reviews: (1) suitable materials and product standards, (2) means to assure marketed products meet them, (3) proper installation and quality assurance of retrofit measures, and (4) known or predictable life cycle performance of them in use. NBS has drafted for the Federal Energy Administration (FEA) and will shortly be submitting for public review and comment criteria for retrofit materials and products based on available standards and experience. The Department of Commerce National Voluntary Laboratory Accreditation Program will assist industry in meeting its responsibilities. NBS, the Energy Research and Development Administration (ERDA), and others are working with industry in meeting needs for installation quality assurance and continued effectiveness and durability of retrofit measures.

Householder decisions are key to program effectiveness. They have varied requirements for data on the need for savings from and alternative options

for retrofit and the choices they must make. Simplistic prescriptive solutions may not be convincing to them. The Department of Housing and Urban Development, FEA, the General Services Administration, ERDA, NBS, industry, and others are contributing to available literature in meeting these needs.

It will take intensified efforts by all of us to assure the success of the Administration's program.

STATEMENT

Mr. Chairman, members of the subcommittee, thank you for this opportunity to testify here today on the utility program and existing buildings energy conservation provisions of the President's proposed National Energy Act. "The cornerstone of National Energy Policy," as set forth in the President's National Energy Plan, "is that the growth of energy demand must be restrained through conservation and improved energy efficiency." Nearly 20 percent of the total energy used in the U.S. is used to heat and cool buildings. Many buildings needlessly waste as much as half of the energy they use. Provisions aimed at reducing energy waste in buildings are essential elements of a comprehensive national energy policy. The utility program, which is the principal focus of this hearing, is one of eight specific measures in this Act aimed at reducing waste of energy in existing buildings. These eight measures are tailored to motivate and responsibly assist building owners and occupants to act in their self interest as well as in the national interest through a variety of financial mechanisms and incentives. Each of these complementary measures can be met with available technology. The success of these efforts is dependent on effective application of this technology. These measures relate to the President's goals for 1985 of reducing the annual growth of U.S. energy demand to less than 2 percent, and insulating 90 percent of all American homes and new buildings. These goals can be met.

The National Bureau of Standards (NBS) has been active in building technology for many decades. As the Nation's standards and measurement technology laboratory, NBS has been working for most of this decade in developing data, performance criteria, and measurement technology directly related to the technical problems this program confronts.

The purpose of my testimony is to share with you the perspective we have developed on energy conservation technology for existing buildings. Specifically, I will use a set of criteria to demonstrate to you within the areas of our expertise that the Administration's program indeed offers a most effective means of reaching the stated goals. We fully recognize that there is a broad range of factors you must consider in reviewing a program such as this one. These would most certainly include the following:

1. Is the technology in hand to do the job?
2. Are there suitable standards, practices, and know-how available to effectively and safely apply this technology?
3. Are the data, testimonial evidence, general information, and educational materials available to communicate effectively to the Nation's 74 million householders and other building owners and occupants the information they must have to do their part in meeting the President's goals?
4. Are there sufficient industrial capacity and professional and skilled work power available to meet the goals by 1985?
5. Is there willing leadership and cooperation within both industry and government as well as effective organizational and institutional mechanisms in place to make these programs work?
6. Are there adequate mechanisms to stimulate and motivate building owners and occupants, industry and labor, and utilities to act in meeting these goals?

As a technologist and representative of NBS, I will speak to the first three of these criteria.

TECHNOLOGY FOR ENERGY CONSERVATION IN EXISTING BUILDINGS

The utility program, like most of the other 7 measures for existing buildings, is built around a list of "residential energy conservation measures." The measures cited in the proposed legislation include those which have demonstrated effectiveness in reducing energy waste in existing buildings. For example, NBS has conducted a series of experiments on a wood frame residence here in

Washington to evaluate actual energy savings from several of the retrofit measures suggested in the Act. These included reducing air leakage through caulking and weather stripping; adding storm windows; and installing insulation in the floor, ceilings, and walls. The addition of storm windows reduced heating energy requirements by 25.2 percent. The installation of insulation in the walls, ceiling, and floor reduced heating energy consumption by 33 percent. The total reduction in heating energy acquired achieved by all stages of the retrofit on this house was 58.5 percent.

Similarly, NBS has conducted field studies of furnace efficiency modifications on oil burners in New England. These studies showed fuel saving potentials of 14 percent from firing rate reductions with modifications made to burner air handling equipment and 30 percent from new burner installation and firing rate reductions. NBS computer studies in the appliance efficiency improvement and labeling program have indicated energy saving ranging from 4 to 13 percent by substitution of automatic ignition for a pilot light in gas-fired furnaces. Energy savings of 4 to 8 percent are achievable by blanket-gas and electric hot water heaters with appropriate types of additional insulation.

In 1973, NBS measured energy savings of 10 percent from nighttime thermostat setback from 75° F (24° C) to 65° F (18° C) in a townhouse in its environmental chamber. Several computer studies and field experiences of others have shown similar findings. Nighttime setback from 65° F (18° C) to 55° F (13° C) would result in slightly lower savings, particularly in very well insulated buildings.

We are presently conducting studies on our own buildings in Gaithersburg to obtain verification of computer predicted savings of some 20 percent of site energy use through the installation of computerized control systems to provide space conditioning only when and where actually required.

In addition to these and other evidences of the energy saving potentials of available technology there is an abundance of emerging or innovative materials, equipment, systems, and practices which offer potentials for similar or greater energy savings. Examples include residential electronic control systems, new foam insulations, insulated sheathings, and flat roof insulating systems. We expect the Federal Energy Administration (FEA) procedures for the utility program will take advantage of the potential benefits of these new technologies.

Also, there are a number of available energy conservation measures not presently included in the list in Section 101 of the utility program, or in the list in Section 1101 of the residential energy tax credit program. For example, NBS has demonstrated the energy cost effectiveness of retrofitting a frame residence with a heat pump to replace an obsolescent oil-fired furnace. Similarly, calculations suggest there may be numerous instances where replacement of electric central air furnaces will heat pumps may be desirable.

Technically from a householders viewpoint it makes little sense to separate and distinguish between energy conservation measures and solar energy installations in residences. Our laboratory and field studies confirm the statement made recently by Sheldon Butt, President of the Solar Energy Industries Association, that determined conservation efforts and the development of other alternatives should accompany the development of solar energy for buildings. Obviously, smaller heating and hot water demands would require smaller and less expensive solar hardware. It may well be that a number of the utilities in this program may wish to include solar and other non-listed energy conservation measures in their programs. Standards for solar components and systems are being developed in the context of the National Solar Heating and Cooling Demonstration Program.

Another possible addition to the list of suggested energy conservation measures would be the purchase and installation of residential ventilating fans. Many people find these fans to be a suitable substitute for air conditioning. In my own house in Washington we have been able to limit use of our central air conditioning system to only the hottest summer days. However, I should hasten to add that this procedure sometimes results in peak indoor temperatures of as high as 80° F (27° C) or more for short intervals yet, generally, we find it reasonably comfortable.

The principal thrust of the President's program is to achieve major reductions of energy use in existing buildings between now and 1985. Nonetheless, the need for reduction of energy waste in new and existing buildings and the rise of energy prices are expected to continue through the end of the century. It will be very important to develop improved efficiency energy conservation measures and the criteria needed to assure their effectiveness. NBS is working closely with the Energy Research and Development Administration (ERDA) and others in this regard. We must assure that these programs do not discourage innovation. Guidelines of special provisions for innovative technologies need to be developed.

APPLYING THE TECHNOLOGY: KNOW-HOW, PRACTICES, STANDARDS

As I pointed out earlier, achievement of the President's goals for saving energy in existing buildings will depend upon how effectively the available technology is applied. Do-it-yourselfers, contractors, technicians, and professionals must have guidelines, procedures, and standards to apply technology successfully.

In assessing the state of the art in applying energy conservation technology, it is convenient to consider four elements in the life cycle of a typical energy conservation measure. These are: (1) guidelines or standards to which materials or equipment are designed and manufactured; (2) the means an industry or the building community uses to be assured that materials and equipment produced meet these requirements; (3) the procedures and mechanisms to assure that energy conservation materials and equipment are properly installed and tested; and (4) adequate knowledge, practices, and test methods to assure the continued effectiveness of these measures over their useful lives.

NBS has been working with FEA, ERDA, and others for several years in addressing needs in each of these areas. Let me say a word about each of them relating this experience specifically to Section 102, which requires the Administrator to develop rules for the content and implementation of residential energy conservation plans.

In anticipation of proposed legislation concerning retrofit tax credits in 1975, FEA requested NBS to recommend the criteria to be used for considering materials and products eligible for tax credit. As a result, in November of 1975, NBS published NBSIR 75-795, Recommended Criteria for Retrofit Materials and Products Eligible for Tax Credit. Mr. Chairman, a copy of this report has been submitted for the record. There are several things I should mention about this report. It represents a snapshot of what is a fairly rapidly changing picture in terms of materials standards and practices. NBS is presently under contract to FEA to revise and expand this set of criteria as a part of its weatherization program. We expect to announce later this month in the Federal Register the availability of the revised criteria for public review and comment. At that time we will be happy to forward a copy of them to your Subcommittee. These and other materials will be used in establishing a final suggested measures list to be published by FEA in developing the rules specified under Section 102 of the proposed legislation.

Unquestionably, available insulation materials and procedures can be used to meet much of the demand that will be stimulated by the President's goals. Existing standards are adequate for many of these materials, particularly certain types of mineral fiber, mineral cellulose, and organic fibrous materials as noted on Table 2 of NBSIR 75-795. Further, materials which meet the American Society of Testing and Materials (ASTM) standards for organic fiber and organic cellular insulations and which also conform to the fire safety requirements outlined in NBSIR 75-795 are suitable for use. Materials meeting these standards meet minimum requirements for heat flow resistance, fire safety, and quality. There are some presently marketed materials for which existing standards and test methods are not available or adequate. NBS scientists and engineers are working with ASTM Committee C-16, a special committee of the Building Research Advisory Board, and colleagues in ERDA, the General Services Administration, and industry in reviewing current standards and outlining efforts required to assure effective materials standards, test methods, and recommended practices are available for thermal insulating

materials. This effort parallels and will contribute substantially to subsequent revision of NBSIR 75-795.

In response to recent requests from industry, NBS is developing plans for a joint NBS/ERDA study of the thermal, fire, and durability performance of insulating materials. This program will include development of test methods and measured data on the response of various insulation materials to moisture and to degradation, and will provide performance criteria for innovative insulating materials and systems. Further, these efforts will involve development and use of facilities to produce data on the "as-built" performance of complete wall, floor, or ceiling sections. In November 1975, NBS published Building Science Series No. 77, a report on the Acoustical and Thermal Performance of Exterior Residential Walls, Doors, and Windows. This document reported laboratory tests conducted by Owens-Corning Fiberglas Corporation on thermal transmission, air leakage, and sound transmission losses of a limited number of full-scale wall sections. The planned studies will result in development of commercial test methods for all types of insulating materials and systems and their effectiveness in actual building elements.

NBSIR 75-795 presents criteria for the other energy conservation measures listed in Section 101 with the exception of furnace retrofit devices which your Committee has already reviewed.

The next major area of concern in assuring effective application of energy conservation measures are the technical practices and institutional mechanisms for assuring that manufactured materials and products meet these standards. In the area of thermal insulation, industry has requested the Department of Commerce (DoC) to provide a program for the accreditation of testing laboratories that furnish technical data or facilitate certification for its products. Under its National Voluntary Laboratory Accreditation Program (NVLAP), DoC has published (March 10, 1977) its preliminary finding that a need for accredited laboratories exists in this area. The NVLAP process (15 CFR Part 7) would result in the establishment of criteria and procedures for laboratory accreditation within 15 months and with the expectation that most testing laboratories in this field would be accredited by DoC inside 2 years. NVLAP provides the means of effective implementation of standards and test methods and for their extension and improvement as operating experience is fed back to standards-writing bodies. NBS is presently exploring possible opportunities for acceleration of this program in helping the insulation industry respond responsibly in this critical period of greatly increased demand for their products.

Further, NBS is working with ASTM Committee E-06 and its Subcommittees in developing improved test methods for the thermal and air leakage performance of windows and as well for air infiltration in new and existing buildings.

The third important area of concern in assuring effective implementation of energy conservation measures is installation practices. Technical information on proper installation of most insulation materials is available. However, the effectiveness of most insulation materials is highly dependent upon how faithfully these procedures are followed in practice. There are few simple or effective mechanisms for field quality assurance of insulation effectiveness in retrofit. Installation of attic insulation can be inspected visually. Bag or wrapper counts can assure that appropriate quantities of material have been applied. However, exterior wall and often crawl space installations pose more difficult problems. Available thermographic techniques are costly. Heat flow meters are very time consuming and highly subject to operator error or interpretation.

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In the final analysis the most effective means of assuring satisfactory results from retrofit measures is the good name and integrity of the installing

contractor. In my opinion installer certification and/or warranty requirements would strengthen the utility program guidelines.

The last major area in assuring effectiveness of energy conservation measures is actual in-service performance over the lifetime of the energy conservation measure. Most of the materials or products contained on the list of suggested measures in Section 101 have been in use for many years and a great deal is known about the durability and reliability of these items. This is not the case for innovative materials or new insulating systems or other equipment. NBS will be working closely with FEA, ERDA, and others in developing performance measures and collecting laboratory and field data to assure that the intensive application of building retrofit measures in the coming decade does not itself stimulate major repair or re-insulation requirements.

PUBLIC INFORMATION AND EDUCATION

The third criteria I would like to address in supporting the proposed legislation relates to the need for data, testimonial evidence, and general information and educational materials available to building owners and occupants for their use in decisionmaking about these various energy conservation measures. Few people will be willing to invest or even apply for the incentives being suggested unless or until the benefits to them have been demonstrated clearly. This points to an essential need for measured data on actual achieved energy savings (and cost reductions) from installation of suggested energy conservation measures. We believe this is an area where the credibility of Federal information is extremely important. As we have indicated earlier, there is adequate testimonial evidence of the effectiveness of most of these energy conservation measures.

Another important area of sensitivity in this regard is the information provided to building owners and occupants for their use in actual decision-making about these measures. I am referring specifically to the means used by the homeowner in determining which combinations of these energy conservation measures makes most sense for his particular household or home. We have abundant data demonstrating the wide range of energy usage in identical dwellings resulting from differences in family size, age composition, and behavioral patterns as well as the particular details of design and construction. Further, individual families will have their own preferences and comfort idiosyncrasies. Simple national or even regional prescriptive solutions may not be effective in meeting individual needs.

The NBS, the Department of Housing and Urban Development (HUD), and others have in recent years published documents aimed at consumers and intended for their own use in making these decisions. Two specific examples are the NBS Consumer Information Series document, "Making the Most of Your Energy Dollars," and the HUD publication, "In the Bank or Up the Chimney." Further, FEA has experimented with a variety of other mechanisms for assisting homeowners in making choices about energy conservation measures.

SUMMARY

In summary we have suggested several criteria for reviewing the state of application in existing technology in achieving the President's goals for energy conservation in existing buildings. This review shows that in general these goals can be met. Intensified efforts by all of us involved with the application of technology in the building community will be required in assuring that these programs are successful.

These comments conclude my prepared statement. I would be pleased to answer any questions.

[News release]

COUNCIL FEARS PRICE INCREASE IN FIBERGLASS INSULATION

The Council on Wage and Price Stability fears that passage of legislation granting tax credits to encourage home insulation would place added pressure on an already tight supply of fiberglass insulation manufacturing for the next 18 months, unless the program is phased in gradually.

This concern is expressed in a study released by the Council today.

It is the view of the Council that production of fiberglass insulation could not be increased enough to meet rising demand in the next year if the legislation is approved without provisions to prevent production bottlenecks. There are few satisfactory substitutes for fiberglass in home insulation. Thus, the result would be that the chief beneficiaries of the tax credit this year would be manufacturers of fiberglass insulation. The Council has no quarrel with the idea that encouraging home insulation is necessary for the conservation of energy. Its concern is only in avoiding sudden price pressures in an industry already operating close to capacity.

Three firms produce 80 to 85 percent of all fiberglass insulation material: Owens-Corning, Johns Manville, and Certain-Teed. While two of the firms expect to have additional capacity available to produce insulating materials by the end of 1978, they are now operating near peak utilization.

According to the Council study, the demand for fiberglass insulation could increase as much as 50 percent if the full tax credit were immediately available. Right now, insulating manufacturers expect to increase their production 10 to 15 percent over 1976. However, private housing starts are expected to increase 20 percent this year and this will leave capacity extremely tight in the industry, even without passage of the measure.

The Council examined other options to increase the supply of fiberglass insulation and found them lacking. The possibility of switching the production of fiberglass textiles and plastic reinforcement plants to the production of fiberglass insulation products has been considered, but it is not possible to do so this year. The United States has imported only \$1.5 million worth of fiberglass materials, mostly from Canada. The Canadian plants are operating at capacity thus increasing imports cannot meet the expected demand. Finally, the manufacturers appear to have little, if any, excess inventory of their product.

A copy of the report is attached.

COUNCIL ON WAGE AND PRICE STABILITY,
Washington, D.C.

To: the members and adviser members of the Council on Wage and Price Stability.

Consistent with the Council's mandate to "review and analyze industrial capacity, demand, and supply . . . in various sectors of the economy," we have conducted a study of the adequacy of capacity in the fiber glass insulation industry. This study was initiated to ascertain whether adequate short-run supply increases would be available to meet an expected increase in the demand for fiber glass insulation products as a result of the various home insulation tax rebate bills now before the Congress.

The Report's findings indicate that the possibility of a shortage of fiber glass insulation products is real. Manufacturers of insulation products are currently utilizing their capacity at peak levels, and no additional capacity is scheduled to come on stream until the third quarter of 1978. Estimates of increased demand for insulation products resulting from a tax rebate law indicate a substantial shortfall in supply unless the tax incentives can be spread out or phased in gradually. Serious upward price pressures on fiber glass insulation products in 1977 could result from the immediate imposition of an insulation tax rebate.

This Report was prepared by James F. Mongoven, Senior Staff Economist, under the direction of Jack Meyer, Acting Assistant Director for Wage and Price Monitoring.

ROBERT W. CRANDALL,
Acting Director.

THE INSULATION MARKET

The market for insulation materials is of moderate size in the United States. Depending on definition and source, yearly sales of thermal insulation materials total between \$700 million and \$1,200 million.¹ Approximately two-thirds of insulation production is used in residential structures (Table 1). Most of the residual output is used to insulate industrial structures and machinery.

¹ Finding adequate and consistent statistics seems to be a particular problem in this industry. No trade association collects data, academic treatises are dated, and the government has no timely collection of data, except for wholesale prices.

Two nonmetallic mineral products account for the bulk of the thermal insulation market. The production of asbestos insulation products is less than \$200 million a year (Table 2). Approximately 90 percent of the asbestos insulation products used in the United States each year are imported and 90 percent of the imports come from Canada. Most of the asbestos insulation products are used in commercial and industrial applications.

Home thermal insulation products for ceilings, floors, and walls are almost entirely made from fiber glass materials. Some paper insulating products are available but questions have been raised regarding their reliability and safety.² These questions, along with the relatively small percentage of the market held by these products, make it impossible for cellulosic products to capture a significant share of the home insulation market in the next year to eighteen months. Thus, adequate substitutes for fiber glass insulation products are not available in the short run.

The focus of this paper is on fiber glass insulation products for the home. The Administration has proposed a tax credit for 25 percent of the first \$800 of home insulation expenditures and 15 percent of the next \$1,400. The passage of such a bill would presumably add some increment to the demand for insulation products as soon as the tax credit is available. The timeliness of the reaction of insulation suppliers to the increased demand then becomes crucial to determining the effect of the tax package. If there is a supply bottleneck in the production of insulation products, the loss in tax revenue will accrue to the producers of these materials in the form of higher prices, and no additional homes will be insulated. If additional supply is immediately available, then the tax program will have its intended effect of encouraging the insulation of more homes.

TABLE 1.—End use of insulation materials, 1975

Use	Percent
Structural.....	65.3
Industrial and equipment.....	32.3
Pipe and other.....	2.4

SOURCE.—Standard & Poor's, *Industry Survey*, 1976.

TABLE 2.—U.S. ASBESTOS INSULATION CONSUMPTION, 1971-75

[Dollar amounts in millions]

Year	Total consumption ¹		Domestic products		Imports	
	Thousands of tons	Amount	Thousands of tons	Amount	Thousands of tons	Amount
1971.....	812	\$92.3	131	\$12.2	681	\$80.1
1972.....	868	101.1	132	13.4	736	87.7
1973.....	942	115.2	150	16.3	792	98.9
1974.....	878	137.6	112	13.8	766	123.8
1975.....	637	125.2	99	14.2	538	111.0

¹ Exports were less than 70,000 tons in any year and have been ignored in these calculations.

Source: Department of the Interior, Bureau of Mines, Mineral Yearbook.

Structurally, the fiber glass insulation industry is a highly concentrated oligopoly. Table 3 shows the value of shipments and concentration ratios for the SIC four-digit mineral wool industry and the five-digit classification of mineral wool for home insulations. Mineral wool producers of industrial insulation show similar concentration levels. Almost all mineral wool products are fiber glass products, manufactured from molten glass.

² Federal Trade Commission, comments on National Energy Act Bill, "Macerated paper is not a viable substitute due to its inherent flammability." The Energy Research and Development Administration disagrees in a statement by Maxine Savitz, Director, Division of Buildings and Community Systems, "It is our position that cellulose produced under . . . [a strict quality control procedure] . . . is an acceptable thermal insulation in some applications."

TABLE 3.—MINERAL WOOL PRODUCTS

Year	Companies	Value of shipments (millions)	Percent of value of shipments accounted for by the largest—			
			4 firms	8 firms	20 firms	50 firms
SIC 3296—Mineral wool:						
1963	89	\$391.9	67	83	95	99
1967	77	454.4	71	84	95	99
1972	66	755.4	75	89	97	99+
SIC 32961—Mineral wool for structural insulation:						
1963	NA	107.7	77	88	98	100
1967	NA	119.8	85	93	99	100
1972	NA	364.3	88	97	100	100

NA—Not available.

Source: U.S. Department of Commerce, 1972 Census of Manufactures.

The five-digit concentration level understates the actual market shares commanded by the largest firms. The three largest fiber glass insulation producers—Owens-Corning, Johns Manville, and Certain-Teed—have 80-85 percent of the market.

The three largest firms had total sales of approximately \$3 billion in 1976.³ It is impossible to say what percentage of sales belongs to fiber glass thermal insulation products, but a rough estimate would be less than one-third. When the smaller firms are added in, the total market in 1976 was approximately \$1 billion. Table 4 shows the sales and profit figures for the three leading firms for the past five years. The figures show rather substantial sales growth in 1973 and 1974, as one would expect from companies that produce energy-saving products. The recession appears to have temporarily delayed the continuation of those high growth rates. In 1976, thermal and acoustical insulating products accounted for 58 percent of Owens-Corning's total sales; thermal insulation accounted for 31 percent of Johns-Manville's sales; and insulation products accounted for approximately 30 percent of Certain-Teed's sales volume.⁴ Eliminating Owens-Corning's acoustical products and Johns-Manville's asbestos products would give us an estimate of fiber glass thermal insulation sales. The available information only allows us to rank the largest fiber glass thermal insulation producers in the order: Owens-Corning, Johns Manville, and Certain-Teed.

The prices of fiber glass insulation materials varied in direction and magnitude with the same pattern seen in many other industrial products in the past five years. Table 5 shows the movement in wholesale prices of insulation materials and fiber glass insulation materials since 1971. The two price movements are similar. A small or nonexistent price increase was followed by double-digit increases in 1974 and 1975. Price increases moderated in 1976, but remain high by long run standards. (A comparison with all industrial products shows that the prices of insulation products have lagged the rest of the economy). The years 1974 and 1975 were an inflationary period for the entire economy and producers suffered severe cost pressures in those years. Fiber glass manufacturers were no exception. Fiber glass products are spun from molten glass, and the two principal raw materials in the manufacturer of glass—sand and soda ash—experienced wholesale price appreciation of 23.9 and 52.1 percent respectively, between December of 1973 and December of 1975.⁵ The 1974-1975 price increases cannot be explained in terms of demand pressures. The recession and the construction collapse of 1975 resulted in fiber glass insulation productive capacity being utilized at the 50-60 percent level during 1974 and 1975.⁶

³ Securities and Exchange Commission, 10K Reports.

⁴ Securities and Exchange Commission, 10K Reports.

⁵ Bureau of Labor Statistics, Wholesale Price Index.

⁶ Estimated by Standard & Poor's, Industry Survey, 1976.

TABLE 4.—SALES AND PROFIT FIGURES FOR MAJOR FIBER GLASS THERMAL INSULATION PRODUCERS, 1972-76

Year	Net sales (million)	Stockholders equity (million)	Net income (million)	Net income over net sales	Net income over stockholders equity
Owens-Corning Fiberglas:					
1972.....	\$615.3	\$309.8	\$35.8	5.8	11.6
1973.....	729.0	344.2	46.1	6.3	13.4
1974.....	828.5	364.3	34.7	4.2	9.5
1975.....	884.9	393.0	41.8	4.7	10.6
1976.....	1,079.2	455.5	71.8	6.6	15.8
Johns Manville:					
1972.....	796.3	477.7	49.3	6.2	10.3
1973.....	905.4	505.9	55.8	6.2	11.0
1974.....	1,105.5	561.4	50.6	4.6	9.0
1975.....	1,107.0	580.5	38.4	3.5	6.6
1976.....	1,309.0	672.0	53.4	4.1	7.9
Certain-Teed:					
1972.....	392.6	175.1	23.7	6.0	13.5
1973.....	476.2	198.3	25.2	5.3	12.7
1974.....	559.1	206.1	-7.4	-1.3	-3.6
1975.....	553.0	216.4	19.5	3.5	9.0
1976.....	665.0	245.7	36.6	5.5	14.9

Source: Securities and Exchange Commission, 10K Reports.

TABLE 5.—WHOLESALE PRICE INDEX—INSULATING MATERIALS, 1971-76
[1967=100]

Year	Insulation materials	Percentage change	Mineral wool, batts	Percentage change	All industrial commodities	Percentage change
1971.....	131.7	-----	130.8	-----	114.1	-----
1972.....	136.9	3.9	135.9	3.9	117.9	3.3
1973.....	137.4	.4	135.2	-.5	125.9	6.8
1974.....	156.5	13.9	154.6	14.3	153.8	22.2
1975.....	196.2	25.4	195.7	26.6	171.5	11.5
1976.....	212.3	8.2	211.3	8.0	182.3	6.3

Source: Bureau of Labor Statistics, Wholesale Price Index.

THE CURRENT SITUATION

The housing recovery and the continuing large price increase in all forms of energy have combined to form a high demand situation for fiber glass insulation materials. The utilization of fiber glass insulation capacity at the end of 1976 was at the 80-85 percent level.⁷ The three largest producers are currently operating at capacity levels and expect to continue to do so for the remainder of 1977.⁸ As expected in such a situation, pricing is strong, with increases of approximately 6-8 percent in the past three months on the West Coast and in the Rocky Mountain area.⁹

The production of fiber glass insulation can be increased 10-15 percent in 1977 due to the higher utilization of capacity and the extra capacity that can be squeezed out of a plant at peak production. This increased production will still leave capacity very tight in trying to accommodate the additional insulation demand that will result from a 20 percent increase in private housing starts.¹⁰

⁷ Estimated by Standard & Poors', Industry Survey, 1976.

⁸ Owens-Corning, Johns Manville, Certain-Teed, 1976 Annual Reports.

⁹ Engineering News Record, April 28, 1977 and Value Line, May 13, 1977.

¹⁰ Chase Econometrics and Data Resources, Inc., Monthly Forecasts, April, 1977.

An insulation tax credit law would result in an additional large increase in the demand for fiber glass products. Estimates of the number of persons who would attempt to take advantage of the tax credit suggest that one to six million households per year will be reinsulated.¹¹ The estimated tax revenue losses per year from the tentative insulation credit bills are: House version, \$300 million; Senate Finance Committee version, \$300 million; and Administration version, \$488 million.¹² The maximum tax credit from any of the tentative bills is \$410. Estimates of the cost of insulating an existing structure range from \$400 to \$800. Therefore, the tax revenue loss may be doubled or tripled to estimate the total additional consumer spending on insulation products attributable to the tax credit in 1977. Thus, the Administration's estimate of a \$488 million tax revenue loss could translate into roughly a \$1 billion increase in consumer spending. As mentioned previously, there is no product that is currently a good substitute for fiber glass for home insulation. A large portion of this extra consumer demand would accrue to this one billion dollar per year industry. We should mention that the are static estimates, based on current price levels. In physical terms, this extra consumer demand could range from 300 million to 1,200 million pounds per year (based on 300 pounds of insulation material per housing retrofit and one to four million jobs completed), which could add 12 to 48 percent to final demand in 1977.

Industry sources indicate that production can be increased 10-15 percent in 1977 with the current physical plant. Other sources of supply do not appear likely to make up the gap between supply and demand that would occur if the tax program is enacted. It takes a minimum of 18 months to expand capacity at a fiber glass insulation plant and 36 months to construct a greenfield plant.¹³ Fiber glass producers have been heavy spenders on capacity additions since 1973. Owens-Corning doubled fiber glass insulation capacity between 1970 and 1976, but it has no scheduled increase in physical capacity at present. However, Owens-Corning expects to be able to increase production by 5 to 8 percent per year the next few years due to greater operating efficiencies.¹⁴ Johns Manville has committed \$200 million to increase fiber glass insulation capacity in the next four years by adding to 10 existing plants and building one new plant, which should result in a doubling of capacity. However, no new capacity will be available until late 1978.¹⁵ Certain-Teed is also building a new insulation plant, but does not expect to begin production until the fourth quarter of 1978 at the earliest.¹⁶ The Council estimates 1977 industry capacity to be 2.3-2.5 billion pounds. The three largest firms plan to increase their capacity by 40 percent by 1980.¹⁷ If the rest of the industry expands at the same pace, productive capacity will be 3.2 to 3.4 billion pounds at the end of 1980. However, no new physical capacity will be available until the end of 1978.

The possibility of switching the production of fiber glass textiles and plastic reinforcements plants to the production of insulation might be considered, but technological considerations apparently make this option infeasible. Insulation production requires a different and more complicated technological process than other fiber glass production, and also a larger plant is required in order to achieve a minimum efficient size. The conversion of a fiber glass textile or plastic plant to insulation production would produce no time advantage over the expansion of an existing insulation plant.

Imports of fiber glass insulation have never been large, accounting for less than \$1.5 million in 1976.¹⁸ Canadian insulation plants are currently operating at the same capacity levels as U.S. plants and cannot be a ready source of new supply.

¹¹ The Congressional Budget Office uses 1 million households per year as their low estimate of compliance and 4 million as their high estimate. The Federal Energy Administration estimates that 6 million households per year would reinsulate. The FEA also estimates that 18 million single family homes in the United States are inadequately insulated.

¹² Benjamin Okner, Congressional Budget Office, Tax Credit for Home Insulation and John Pierson, "Tax Credit for Home Insulation Is Cleared in Narrow Vote by Ways and Means Panel," Wall Street Journal, June 8, 1977.

¹³ Owens-Corning testimony before Housing Banking Committee, May 27, 1977.

¹⁴ Owens-Corning, Annual Report, 1976.

¹⁵ Johns Manville, Annual Report, 1976.

¹⁶ Certain-Teed, Annual Report, 1976.

¹⁷ Confidential data supplied to the Council.

¹⁸ U.S. Department of Commerce, Schedule A Imports, 1976.

Increased supply from inventories will likewise be unavailable in 1977. Table 6 shows the dollar value of inventories for the large producers over the past three years. These are company inventories; therefore, they include more than fiber glass insulation products. They are used here as the best available proxy for fiber glass inventories. Despite substantial price increases, the dollar value of inventories has edged downward for the three large producers as a group. Thus, it is apparent that these firms have been reducing inventories substantially. There is no evidence of withholding finished products in anticipation of higher prices.

TABLE 6.—TOTAL INVENTORIES OF ALL PRODUCTS FOR FIBER GLASS INSULATION MANUFACTURERS, 1974-76

[In millions of dollars]

	Owens- Corning	Johns Manville	Certain- Teed	Total
1974	88.3	160.7	79.3	328.3
1975	81.3	145.5	80.4	307.2
1976 ¹	80.3	144.4	86.6	311.3

¹ As of December 31.

Source: Value Line, May 13, 1977.

SUMMARY

In the short run, there is no source of readily available increased supply of home insulation products to accommodate a large increase in demand. Over time, substitute products might be developed, and within 18 months new sources of fiber glass insulation will be available. In the interim, only modest demand increases can be accommodated without creating inflationary pressures. If the increased demand from tax inducements to retrofit existing homes with insulation can be spread out or phased in, these inflationary pressures will be avoided. Moreover, the spreading of this increased demand over a few years will provide a more secure climate for new investment and would therefore be more likely to induce capacity expansion.

BUREAU OF MINES
Preprint from BULLETIN 667

BORON

A Chapter from
Mineral Facts and Problems,
1975 Edition

Latest information is published annually in **MINERAL INDUSTRY SURVEYS** on "Boron" available free upon request from the Publications Distribution Branch, Bureau of Mines, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.



UNITED STATES DEPARTMENT OF THE INTERIOR

BORON

By K. P. Wang¹

Virtually all U.S. boron production and about three-fifths of the world production comes from bedded deposits and lake brines in California (3, 6)². Although U.S. reserves are adequate to support designed production levels, borates became scarce in 1973-74, mainly because of the sharp increase in demand for boron-containing glass wool for insulation that was created by the energy shortage (2). Subsequently world demand eased somewhat because of the general decline in economic activity in 1975. A foreign-based company that has its major production facilities in the United States accounts for a large percentage of world production. This company has initiated a program to expand production by one-third in a few years.

Turkey, the only boron-producing country of great significance besides the United States, is likely to gain importance as a competitor for international markets. Turkey completed two new beneficiation plants in recent years, and is building a downstream facility to produce refined sodium borates. Future world trade patterns may change somewhat and favor increased imports from Turkey into the United States. Over the long term such competition will tend to stabilize prices rather than greatly affect U.S. production and consumption growth rates. However, U.S. boron compound exports, which comprise about half of the overall production, may be reduced in the future.

The possibility of employing boron and boron compounds as substitutes for other substances that are less abundant or more costly, or that promise better performance, has inspired much research in both the producing and potential consuming sectors. This interest is expected to be sustained without added incentives.

INDUSTRY STRUCTURE (1)

Compounds of boron were used for many centuries before the element was identified as such. Three chemists, Joseph Louis Gay-Lussac and Louis Jaques Thenard of France and Sir

Humphrey Davey of England, discovered the element almost concurrently in 1808 (4).

Borax, the most common boron compound, was first used by Asian artisans for welding and brazing precious metals and for glazing pottery. Importation of Tibetan borax into Europe in the 13th century was the start of the modern trade in boron compounds. Around the 1750's, sassolite or boric acid (H_3BO_3) was discovered in the hot springs of Tuscany, Italy, and by 1828 this became the world's main source of boric acid. Mining of borax began in Chile in 1852, and soon thereafter that country became the principal world producer. At that time the chief use for borax was for pharmaceutical purposes.

Borax production in the United States began in 1864 when crystals were recovered from certain mineral springs and lakes north of San Francisco (6). In 1870, "cottonball" (ulexite) was found in quantity on the arid lake beds of Columbus Marsh, Nevada. Soon after, the Searles Lake deposits were discovered in California. Between 1887 and 1907, colemanite from the Calico Mountain district of California was worked. In 1913, colemanite was discovered in Kern County. Subsequent deep drilling revealed extensive sodium borate deposits in the area of the county now called Boron. Underground mining began here in 1927, and conversion to open pit operations followed in 1957. U.S. Borax & Chemical Corp.'s Boron pit now produces nearly half of the world's borates, and plans to increase output by about one-third in three or four years.

Size, Organization, Geographic Distribution (8)

Three companies produced borax in the United States during 1975, all operating in southern California. U.S. Borax & Chemical Corp., by far the most important producer, mined borax (or tinal) and kernite at a large

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²Italicized numbers in parentheses refer to items in the list of references at the end of the chapter.

Table 1.—World boron production, 1973, and capacity, 1973, 1974, and 1980¹

	Production in 1973	Capacity		
		1973	1974	1980
Western Hemisphere:				
United States	207,000	210,000	220,000	250,000
Argentina	10,000	10,000	10,000	15,000
Chile	0	0	0	5,000
East Europe: U.S.S.R.	40,000	40,000	40,000	60,000
Asia:				
Turkey	80,000	90,000	90,000	130,000
People's Republic of China	5,000	5,000	5,000	20,000
World total	342,000	355,000	385,000	480,000

¹ Except for the United States, estimates on other countries denote only a general order of magnitude.

open pit mine at Boron. Previously, U.S. Borax had mined colemanite from the Gerstley underground mine and ulexite from the De Bely mine, both in Inyo County. U.S. Borax also owns and operates refineries and products plants at Boron in Kern County, at Wilmington in Los Angeles County, Calif., and at Burlington, Iowa.

Kerr-McGee Chemical Corp., which took over Stauffer Chemical Co.'s nearby Westend plant in late 1974, extracted borax, soda ash, and sodium sulfate from Searles Lake brines. In addition, Kerr-McGee was producing coproducts such as lithium carbonate, potassium sulfate, potassium chloride, and even bromine. Kerr-McGee was also building a new soda plant at Trona (the existing plant site), although additional borates will not necessarily be produced. In 1970 Tenneco Oil Co. became the newest producer when it opened up a colemanite mine near Ryan, Calif., and a calcining plant north of Death Valley Junction in nearby Nevada.

Prior to 1968, U.S. Borax was a direct subsidiary of the British-registered firm Borax (Holdings) Ltd., which subsequently was taken over by the Rio-Tinto Zinc Corp. (RTZ). Through this purchase and others, Rio-Tinto gained control of most of the major market economy boron operations because the firm also obtained an 80-percent interest in the Turkish, Turk Boraks Madencilik, which discovered the extensive deposits of tincal in the Kirka area around 1964. The Turkish Government subsequently canceled previously issued exploration permits, with the thought of possibly working the Kirka area under Turkish auspices. Rio-Tinto further maintains controlling interest in various other organizations and facilities as follows: Borax Francais, S.A., with refining and marketing facilities at Coudekerque, France; Boroquimica Limitada, with mining facilities in the Andes and refining facilities in the lowlands of Argentina; refining plants in London, Belvedere, and Chesington,

United Kingdom; a refining plant in Barcelona, Spain; a refining plant in Stadlau, Australia; and other facilities in West Germany and Belgium.

Much of Turkey's boron operations are under the Government corporation Etibank. A large washing plant was recently completed at Hisar-cik to process colemanite, and another large washing plant was being constructed to upgrade tincal from Kirka. Etibank was also planning to construct a large new refining plant to produce numerous boron products.

Definitions, Grades, Specifications

Many minerals contain boron, but only a few are commercially valuable. The principal boron minerals are tincal, $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$; kernite, $\text{Na}_2\text{B}_4\text{O}_7 \cdot 4\text{H}_2\text{O}$; colemanite (borocalcite), $\text{Ca}_2\text{B}_6\text{O}_{11} \cdot 5\text{H}_2\text{O}$; ulexite (boronatocalcite), $\text{CaNaB}_5\text{O}_{13} \cdot 8\text{H}_2\text{O}$; priceite (pandermite), $5\text{CaO} \cdot 6\text{B}_2\text{O}_3 \cdot 9\text{H}_2\text{O}$; boracite (stassfurtite), $\text{Mg}_2\text{Cl}_2\text{B}_{10}\text{O}_{20}$; and sassolite (natural boric acid), H_3BO_3 .

Borax pentahydrate ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 5\text{H}_2\text{O}$) and its derivative anhydrous borax ($\text{Na}_2\text{B}_4\text{O}_7$) are the most common refined borates manufactured. These could be superpure (such as "technical" and U.S.P. grades), very pure (99.5-percent purity or better), or slightly impure. Actually, more slightly impure or "crude" borates are produced than very pure borates. U.S. Borax calls its crude pentahydrate rasorit 46 and its crude anhydrous borax rasorit 65. Most of the company's rasorit 46 is sold abroad. Lesser quantities of borax decahydrate ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$) are also produced in the United States, mostly in the pure form. All these products can be in the crystalline, granular, or powder forms.

Some of the impure borates of various forms are made into boric acid (H_3BO_3) or its anhydrous derivative boric oxide (B_2O_3). Boric acid is a colorless, odorless, crystalline solid sold in

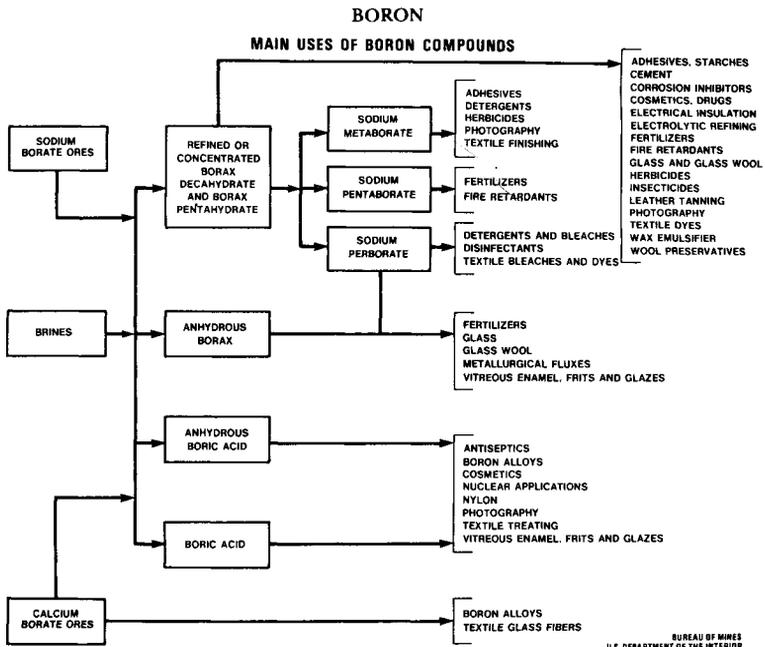


Figure 1.—Main uses of boron compounds.

technical U.S.P. and special-quality grades. It is also available in crystalline, granular, or powder forms. Boric oxide is a hard, brittle, and colorless solid resembling glass.

The B_2O_3 contents of various boron-containing minerals follow, in percent: borax decahydrate 36.5; borax pentahydrate 47.8; anhydrous borax 69.2; boric acid 56.3; boric oxide 100; and colemanite 50.8. Boron content of B_2O_3 is 31.1 percent.

Elemental boron is a black or brownish powder in the amorphous form and a black, hard, brittle solid in the crystalline form. It melts at about $2,300^\circ C$ and has an atomic weight of 10.82. Boron is marketed in several grades ranging from 90 to 99+ percent purity.

Ferroboration is a boron iron alloy containing 0.2 to 24 percent boron. The alloys are marketed in various grain sizes.

Typical of the boron hydride series of compounds are diborane (B_2H_6), a gas; pentaborane (B_5H_9), a liquid; and decaborane ($B_{10}H_{14}$), a solid. Heating values of these compounds range from 31,200 British thermal units per pound for diborane to 29,200 for decaborane.

Boron nitride (BN) is a white solid with a waxy surface which crystallizes in thin hexagonal plates somewhat analogous to graphite. It withstands temperature to $850^\circ C$ in inert environments. Produced in fiber form, boron nitride equals glass fibers in strength and modulus values while being lighter and much more resistant to high temperatures. When subjected to extremely high pressure and temperature, boron nitride crystallizes in the cubic form. Its hardness rivals that of diamond.

Boron carbide (B_4C) is produced by reacting coke and boric oxide at $2,600^\circ C$. The product, which is about 99 percent pure, is one of the hardest substances known.

USES AND CONSUMPTION (5)

U.S. consumption of boron compounds, measured in terms of B_2O_3 , was about 333,000 tons in 1974. Two-fifths or more of the boron compounds consumed were used in the manufacture of various kinds of glasses within the United States. Boron materials account for 5 to 10 percent of many special glasses by weight and

50 to 75 percent by value. About 15 percent of all boron consumed went into insulating fiberglass, 10 percent into textile fiberglass, and 15 to 20 percent into all other glasses. The energy shortage has created a further demand for insulating fiberglass. Manufacture of enamels, frits, and glazes for protective and decorative coatings on sinks, stoves, refrigerators, and many other household and industrial appliances accounted for another 10 percent of the boron consumption. Approximately one-sixth of the boron compounds consumed in the United States went into soaps and cleansers.

Possibly 5 percent of boron used went into agriculture and another 2 to 3 percent into herbicides. Minor amounts of boron compounds were consumed as fluxing materials in welding, soldering, and metal refining. Some elemental boron was used as a deoxidizer in nonferrous metallurgy, as a grain refiner in aluminum, as a thermal neutron absorber in atomic reactors, in delayed-action fuses, as an ignitor in radio tubes, and as a coating material in solar batteries. Use of boron compounds in abrasives gained ground, particularly cubic boron nitride produced by synthetic diamond producers. Use of boric acid as a catalyst in the air oxidation of hydrocarbons accounts for possibly 1 to 3 percent of boron consumption. Boron materials also went into direct consumption in chemicals, conditioning agents or precursors to chemicals, plasticizers, adhesive additives for latex paints, fire retardants, antifreeze, textile and paper products, biocides in jet fuels, photography, and composite materials. Figure 1 illustrates the many end uses of various boron chemicals.

Western Europe consumed possibly 500,000 tons of equivalent B_2O_3 . West Germany, France, the United Kingdom, Belgium, Italy, and the Netherlands were the leading consumers. Virtually all the supply came from the United States and Turkey. The West European pattern of boron consumption has been slightly different from that of the United States. For example, sodium perborate detergents used primarily in high-temperature washing account for more than a quarter of all boron consumed, whereas this particular use is only about 5 percent in the United States. Use in insulating fiberglass has been less than 10 percent of the total in Western Europe, textile fiberglass possibly 5 percent, and borosilicate glass (for example, for Pyrex) perhaps 10 percent. On the other hand, use in enamels and ceramics has been nearly one-fourth of the total.

Japan's consumption of borates and boric acid (roughly 100,000 tons of B_2O_3 annually), imported from the United States, Turkey, and the

Table 2.—World boron reserves

(Million short tons of boron content)	
	Reserves ¹
North America:	
United States: California	20
South America:	
Argentina	5
Chile	5
Europe: U.S.S.R.	20
Asia:	
Turkey	20
China	10
World total	80

¹ Order of magnitude only.

U.S.S.R., has been about equal to that of West Germany, the leading consumer in Western Europe, and is increasing. Consumption of borates by the U.S.S.R. may be about 100,000 tons of equivalent B_2O_3 per year, and the country has had a surplus for exports. Other countries consume only a small part of the world's borates.

RESERVES—RESOURCES

U.S. reserves of boron minerals are fairly well known. Virtually all the domestic reserve is in California, the primary deposit is at Boron, and other deposits occur at Searles Lake and in the Furnace Creek district of Inyo County. Also, the waters of the Great Salt Lake, Utah, analyze 20 to 35 parts per million of boron. Reserves of sodium borate in the deposit at Boron are over 100 million tons of 25- to 40-percent B_2O_3 ore. Searles Lake reserves can support an annual production of 100,000 to 200,000 tons of contained B_2O_3 in the form of sodium borates indefinitely. Furnace Creek has calcium borates, and ore reserves may be several tens of million tons.

Turkey's reserves of boron minerals apparently are at least as large as U.S. reserves, and perhaps much larger. Calcium borate (colemanite) ore reserves in the Emet district exceed 10 million tons, and sodium borate ore reserves in the Kirka district of Eskisehir are many tens of million tons, if not hundreds of million tons. Commercial quantities of colemanite also occur in the Bigadic and Bursa areas.

Borate ore reserves in the U.S.S.R. may be on the same order as those of the United States. Several dozen deposits have been discovered in the Inder district, 150 miles north of the Caspian Sea, and in Kazakhstan, in the Caucasus, and near Lake Baikal.

South-central China, northern Tibet, and Tsinghai in China possess semidry playa lakes which yield moderate supplies of borates. One important example is the Iksaydam Lake area of

the Tsaidan basin of Tsinghai Province. Borate mineralization is fairly widespread in northwestern Argentina; the most important location is Tincalayu in the Salta region of the Salar del Hombre Muerto basin. Chile has a ulexite deposit at Salar de Ascotan in western Antofagasta Province.

Geology

The large Kramer deposit at Boron is a high-grade, predominantly crystalline tincal ore body overlying kernite. Mineralization occurs in a flat-lying irregular tubular mass 2 miles long, half a mile wide, and 80 to 250 feet thick. The deposit was formed in a Miocene lake, fed in part by thermal streams. Fairly pure borax was deposited in alternating sequences with clays and siltstone. Overburden consists mainly of layers of shale, sandstone, conglomerate, and tuffs. Secondary kernite is derived from "borax" or tincal.

The Searles Lake deposit formed in Pleistocene times is 41 square miles in area and comprises a 75-foot upper layer, 12 feet of impervious mud, and a 35-foot lower layer. Two-fifths of the beds consist of voids which are permeated by saturated brines analyzing 3 to 4 percent each of soda ash and sodium sulfate, and 16 to 17 percent plain salt, with contents varying according to the layer.

The Furnace Creek deposits have both ulexite—the primary mineral containing sodium as well as calcium borates—and colemanite, the secondary mineral from which sodium has been leached out. Massive faults occur in the area, and beds of up to 40 feet can be very steep. Ore bodies can also be fairly flat or somewhat tabular, occurring both near the surface and at considerable depths underground.

Theories on the geologic origin of Turkey's colemanite and tincal deposits vary from area to area. However, the major host rocks for the borate mineralization are shales, marl, and to a lesser extent, bentonite, volcanic tuffs, and limestone. The Bigadic deposits may have been formed by boron-rich exhalations associated with Tertiary volcanic activity, and deposits in the Emet and Kirka areas appear to have been formed from saturated brines together with accompanying shales.

The Indar deposits of the U.S.S.R. occur along a fracture zone on the periphery of a 100-square-mile Permian salt dome which has been thrust up through Mesozoic and Tertiary sedimentary rocks. Borates occur above the salt and replace gypsum and clay. The country also has lake and skarn deposits, sometimes associated with volcanics.

TECHNOLOGY

U.S. Borax mines its Kramer ore body at Boron by open pit methods, having converted from underground methods in 1957. The pit is down to a 1,000-foot depth. Ore is brought up by inclined conveyor. The crushed tincal ore is shipped to an 80-acre refining plant near the mine site for dissolving at about the boiling point of water, thickening and washing to remove impurities, and vacuum crystallization. Refined decahydrate, pentahydrate, and anhydrous borax of various grades, totaling about 4,500 tons of B_2O_3 daily, are produced by repeated recrystallization, drying, and dehydration processes. No basic changes have been made in extraction processes, except that anhydrous boric acid, anhydrous borax, and anhydrous rasorite are now produced. High-purity and specialty products are produced at Wilmington, Calif., and secondarily at Burlington, Iowa. Wilmington is also the company's port of export. U.S. Borax also has a large terminal in Botlek, Rotterdam, to distribute borates in Europe.

Kerr-McGee employs the evaporative or "trona" process at its Trona plant on the shore of Searles Lake. Brines from the upper and lower structures are treated separately. The basic process is sequential in nature. Potash, borax, dilithium sodium phosphate, soda ash, and sodium sulfate are separated at different stages through crystallization based upon complex phase-rule chemistry. Soda ash, mainly from the lower structure brines, is recovered through the carbonation process. Sodium chloride and waste brines are sent back to the lake. Kerr-McGee has a daily B_2O_3 capacity of 300 to 400 tons (including 150 tons of anhydrous borax and 80 tons of boric acid) and processes 10,000 gallons of brine per minute pumped from a series of wells.

Stauffer Chemical's Westend plant, which was bought by Kerr-McGee in late 1974, primarily employs the carbonation process, whereby carbon dioxide from calcining limestone is used to precipitate soda ash from the mixed brines. The stripped brine passes through thickeners and heat exchangers, and borax is crystallized by neutralization with incoming cool brines. Anhydrous borax, decahydrate, and pentahydrate are the principal borate products. Brine intake is about 4,000 gallons per minute. Daily capacities for the Westend plant are as follows: soda ash, 350 tons; equivalent decahydrates, 200 tons; and sodium sulfate, 450 tons. Sodium and potassium chloride are not recovered at all, and liquids are returned to the lake.

Tenneco Oil Co.'s colemanite-ulexite open pits near Ryan supply colemanite ore to a calcining

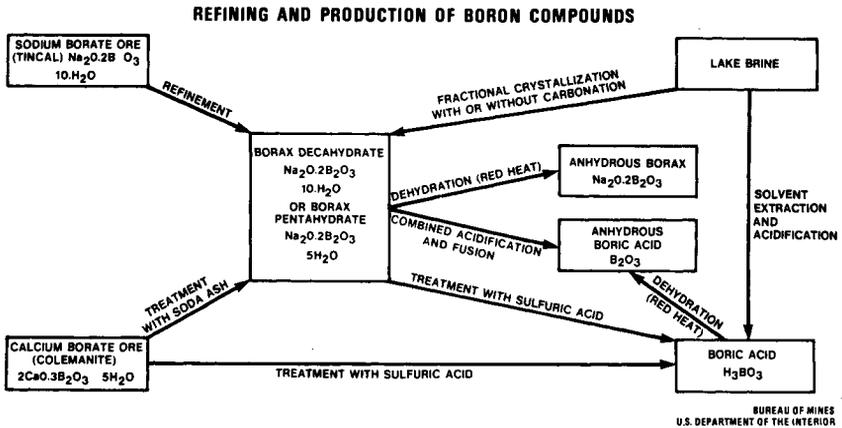


Figure 2.—Refining and production of boron compounds.

plant near Death Valley Junction and ulexite to a mill at Dunn for upgrading to 26 to 28 percent B_2O_3 . Colemanite is calcined to raise the B_2O_3 content from about 22 percent to 48 percent.

Turkey's Hisarcik open pit colemanite mine in the Emet district was recently transformed from a hand-sorting operation to a fairly modern mine plant. The new washing and screening plant is rated at 660,000 tons per year of feed (28 percent B_2O_3) and 330,000 tons per year of product (43 percent B_2O_3). Mining is now somewhat mechanized.

Turkey's open pit tincal deposits at Kirka, Eskisehir Province, are being developed in a systematic manner to provide 26- to 27-percent- B_2O_3 ore to a washing plant rated at 440,000 tons per year of upgraded tincal concentrates. Etibank was working on a plan to construct a refinery with 35-percent- B_2O_3 tincal as the raw material. The plant, which is much like the U.S. Borax refinery at Boron, would produce annually 200,000 tons of crude pentahydrate borax (rasorite 46), 55,000 tons of crude anhydrous borax (rasorite 65), and 11,000 tons of refined

anhydrous borax. Meanwhile, the crude ore is sent to a smaller refinery at Bandirma built in 1968 that has a yearly capacity to manufacture 60,000 tons of borax and 28,000 tons of boric acid. Most boric acid in the United States is manufactured by acidulating a saturated sodium tetraborate solution with hot, concentrated sulfuric acid. In Turkey and Europe, the boric acid has been made mainly from reacting sulfuric acid with calcium borates. Kerr-McGee's process recovers boric acid from process filtrates and weak brines, with kerosine and dilute sulfuric acid. Stauffer Chemical's small boric acid plant in San Francisco uses U.S. Borax's rasorite as raw material.

Elemental boron may be produced by several processes including fused-salt electrolysis, reduction of boron compounds with hydrogen, and reduction of boron halogens with sodium or magnesium. U.S. Borax has a new process to produce less pure (95 percent) boron. The process consists of spraying sulfuric acid on a moving bed of sodium pentaborate passing through a gas furnace, whereby a layer of boron forms at the bottom.

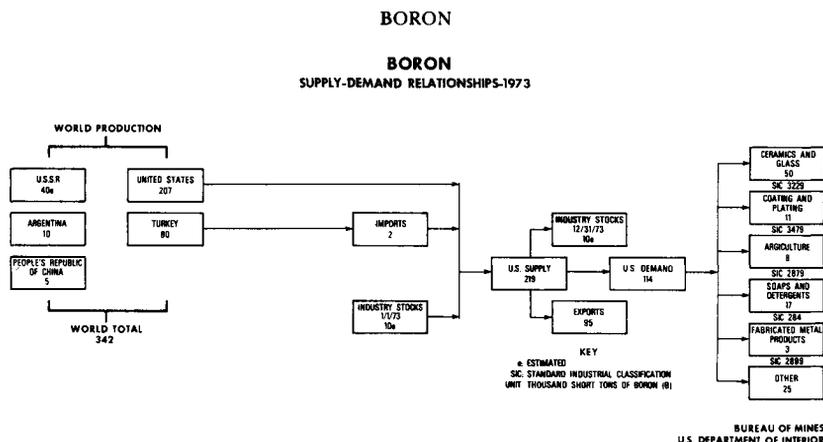


Figure 3.—Supply-demand relationships for boron, 1973.

SUPPLY-DEMAND RELATIONSHIPS

Components of Supply

World production of boron increased 9 percent in 1973 to 342,000 short tons. The United States produced 61 percent, followed by Turkey with 23 percent and the U.S.S.R. with perhaps 12 percent. U.S. output increased by 9.5 percent, whereas Turkish output gained possibly 5 to 7 percent. More than four-fifths of U.S. production in 1974 came from the U.S. Borax & Chemical Corp. open pit operation at Boron, Calif.; most of the remainder came from Searles Lake and Ryan, also in California.

The United States has long had a surplus of boron minerals, and nearly half of the U.S. output, or roughly 90,000 short tons of contained boron, was exported in 1974 to many countries especially West Germany, the United Kingdom, France, and Japan. The Netherlands was the main transshipment point in Europe. This pattern was not too different from that of years past. Turkey, however, offered increasing competition to the United States in world markets, because most of its output was shipped to Europe.

During 1964-73, U.S. production increased by about 64 percent, whereas rest-of-the-world output almost tripled. In the same period, U.S. consumption rose by about 65 percent to perhaps 114,000 short tons of boron, compared with about 120 percent to some 228,000 tons for the rest of the world. Thus, both production

and consumption of boron have risen much more sharply outside the United States than within it.

The U.S. boron mineral industry, dominated by U.S. Borax, has traditionally been export oriented, with roughly half of the production shipped to foreign countries in recent years. In fact, U.S. Borax is really an international company with worldwide interests. Of the U.S. exports, approximately 40 percent represent refined borates and the rest crude borates. The Netherlands is the main distribution point for U.S. exports to European countries. Turkey sells nearly all its borates abroad in the form in which they are produced—colemanite, boracite, sodium borates, and boric acid. U.S.S.R. output basically remains within the country and Eastern Europe, and Chinese output is still small.

Borates are not stockpiled by the U.S. Government, nor by the private producers except as operating stocks. The same is true of Turkish supplies.

The essential components of domestic boron supply-demand relationships for 1973 are shown in figure 3; those for the past 11 years appear in table 3.

BYPRODUCTS AND COPRODUCTS

Over four-fifths of U.S. production comes from borax mineral deposits mined only for their boron content. The remainder was produced mainly from lake brines, which also

Table 3.—Boron supply-demand relationships, 1964-74
(Short tons of boron content)

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974
World production:											
United States	125,985	132,175	143,682	147,103	161,409	171,361	175,000	178,500	189,000	207,000	193,000
Rest of world	45,900	57,100	65,400	73,500	70,300	79,741	82,400	107,200	125,000	135,000	135,000
Total	171,885	189,275	209,082	220,603	231,709	251,102	257,400	285,700	314,000	342,000	328,000
Components of U.S. supply:											
U.S. mines	125,985	132,175	143,682	147,103	161,409	171,361	175,000	178,500	189,000	207,000	193,000
Estimated imports	4,300	5,000	4,000	4,352	2,832	3,675	3,661	1,000	2,000	2,000	2,000
Industry stocks, Jan. 1	1,045	1,000	1,300	1,000	1,000	1,200	1,500	2,000	10,000	10,000	10,000
Total U.S. supply	131,000	136,175	148,982	152,455	165,341	176,236	180,161	179,500	201,000	219,000	205,000
Distribution of U.S. supply:											
Industry stocks, Dec. 31	1,000	1,000	1,000	1,000	1,200	1,500	2,000	2,000	10,000	10,000	10,000
Estimated exports	61,000	62,875	70,962	67,006	77,141	86,872	90,000	90,000	86,000	85,000	80,000
Industrial demand	69,000	74,300	77,000	84,448	67,000	85,884	86,161	87,500	93,000	114,000	105,000
U.S. demand pattern:											
Ceramics and glass	20,700	22,200	23,100	25,335	29,200	29,194	30,000	35,000	40,000	50,000	45,000
Coating and plating (enamel)	9,660	10,360	10,780	11,823	11,900	12,021	12,300	8,600	9,000	11,000	10,000
Agriculture	9,660	10,360	10,780	11,823	11,900	12,021	12,300	8,700	7,000	8,000	7,000
Soaps and detergents	10,281	11,000	11,500	12,000	13,800	13,738	14,000	13,000	14,000	17,000	16,000
Fabricated metal products (fluxes)	1,380	1,460	1,540	1,669	1,700	1,717	2,000	2,000	2,000	3,000	3,000
Other	17,319	16,900	16,300	21,779	16,700	17,173	17,581	20,000	21,000	25,000	24,000
Total U.S. primary demand	69,000	74,300	77,000	84,448	67,000	85,884	86,161	87,500	93,000	114,000	105,000

provide soda ash and sodium sulfate, and, in the case of one company, lithium carbonate, potassium sulfate, potassium chloride, and bromine. Turkish colemanite and tincal ores are worked only for boron. Most Soviet borates are standard, but the Lake Baikal ore is azoprofit which contains titanium and magnesium. Argentine ores have no byproducts, but Chinese complex salts provide many coproducts.

STRATEGIC CONSIDERATIONS

Known U.S. reserves can satisfy domestic and export markets for at least several decades. However, greatly increased U.S. demand, particularly for borates in insulating glass, has put pressure on the distribution and sale of U.S. output, because the largest producer is British-owned and much of its product is traditionally exported. Western Europe and Japan are also competing for U.S. and Turkish supplies. Although only nominal tonnages of Turkish borates are imported by the United States, and Turks may find it worthwhile to expand facilities to meet potential U.S. demand on the east coast. Small surpluses of borates exist in the Soviet Union and China. Whereas the borate potential in Turkey appears excellent, prospects for finding additional large reserves in the United States are less favorable. The United States does not have a stockpile program on borates.

ECONOMIC FACTORS AND PROBLEMS

Boron minerals are produced in the United States to satisfy both the domestic market and

the international market. During 1954-73 world production and consumption roughly tripled, whereas real price was nearly cut in half (table 4) owing in part to steady improvements in operation. However, between yearend 1973 and November 1974, the price of anhydrous borax (bulk) rose from \$110 per short ton to \$203 for U.S. Borax, and the price of boric acid increased from \$134 to \$199. These increases reflect steep rises in energy cost, inflation, and strong demand. The sharper rise in costs of anhydrous products, compared with costs of products with water, can be explained by the more intense use of energy in fusion than in distillation and chemical processing. This fact has also caused producers to shift some production of anhydrous products to hydrated borates. Originally, the anhydrous products were introduced to cut down on freight. Demand for borates weakened slightly in the spring of 1975 but firmed up subsequently; prices remained steady during most of 1975.

U.S. Borax with a high-grade, relatively pure ore has had less of an energy difficulty than Kerr-McGee using Searles Lake brines. Impure, mixed-salt brines require more distillation and crystallization runs. Kerr-McGee may not install its borate recovery cycle in the new soda ash plant being built adjacent to the old facilities. Kerr-McGee envisages some overall economies by taking over Stauffer Chemical's plant.

Despite inflation and rising costs, U.S. companies are compensated by higher prices and increased demand. The borate shortage continued into yearend 1974. There was no problem

Table 4.—Time-price relationship for boron

Year	Average annual price, dollars per short ton	
	Actual prices	Constant 1973 dollars
1954	830	1,084
1955	853	1,109
1956	500	821
1957	585	894
1958	585	872
1959	565	857
1960	557	833
1961	580	826
1962	540	787
1963	543	781
1964	543	770
1965	532	741
1966	505	684
1967	500	656
1968	470	593
1969	470	566
1970	510	582
1971	510	557
1972	510	539
1973	520	520
1974	640	582

selling the borates, except for a brief period in the last spring of 1975.

Whereas the United States cannot expand output much more than a third, because of lack of large assured new reserves and the nature of the known deposits and processes, Turkey's problem is mainly a matter of timing—establishing steady new markets, converting to more finished products, and arranging capital to build additional facilities. Various borate buyers and producers around the world are vitally interested in the question of whether the borate industry of Turkey will eventually be nationalized. However, it is axiomatic that the country must export. Therefore, the problem facing consumers in the United States, Western Europe, Japan, and other countries is to make suitable, long-term commercial arrangements.

OPERATING FACTORS

U.S. boron mineral producers have been adopting conservation practices to lower costs and extend the life of deposits. U.S. Borax, for example, changed from underground to open pit mining at Boron to increase recovery of reserves. The company has also adopted new practices for beneficiation of lower grade ores. There was a dust control problem because of the open pit method of extraction in a dry, desert type of environment, but this has been substantially overcome by a \$10 million effort. A one-third output increase program by U.S. Borax got underway by yearend 1974.

Searles Lake has no dust problem, but the brines in the ponds give off rather strong odors. Kerr-McGee employs a special process that pro-

duces boric acid, potassium sulfate, and sodium sulfate from weak brines which could not be processed by conventional methods. Energy costs are high. Kerr-McGee must coordinate activities of its old plant at Trona, the recently acquired Westend plant, and the new soda plant now being built, for maximum efficiency and economy.

The problems with Tenneco's colemanite operations are that reserves at the old Boraxo pit are being depleted, ore is low grade, and calcining of wet ore by rotary kilns is difficult and expensive. These problems are offset however by recovery and sale of ulexite and discovery of new reserves at two other locations.

Overall, nearly 2,000 persons are employed within the U.S. boron extraction industry. There is no secondary recovery and reuse of boron compounds, since almost all of this goes into dissipative uses.

In Turkey much more exploration needs to be done to select the best areas for mining. The shortage of capital makes it difficult to develop new mines, mechanize old ones, and build additional refineries. Selective mining and hand cobbing are being supplanted by shovels, trucks, and beneficiation plants. Increasing quantities of offgrade materials are being upgraded mechanically and chemically. When the Emet deposit was first developed, hand-picked colemanite concentrates were as high as 45 percent B_2O_3 , waste of raw materials and sharp grade decline forced Etibank to build the present mill. Tincal from Kirka is beneficiated to marketable concentrates, and the long-range plan is to construct a very modern refinery to process 35-percent concentrates into high-purity borates and raserite.

OUTLOOK

Demand

Based upon contingency analysis of components of demand, total boron consumption in the United States for 2000 is estimated at 340,000 tons (table 5). Interpolating from the same growth rate, total U.S. boron consumption for 1985 is estimated at 185,000 tons. Forecasts for U.S. boron demand by end use are shown in table 6.

During the last decade, actual growth in boron consumption has been slightly greater outside the United States than domestically. Assuming this trend will continue, it is estimated that probable boron consumption for the rest of the world would be 375,000 tons in 1985 and 690,000 tons in 2000. (See also table 5.)

Table 5.—Summary of forecasts of U.S. and rest-of-world boron demand, 1973-2000

	(Thousand short tons of boron content)					
	1973	Forecast range		Probable		Probable average annual growth rate 1973-2000 (percent)
		Low	High	1985	2000	
United States:						
Total	114	238	405	185	340	4.1
Cumulative .....	.....	4,600	6,100	1,800	5,700	.....
Rest of world:						
Total	228	450	705	375	690	4.2
Cumulative .....	.....	8,900	11,700	3,600	11,500	.....
World:						
Total	342	688	1,110	560	1,030	4.2
Cumulative .....	.....	13,500	17,800	5,400	17,200	.....

The future of the boron industry is closely tied up with that of the glass industry, since the latter is by far the principal market. All three major use categories in glass manufacture show good promise. There is a boom in use of borates in insulating glass, as a result of the energy crisis. Demand for textile fiberglass to reinforce plastics, tires, industrial fabrics, and paper is expected to continue its steep growth. Consumption of borosilicate glass is related to economic growth and industrial adjustments. Possible U.S. shortage of borates and conversion to substitutes were considerations for the low forecasts, and probable greatly expanded output abroad prompted the high forecasts.

Demand for borates in coating and painting appears to have a correlation with gross national product (GNP). An affluent society requiring more and better coated appliances and possible greater use of porcelain enamel for decorating building panels were considerations for the high forecasts, and competition from plastic coatings prompted the low forecasts. The summary view is that the positive factors outweigh the negative. This explains why probable demand was placed nearer the high side.

Borates for agriculture seem to have a relationship with population growth. The positive factor of possible use of borates in herbicides and as soil sterilant apparently is balanced by the negative factor of competition from other organic compounds. This explains why probable demand in this category has been placed around the forecast base.

Use of borates in soaps and detergents can be correlated with population growth. However, it is likely that per capita consumption will increase slightly faster. While certain alternate materials are available, the generally favorable price of borates discourages widespread substitution. Thus, probable demand has been estimated on the high side of the range.

The outlook for borate consumption in miscellaneous categories could be correlated with overall evolutionary technology and GNP

growth. Probable demand was arbitrarily placed midrange, because of uncertainty of many components of demand.

Supply

The United States is in a relatively favorable position with regard to borates. Although boron minerals are neither overly plentiful nor widely distributed worldwide, a significant part of the known reserves are located in southern California, primarily at Boron. A rough estimate places potentially minable U.S. reserves at 20 million short tons of contained boron. Output can be expanded somewhat to meet domestic and export requirements.

Turkey, the principal future competitor to the United States, can be expected to satisfy an increasing share of world demand for borates. In fact, its reserves might turn out to be considerably larger than those of the United States. However, both countries will share in the expanding markets, and more than likely there will be greater understanding between the two countries rather than competition.

During 1954-73, U.S. production rose from about 72,000 short tons of contained boron in 1954 to 115,000 tons in 1963 and 207,000 tons in 1973 (table 7). Based upon the historical 20-year trend, future U.S. output is projected at 275,000 tons in 1985 and 380,000 tons in 2000. Practical estimates would place future output considerably higher. Such greatly expanded rates of production could cut deeply into known reserves. However, actual U.S. output could be kept at more constant levels if Turkey and other countries could supply more to world markets.

Possible Supply-Demand Changes

Domestic production during 1972-74 totaled approximately 559,000 short tons of contained boron, whereas exports added up to perhaps 273,000 tons. Thus, exports were nearly half of production. This traditional pattern could

Table 6.—U.S. projections and forecasts for boron demand by end use, 1973–2000
(Thousand short tons of boron content)

End use	1973	2000			
		Contingency forecasts for United States			
		Forecast base	Forecast range		Probable
Low	High				
Ceramics and glass	50	150	120	200	170
Coating and plating	11	25	20	50	40
Agriculture	8	17	15	20	17
Soaps and detergents	17	30	28	35	35
Fabricated metal products	3	8	5	10	8
Other	25	53	50	90	70
Total	114	---	238	405	340

change somewhat, if a larger share of U.S. output is sold domestically and/or imports become sizable. In both contingencies, Turkey's role will be controlling, either by selling more to Europe and hence cutting down U.S. exports to Europe or by selling more to the United States.

Total probable U.S. demand for boron in 2000 is projected at 340,000 short tons, U.S. domestic production in 2000 is projected at 500,000 tons, on the basis of present knowledge of resources. Unless new boron-bearing deposits or dry lakes are found, or more supplies are kept at home or imported, U.S. consumption may even have to be cut down.

Cumulative domestic requirements for boron, using probable composite demand, will be 5.7 million short tons during 1973–2000. Theoretically, this is much less than estimated U.S. reserves. A sizable portion of the so-called reserves, however, is not fully dependable. Also, a continued growth in demand after 2000 would cut into the available supply at an accelerated rate. Lowering the grade of ore mined and improving technology would not extend U.S. borate reserves substantially.

The cumulative demand for boron in the rest of the world has been estimated at 11.5 million short tons, bringing the probable world demand for boron throughout the forecast period to 17.2 million tons. The estimated world supply of 110 million short tons of boron, even discounting what will not be extracted by 2000, is more than adequate to meet world demand for decades. Moreover, additional large reserves undoubtedly will be delineated abroad, notably in Turkey.

The principal geographical shift expected in future supply is for western Turkey to gain on southern California in production and even more so in exports. U.S. demand will steadily grow, whereas Turkish demand is unlikely to be large. Thus, export of boron compounds is the main outlet for the Turkish industry. Most of the U.S.S.R. supply may well be internally consumed, but the future Chinese supply might

Table 7.—Comparison of domestic boron production and demand, 1954–74, and projected production in 2000 based upon historical trends

(Thousand short tons)		
Year	U.S. demand	Domestic production
1954	41	72
1955	44	76
1956	46	83
1957	52	84
1958	48	83
1959	60	98
1960	56	101
1961	57	97
1962	61	105
1963	64	115
1964	69	126
1965	74	132
1966	77	144
1967	84	147
1968	87	161
1969	86	171
1970	88	175
1971	88	177
1972	92	189
1973	114	207
1974 ¹	105	193
1985	² 185	³ 275 ⁴ 350
2000	² 340	³ 380 ⁴ 500

¹ Estimated.

² Not used in forecasts.

³ Probable forecasts from table 5.

⁴ 20-year trend.

become substantial in world markets. The most important geographical shift in future demand is that more countries will consume increasing quantities of boron compounds; thus, world demand will be more evenly divided among countries rather than concentrated in a few. Present markets for boron compounds are relatively secure in terms of competition with substitutes, and the pattern may not change radically in the future.

Possible Technological Progress

Processes for recovering usable boron compounds either from bedded deposits or from underground brines or brine lakes are not

expected to change significantly by 2000. The solution phase is an important part of boron recovery technique, and some improvements in evaporation of the solutions may be expected as the chemistry of various brine systems becomes better known.

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	<h2 style="margin: 0;">MINERAL INDUSTRY SURVEYS</h2> <p style="margin: 0;">U. S. DEPARTMENT OF THE INTERIOR BUREAU OF MINES WASHINGTON, D. C. 20241</p>	
<p>Thomas S. Kleppe, Secretary</p>		<p>Thomas V. Falkie, Director</p>

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Annual, Preliminary

BORON IN 1976

The estimated 1976 U.S. production of boron minerals and compounds, based upon 9-month figures, was 1.2 million short tons, compared with 1,172,000 tons in 1975, according to the Bureau of Mines, U.S. Department of the Interior. Continuing demand for borates in glass products was stimulated by the use of glass wool for insulation purposes. The modest increase in new housing starts in 1976 also increased this demand. Prices held firm throughout the year, with some energy-intensive anhydrous varieties at higher prices. Overall output value was \$170 million as compared with \$159 million in 1975. Combined exports of crude and refined borates and boric acid increased slightly as compared with 1975. The United States and Turkey are now competitors in the world market, especially in Europe, where Turkey has some transportation cost advantage.

California supplied virtually all of the boron minerals produced in the United States. The large tincal mine and refining facilities at Boron, Calif., owned by the major U.S. producer, U.S. Borax, now processes over 10,000 tons of ore per day. During the year, its \$54-million expansion project continued on schedule, with most of the new capacity to be onstream in 1977. This project will provide a 25% increase in the output of primary products. The second largest producer, Kerr-McGee Chemical, consolidated its two operations at Searles Lake and is building a large soda ash plant nearby, but it will not have a borate cycle until operations have determined the economic feasibility. The third U.S. producer, Tenneco Oil, with colemanite and ulexite properties in and near Death Valley, increased their production significantly. They developed additional reserves and approved a plan to double their production in 3 years, which will require a capital investment of \$20 million.

However, at yearend and because of the environmental concern for mining in the National Parks, Congress passed a bill, PL 94-429, to regulate and constrain all mining activities within the National Park Service and repealed the mineral entry provision for certain units. This law also applied to Death Valley National Monument which is currently the sole commercial source of colemanite and ulexite in the United States. Because of this environmental impact, in October Tenneco Oil sold its total boron mining and marketing assets to the American Borate Corporation, who will continue the present operations.

Imports of colemanite during the first 9 months, all from Turkey, were 22,000 short tons valued at \$1.4 million, as compared with 27,641 tons valued at \$1,560,000 in 1975.

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Energy Conservation



**Survey of Cellulosic Insulation
Materials**

January 1977

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Survey of Cellulosic Insulation Materials

I. INTRODUCTION

The properties of commercially available cellulosic thermal insulation materials were evaluated to obtain base level data on the materials and to assess existing specification standards commonly used for testing and purchasing. Cellulosic material has been used for residential building insulation for several decades and currently represents an estimated 30-40 percent of that market (second only to fibrous glass insulation). Nevertheless, very little data about the properties of the product have been published. The results of this survey provide guidance to the manufacturer in the design and manufacturing control of the material; to specification organizations in re-evaluating and improving specifications; and to the consumer in selecting a product.

Cellulosic insulation is manufactured from waste paper products, such as newspaper. Its manufacture is simple, requiring only shredding and milling to convert it into a low-density, fluffy material and the addition of chemicals to provide flame retardancy. When bagged, the material is ready to be installed. Even installation is simple; it can either be poured or blown in place. Because of the relatively low capital cost required for production and the large profitable market for the material, it is estimated that there are over one hundred manufacturers operating throughout the country.

Cellulosic insulation has several advantages which could produce even greater future demand for the product. On the other hand, it has several potential disadvantages which could seriously affect the industry, if not corrected. When properly applied, cellulosic insulation has excellent thermal resistance properties, is manufactured from an inexpensive and readily available waste material, and requires little energy or petroleum base materials in its manufacture. It can currently compete favorably on a cost/performance basis with other insulation materials, and, as future energy costs increase, its competitive position will be enhanced. However, on the negative side, cellulosic insulation has received criticism alleging poor flame retardancy, overstated thermal resistance values and poor manufacturing quality control. Although it is suspected that some of these criticisms are justly deserved, there has been a lack of reliable data to refute or substantiate many of them.

In consideration of the above, this survey of cellulosic insulation properties, though limited in scope, provides base data which will prove valuable in providing a better understanding of the material, in improving the qual-

ity of the product, and in promoting the conservation of energy. The specific cellulosic properties addressed in this survey include:

- composition and quantity of fire retardant
- moisture absorptivity
- fire retardance
- thermal conductivity
- corrosiveness, and
- resistance to fungal growth.

I. EXPERIMENTAL APPROACH

A total of nineteen different off-the-shelf samples of cellulosic insulation were obtained from four geographic areas: Colorado, Minnesota, Indiana, and Pennsylvania. All tests, except for thermal conductivity and fire retardancy, were performed under direct ERDA contract at the laboratories of the Naval Weapons Support Center, Crane, Indiana. The thermal conductivity and fire retardance test data were supplied to ERDA by an independent organization, and the sample materials used in their tests were also used in the Naval Laboratory tests.

Whenever possible, tests were performed in accordance with the American Society for Testing Materials (ASTM) specifications C739-73; Cellulose Fiber (Wood Base) Loose-Fill Thermal Insulation. The ASTM C739-73 specification is referenced in the Federal specification HH-1-515C Insulation Thermal (Loose-Fill for Pneumatic or Poured Application) Cellulosic or Wood Fiber, and is the basis for the National Cellulose Insulation Manufacturers Association (NCIMA) specification N-101-73, Standard Specification for Cellulosic Fiber (Wood Base) Loose Fill Thermal Insulation. In some tests, conditions were modified to gain additional information which will be discussed later in the text.

Because it was realized that one sample from each manufacturer might not fairly represent that manufacturer's product, manufacturers' identifications were not given in the report: the data were evaluated as a whole to determine trends and patterns.

I. EXPERIMENTAL RESULTS

A. FIRE RETARDANT ADDITIVES

Samples of cellulosic insulation were analyzed to identify the additives and their relative proportions. This was done by extracting the water soluble content of 5 gram samples and subjecting the residue to a series of analytic procedures described in Appendix A. No attempt was made to analyze for possible water insoluble additives. The analysis scheme included use of X-ray diffraction; atomic absorption, spectrographic and X-ray fluorescence and differential thermal analysis techniques. The analyses were considered to be semiquantitative because:

1. the samples contained various unknown compounds that were also water soluble, such as starches, inks and adhesives;

2. the degree of hydration of the original fire retardant compound was not known (the most probable was assumed); and
3. only that quantity retained within or on the cellulose was analyzed. As will be discussed in the next section, it was observed that some of the fire retardant had separated in most of the samples.

The results of the analyses did provide a measure of the kinds and relative proportions of fire retarding additives as shown in Table I. Also included in Table I are the pH* values of the samples when contacted with water. The procedure for measuring pH is given in Appendix B.

These analyses showed that boric acid** and ammonium sulfate were the most common additives and were used singly or in various combinations with other additives, such as calcium sulfate, aluminum sulfate and sodium carbonate. Comparison of the pH values of the respective samples showed that the resulting pH was not always in accordance with the kind and quantity of the additives. Whereas this could be, in part, a result of inaccuracies in the quantitative analyses, it is also possible that impurities in the cellulose stock material contributed to the final pH.

B. SEPARATION OF FIRE RETARDANT ADDITIVES

Of the nineteen samples received for analyses, thirteen showed visible evidence that some of the fire retardant chemical had separated from the cellulosic matrix; quantities of the additives were found at the bottoms of the containers. Because each sample had undoubtedly been handled differently from the time of its manufacture, no attempts were made to measure the quantity of the separated material nor to determine the effects such separations may have on the properties of the samples. The referenced standard specifications (ASTM, Federal and NCIMA) do not include a test or requirement for non-separation of the fire-retardant additive.

C. MOISTURE ABSORPTIVITY

The nineteen samples were tested for water absorption in accordance with ASTM C739-73, section 10.5. According to that specification, weight gain should not exceed 15 percent. For the standard test, samples of approximately 100 grams were pre-conditioned at 50 percent relative humidity (R.H.) and 120°F to a constant weight. The samples were then exposed to 90 percent R.H. at 120°F for 24 hours and the weight gain recorded. In addition to the standard 24 hour tests, cumulative weight gain data were also obtained after 8 days and 15 days.

Since the ASTM C-739-73 procedure does not specify the sample configuration during testing, the samples were contained in 9" x 12" x 2½" open containers to allow a low-packing density similar to that found in attic installations. For several of the sample materials, additional test specimens were packed in either 1000 ml or 2000 ml beakers to evaluate the effect of different packing densities and configurations.

* A measure of the relative acidity of samples; 7.0 indicates a neutral solution and decreasing values indicate increasing acidic activity.

** The boron contents were reported as boric acid; however, the original compound may have been other boron compounds such as "borax."

TABLE I
Composition and pH of Cellulosic
Insulation Samples

Sample Identification	Total Water Solubles %	pH	Fire Retardant Chemical, %				
			Ammonium Sulfate	Boric Acid	Calcium Sulfate	Aluminum Sulfate	Sodium Carbonate
526-1	18	4.4	18	—	—	—	—
526-5	20	8.0	—	11	1	—	5
527-A	22	8.2	—	16	—	—	3
527-B	31	4.8	—	23	—	—	—
527-C	28	8.1	—	22	—	—	5
527-C1	24	8.2	—	20	—	—	5
527-D	22	8.0	—	13	—	—	5
527-E	26	4.5	26	—	—	—	—
527-F	21	5.9	—	10	5	—	2
527-G	19	4.4	19	—	—	—	—
527-H	21	7.8	—	16	3	—	1
527-I	20	5.0	—	4	1	—	—
535	24	7.4	—	17	4	—	—
562	22	3.7	18	1	2	—	1
563-4	24	4.0	—	10	—	7	2
563-5	19	7.7	12	4	1	—	2
563-6	17	5.9	—	4	6	—	—
563-7	23	6.1	—	5	8	—	—
593	17	7.7	—	—	—	17	—

The results of the moisture absorptivity tests are given in Table II and shown graphically in Figure I.

Examination of these data show the following:

1. There was a wide range in moisture absorption between samples when tested in the low density configuration. After the standard 24 hour test, moisture gains ranged from 3.5 to 38 percent and six of the samples exceeded the 15 percent limit given in the standard specification.
2. The differences in moisture absorption increased with increasing time—some samples had moisture gains in the 75 percent range after 8–15 days exposure. Also, in some samples the moisture gains reached a maximum and then decreased. The mechanism for this behavior is not known, but may be a result of some moisture-induced separation of the fire retardants from the cellulose matrix.
3. Generally, samples containing primarily boric acid had lower, and acceptable, moisture absorptivities, whereas those containing primarily ammonium sulfate had excessive gains in moisture. The one sample containing only aluminum sulfate showed excessive moisture gains but less than those containing ammonium sulfate.
4. The differences between moisture gains in samples containing similar additives suggested that factors other than composition of fire retardants also affect moisture gain, such as the size and distribution of the additives and the characteristics of the cellulose matrix.
5. The apparent moisture gains observed during testing were dependent upon the specimen configuration. For example, sample 563-5, when tested in the low-density configuration had an unacceptable 22 percent moisture gain. However, when tested in 1000 and 2000 ml beakers, the moisture gains were an acceptable 6 and 8 percent respectively.

D. CORROSIVENESS

The nineteen samples were tested for corrosiveness in accordance with ASTM C739-73, section 10.7, except that thicker metal test coupons were used. The thicker coupons (0.25 inches/0.6 cm) were selected to allow more detailed evaluation of the mechanisms and rates of possible corrosion. The test coupons specified in ASTM C739 are only 0.003 inches thick and failure of test is based on visual observance of perforation of the coupon.

The coupons, tested in duplicate for each cellulosic samples, were:

1. Steel, AISI type 1018, cold rolled, 5 cm x 6.3 cm x 0.6 cm.
2. Aluminum, alloy 2024-0, (annealed) 5 cm x 5 cm x 0.6 cm.
3. Copper, type K tubing, 5 cm x 1.5 cm O.D.

As specified in the standard, the coupons were placed in contact with the cellulosic samples that had been moistened with water and held for thirty days at 120°F and 96% R.H. Because of the difficulty in expressing the corrosion results adequately in terms of a single number or term, the data were reported by corrosion type: general or uniform, pitting, and subsurface.

TABLE II
Moisture Weight Gains in Cellulosic Insulation Samples

A. Moisture Gain (%) in Low-Density Packing Configuration

Sample Identification	Pre-Test Conditioning (50% RH)	Test Exposure (90% RH)		
		24 Hour *	8 days	15 days
526-1	2.4	38.5	76.5	43.7
526-5	1.1	9.5	18.2	19.5
527-A	1.1	5.6	7.7	6.7
527-B	1.3	5.6	7.2	6.0
527-C	-0.5	7.8	9.0	8.4
527-C1	0.1	7.3	8.4	7.9
527-D	2.2	10.9	16.4	20.4
527-E	2.2	29.0	65.9	70.0
527-F	1.1	10.0	9.7	8.5
527-G	2.2	24.1	43.2	37.4
527-H	2.6	7.0	5.5	3.8
527-I	2.5	24.8	50.7	42.5
535	-0.3	10.3	16.4	14.9
562	1.8	11.2	20.2	19.6
563-4	0.5	11.6	16.8	14.4
563-5	0.7	21.6	55.1	29.5
563-6	0.7	10.6	15.0	10.1
563-7	0.6	12.3	13.1	10.3
595	1.2	19.6	30.3	29.7

B. Moisture Gain for Different Packing Configurations

527-A, Low Density	1.1	5.6	7.7	6.7
527-A, 2000 Ml Beaker	1.4	4.0	6.9	6.9
527-A, 1000 Ml Beaker	1.5	3.5	6.4	6.5
562, Low Density	1.8	11.2	20.2	19.6
562, 2000 Ml Beaker	2.2	4.9	15.1	17.1
562, 1000 Ml Beaker	1.8	4.3	12.2	15.2
563-5, Low Density	0.7	21.6	55.1	29.5
563-5, 2000 Ml Beaker	1.1	7.6	23.5	29.2
563-5, 1000 Ml Beaker	1.1	6.0	21.1	26.4

* Standard ASTM test, acceptance level set at less than 15% gain.

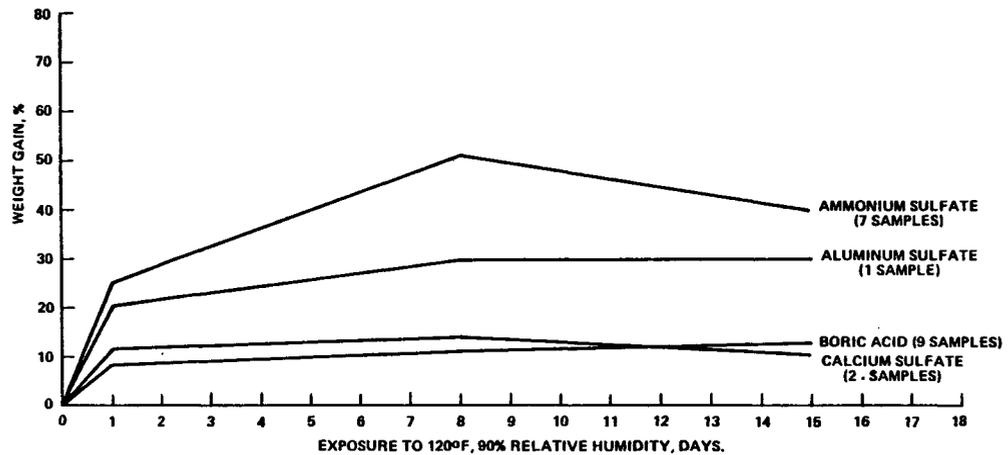


FIGURE 1. EFFECT OF FIRE RETARDANT COMPOSITION ON MOISTURE WEIGHT GAIN.

General corrosion was determined by measuring the coupon weight loss during the test, and calculating the equivalent uniform loss of thickness over all surfaces of the test coupon. Pitting corrosion was determined by microscopic measurement of the depths of individual surface pits below the final coupon surface. Subsurface corrosion was determined by metallographic analysis of cross-sections of the coupons thereby indicating both the depth and mechanism of corrosion; e.g., intergranular. Again, all measurements were made from the final coupon surface. The general corrosion data are given in Table III and Figure 2. Pitting corrosion data are given in Table IV.

Examination of the corrosion test data showed the following:

General Corrosion:

1. The corrosion experienced by the individual test coupons was not uniform, but rather much greater on one of the surfaces, and, in many cases variable over the surface. Apparently corrosion was greater at points of intimate physical contact between the coupon and the cellulose. Consequently, the calculated general corrosion reported in Table III and Figure 2 represents conservative corrosion values: it is roughly estimated that the corrosion areas were approximately twice those reported.
2. A wide range of corrosion rates of the test materials were observed between the cellulosic samples. Generally, the steel coupons experienced the greatest rate of corrosion.
3. There was poor correlation between corrosion rates, composition of fire retardant, and pH.
4. Based on the calculated general corrosion rates, eleven of the nineteen samples showed corrosion rates greater than allowed under ASTM C739-73 for one or more of the test coupon materials. (The corrosion rate to completely dissolve the 0.003 inch thick test coupons specified in ASTM C739-73 in the 30-day test period is equivalent to 0.45 mm per year.)

Pitting Corrosion:

5. The observed pit depths are conservative, since measurements were taken from the final coupon surfaces.
6. Only the aluminum test coupons showed any significant amount of pitting corrosion.
7. All nineteen cellulosic samples produced pitting in the aluminum test coupons to an extent greater than allowed in ASTM C739-73. (The ASTM standard test coupon is 0.003 inches or 0.076 mm thick.) However, the control sample, which was exposed only to the test atmosphere, also showed excessive pitting. Of the nineteen coupons tested against the cellulose samples, twelve exhibited pitting depths greater than that observed on the control coupon. The standard specifications do not require the evaluation of control coupons in the corrosion tests.

8. Essentially no correlation was observed between the pitting of aluminum, composition of fire retardant, and pH.

Subsurface Corrosion:

9. There was extensive subsurface corrosion in the form of intergranular attack in the aluminum test coupons. Maximum observed depths of subsurface attack were in the 0.008–0.010 inch range. Although no attempt was made to correlate depth of attack with fire retardant composition and pH, deep attack was observed in test coupons exposed to samples containing boric acid and ammonium sulfate.
10. Subsurface corrosion of the copper test coupons was limited to an observed maximum of about 0.0005 inches and was considered negligible.
11. The steel test coupons had no observable subsurface corrosion.

TABLE III
Rates of General Corrosion of Aluminum, Copper and
Steel Exposed to Cellulosic Insulation Samples,
Millimeters per Year*

Sample Identification	Aluminum	Copper	Steel
Control**	0.18	0.05	0.05
526-1	0.29	0.75	1.57
526-5	0.14	Nil	0.77
527-A	0.05	Nil	0.19
527-B	0.16	0.07	1.53
527-C	0.06	Nil	0.46
527-C1	0.29	Nil	0.58
527-D	0.25	0.03	0.36
527-E	0.10	0.78	0.53
527-F	0.07	Nil	0.43
527-G	0.11	0.47	1.57
527-H	0.06	Nil	0.15
527-I	0.39	0.30	0.98
535	0.24	0.04	0.58
562	0.26	0.20	0.16
563-4	0.06	0.10	1.12
563-5	0.20	0.56	0.38
563-6	0.14	0.03	0.87
563-7	0.11	0.03	0.34
593	0.22	0.33	2.24

* Base on 30-day test period

** Control samples exposed only to test atmosphere

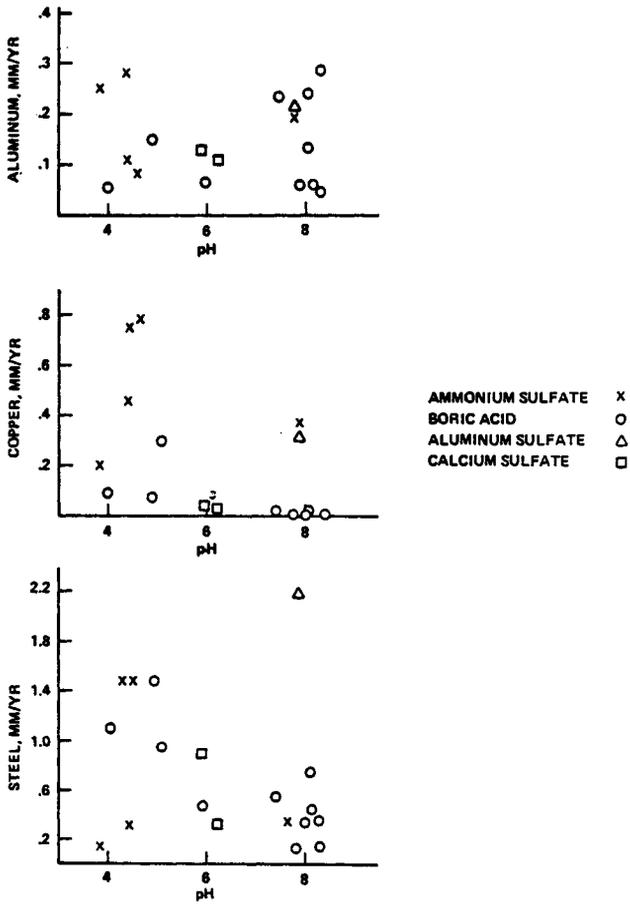


FIGURE 2. EFFECT OF COMPOSITION AND pH ON GENERAL CORROSION RATES.

TABLE IV
 Maximum Pit Depth on Aluminum Exposed to Cellulosic
 Insulation Samples for 30 Days

Sample Identification	Pit Depth Millimeters
Control	0.38
526-1	0.25
526-5	0.86
527-A	0.15
527-B	0.15
527-C	0.33
527-C1	0.76
527-D	0.99
527-E	0.28
527-F	1.04
527-G	0.63
527-H	0.33
527-I	0.66
535	0.48
562	0.96
563-4	0.66
563-5	1.07
563-6	0.61
563-7	0.55
595	0.81

**E. RESISTANCE TO
FUNGAL GROWTH**

Fungi which degrade cellulose are widespread and are found in virtually all environments. Generally, these fungi require temperatures in the 50-100°F range and a relative humidity of 60 percent or greater. It is possible that fungal growth on cellulosic insulation could cause the following undesirable conditions:

- a. provide a source of fungal spores which can penetrate the living area and cause health problems,
- b. degrade the thermal properties of the insulation by destroying the structure of the cellulose, and
- c. increase the corrosive action of the insulation material through accumulation of metabolic products.

Testing for fungal growth is not included in the ASTM, Federal or industry specifications.

The nineteen cellulosic samples were tested on a "go, no-go" basis to determine the propensity for fungal growth. The samples were tested at 86°F and 95 percent relative humidity for 28 days in accordance with military testing specification Military Standard 810B, method 508. Results of those tests showed the following:

1. Cellulosic samples containing primarily boric acid were resistant to fungal growth.

2. Cellulosic samples containing primarily ammonium sulfate supported fungal growth. Visible indications of growth were observed after 2-3 weeks exposure in sample 526-L, 527-E, 527-G, 563-S and 562.
3. The cellulosic sample containing primarily aluminum sulfate (593) supported fungal growth; visible indications of growth were observed after 2 weeks exposure.
4. The existence of fungal growth after 28 days exposure would be difficult for the untrained or casual observer to detect because of the coloration and texture of the cellulosic matrix.

**F. THERMAL
CONDUCTIVITY AND
FLAME SPREAD**

Only eight of the nineteen cellulosic samples were tested for thermal conductivity and flame spread by a non-Federal organization prior to the foregoing tests performed at the Naval Laboratory. The thermal conductivity tests were reportedly performed in accordance with ASTM C518-70, Thermal Conductivity of Materials by Means of the Heat Flow Meter Method. Likewise, the flame spread tests were performed in accordance with ASTM E84-75, Test For Surface Burning Characteristics Of Building Materials.

Both of the above tests are included in the ASTM, Federal and Industry specifications. The results of the tests are given in Table V.

Examination of these data show the following:

1. For most of the samples, the thermal conductivity values obtained through independent testing were significantly higher than corresponding values reported by the manufacturers. The differences in value were greater than could be expected from differences in test densities.
2. Flame spread data reported by the manufacturers were in good agreement with those obtained through independent testing. The data indicate that both boric acid- and ammonium sulfate-based fire retardants are capable of affording the flame spread levels defined in the standard specifications.

TABLE V
Thermal Conductivity and Flame Spread
Values for Cellulosic Insulation Samples

A. Thermal Conductivity

	Manufacturer's Data		Independent Data		Deviation in "K" Values, %
	Test Density pcf	"K" BTU-in Hr-ft ² -°F	Test Density pcf	"K" BTU-in Hr-ft ² -°F	
527-A	3.0	.25	2.9	.35	40
527-B	2.3	.20	2.8	.31	55
527-C	3.0	.19	2.6	.31	63
527-C1	—	—	2.4	.30	—
527-D	2.4	.27	2.7	.32	18
527-E	—	.24	2.2	.29	21
527-F	1.8	.26	2.2	.29	12
527-G	2.2	.27	2.3	.27	0

B. Flame Spread

	Manufacturer's Data*	Independent Data**
527-A	15	10
527-B	10	20
527-C	.38	15
527-C1	—	—
527-D	30	20
527-E	—	15
527-F	20	15
527-G	—	10

* Test method not known

** ASTM E84 25-foot tunnel tester

IV. CONCLUSIONS

A survey of cellulose thermal insulation materials has provided base level property data heretofore unavailable and an assessment of the suitability of specification standards for defining the properties and quality of the material. Since the survey included samples of only nineteen commercially available products from an estimated one hundred manufacturers, the results and conclusions cannot be interpreted as pertaining to every manufacturer. But rather, the results must be reviewed in total to identify overall trends or patterns and serve as a base from which manufacturers can improve their products and consumers can better choose a product. The results also provide a basis from which organizations responsible for preparing cellulose insulation standard specifications can evaluate the adequacy of their standards.

Specific conclusions derived from this survey were as follows:

1. A variety of fire retarding chemicals are added to cellulose in quantities ranging to about 25 percent. The chemicals are added either singularly or are combined. Types of chemical additives used include:
 - ammonium sulfate
 - "borates", e.g., boric acid and borax
 - aluminum sulfate
 - calcium sulfate
 - sodium carbonate
2. The pH of the samples, when contacted with water, ranged from 9.7 to 8.2. The standard specifications neither limit nor require reporting of pH values.
3. Some separation of fire retardant chemicals from the cellulosic matrix occurred in thirteen of the nineteen samples surveyed after handling under normal conditions. The standard specifications do not include criteria for retention of fire retardant chemicals.
4. Six of the nineteen samples exceeded the moisture absorption criteria of the standard specifications when tested in a low-density configuration (e.g., as may be found in attic installations). Excessive moisture absorption rates were generally found in samples containing ammonium sulfate and aluminum sulfate. The standard specifications do not adequately define the testing conditions for moisture absorption tests.
5. The capacity of cellulosic materials to absorb moisture is variable. Extended testing at 120°F and 90 percent relative humidity showed weight gains ranging from 5 to 76 percent. The standard specifications do not provide limits for moisture absorption over long-term exposure.
6. The cellulosic materials exhibited a wide range of corrosiveness against aluminum, copper and steel when tested in accordance with the standard specifications. Three types of corrosion were observed:
 - a. general corrosion (dissolution of the metal)
 - b. pitting corrosion, and
 - c. subsurface corrosion (intergranular)

When compared with the limits of corrosion provided in the standard specifications, eleven of the samples produced excessive general corrosion, primarily when in contact with steel. Excessive pitting and subsurface corrosion were observed on aluminum coupons when tested against most of the cellulose samples. The standard specifications do not differentiate between different types of corrosion, nor do they consider the full extent of possible corrosion. Because of the poor correlation between composition and pH of the cellulose samples and observed corrosion, composition and pH cannot be used as indicators of corrosiveness.

7. Six of the nineteen samples supported fungal growth when tested at 86°F and 95 percent relative humidity for 28 days. Samples containing boric acid were resistant to fungal growth, whereas samples containing primarily ammonium sulfate or aluminum sulfate supported fungal growth. The standard specifications do not include criteria for fungal growth resistance.
8. Thermal conductivity values for seven of the eight samples tested exceeded the values reported by the manufacturers; the range of deviations was 11-63 percent. The standard specifications allow only a 5 percent deviation.
9. Flame spread ratings obtained from the eight samples tested were in good agreement with values reported by the manufacturers. The chemicals used in the tested samples were effective in providing flame spread resistance as defined under the standard specifications.

V. RECOMMENDATIONS

The results of this survey show the need for a better understanding of the parameters which control the performance of cellulosic insulation and the need for improved standard specifications. Therefore, the following recommendations are offered:

1. That the performance criteria of cellulosic insulation be reevaluated and, where necessary, redefined and/or new performance criteria identified. Items to be included in the reevaluation should be:
 - retentivity and stability of fire retardant additives
 - moisture absorptivity
 - resistance to fungal growth
 - corrosiveness
2. That the standard specifications be modified to insure effective specifications for product quality and performance.
3. That manufacturers of cellulosic insulation place greater emphasis on compliance with standard specifications.
4. That consumers of cellulosic insulation insist that purchased materials are in compliance with the standard specifications and, when feasible, check for such compliancy by independent testing.

APPENDIX A—PROCEDURE FOR ANALYZING FIRE RETARDANT ADDITIVES

- (1) Check sample for organic additives by extraction with suitable solvents. Check sample for ethanol solubles in particular.
- (2) Oven dry a weighted sample at 80°C for one hour to determine moisture level "as received."
- (3) If results of (1) through (2) are negligible, proceed with water extraction.
- (4) Combine 5 grams of insulation sample with 100–200 ml distilled water in suitable container and warm on hot plate for 5 minutes. Stir occasionally.
- (5) Remove water and dissolved material from wet cellulose by vacuum filtration. Retain washed cellulose on filter paper in buchner funnel.
- (6) Set aside 100 ml of the filtrate for analysis.
- (7) Wash cellulose with three 100 ml portions of hot distilled water and one 50 ml portion of 95 percent ethanol.
- (8) Transfer cellulose to watch glass and dry one hour at 100°C.
- (9) Weigh watch glass and cellulose. Place cellulose in labeled bottle, wipe dust from watch glass and weigh.
- (10) Computer weight of dried cellulose and percent water solubles by difference.
- (11) Heat filtrate retained in step (6) at 80–90°C until water has evaporated. Remove dried solids, grind and mix to assure uniformity. Place in labeled vial.
- (12) Perform emission spectrographic and X-ray fluorescence analyses to detect elements.
- (13) Confirm compounds and elements detected in steps (11) and (12) using X-ray diffraction and differential thermal analysis.
- (14) Quantitatively determine metallic elements using atomic absorption spectrophotometry.
- (15) Quantitatively determine metallic elements by using the quantity of that element present and the molecular weight of the most likely molecular form and hydration state.
- (16) Quantitatively determine those compounds which do not contain metallic elements by subtracting known substances in those cases where all residue components are identifiable.

APPENDIX B—PROCEDURE FOR DETERMINING pH OF CELLULOSIC SAMPLES

- (1) Allow a quantity of distilled water to equilibrate with atmospheric CO₂ (approximately pH 5.7).
- (2) Add 50 ml of water to one gram insulation sample and stir for approximately five minutes using an electric stirrer.
- (3) If the sample does not wet readily, add 0.1 ml of a 5 percent Trident Solution to the mixture prior to stirring. (This will not alter the final pH).
- (4) Using a Beckman Zeromatic pH meter and Combination Electrode (Beckman Part No. 39013), determine the pH of the suspension.

Senator McINTYRE. That is a very good statement. It just seems like the problem seems to proliferate, or seems to grow all of the time.

For instance, we heard the other day in a hearing I was in that putting insulation in a building that is already insulated would mean a 6 or 7 percent saving, whereas putting it in a building that had no insulation would be a 50 or 60 percent saving. So it looks like the priority should be those that don't have any insulation at all. I know our insulation up in the Northeast is very good, but it is very poor in the South where they have air conditioning.

If Congress grants a tax credit for energy conservation and solar energy, would your organization endorse the concept of loan subsidies for solar energy?

Ms. LAWRENCE. It is our feeling that we have to have more than one system going. I don't think we would endorse people getting both a tax credit and a low interest loan. But it is our feeling that tax credits will affect one part of the population and low interest loans will affect another part of the population, and it is appropriate to devise two different strategies because of that.

So we would endorse a double strategy.

Senator McINTYRE. Tax credits and tax exemptions are such difficult things to push through the Finance and Ways and Means committees. Loan subsidies may be the more facile route.

Ms. LAWRENCE. Are they easy to push through?

Senator McINTYRE. Well, the Finance Committee gets so many of these coming in.

Can you suggest any existing Federal programs that could be used to directly provide low cost loans for solar energy and energy conservation?

Ms. LAWRENCE. There are some programs in Farmers Home which are already apparently being used for this, low interest loans for conservation and those could be used for solar. I read a report in the paper on Saturday that said that they were not anxious to use Farmers Home loan money for solar, because they didn't feel the standards were available yet.

It is my hope that with the HUD minimum property standards they will now be willing to do that. Perhaps that program could be expanded.

I don't know what the legalities are of using some of the existing home improvement programs for low interest loans for solar, and I think the staff of the committee could probably tell you better than I.

There are many different kinds of loan programs, and I am just not familiar enough with the way they are structured to be able to tell you whether you could adapt those to solar energy. I think your staff would have to tell you.

Senator McINTYRE. We put out one of these reports that go back home to the constituents, and it is currently under fire by Common Cause. And we have been giving them all this sweet talk about how insulation is available, all of that. And I wish you could see some of the letters I got. We made one mistake somewhere—the staff never makes a mistake, it is always someone else. We fed a lot of wrong figures up there, and I wish you could have seen the replies. I re-

member one reply in heavy black type saying "I have eight kids, I worked hard all my life, I have got a little house, what are you trying to tell me? The banks are going to loan me money to insulate the house? Sure, at 18 percent, of course they are."

It is very frustrating. I find it frustrating, too. For instance, I am still frustrated that 4 years ago I said sure, we ought to make sure no building is built that you can't open the windows. And they are still building them that way today. Why doesn't Ralph Nader get after that?

Mr. STANTON. We will work on it.

Senator McINTYRE. It is a mess, really, so help me God, what a mess.

Ms. LAWRENCE, what action should the Government take to protect the potential 1.2 million to 2.3 million American families who are expected to buy solar energy heating systems between now and 1985?

You mentioned standards. What about enforcement as well?

Ms. LAWRENCE. I think one thing that could be done is a very active look at what is going on already. Aside from the HUD minimum property standards, which are really only a stopgap measure, there is a very complex process among the industry itself to set standards for itself which is progressing at a very slow pace.

Some pressure ought to be put on ERDA from this committee and maybe some funding provided to actually assist in hastening that process.

The concept of consensus standards made by the industry itself is an appropriate one. I don't think ERDA should go in and set standards for the industry. But ERDA can play a very important role in hastening that process.

What would come out of that would be something similar to what is happening in Florida, where there is a Florida Solar Testing Center. That center certifies equipment and puts a seal, a round sun-shaped seal on it—

Senator McINTYRE. A Goodhousekeeping Seal of Approval?

Ms. LAWRENCE. That is right, Florida goodhousekeeping seal of approval. That indicates the collector has gone through a series of tests, not only to see if it will stand up to weather conditions, but also to see if it will perform at a certain level. The center then gives you sheets of information as to what level of performance this specific collector has met.

I don't think you want to get into a situation of saying that collectors should perform at a specific level or else they are no good, because the reality is that many collectors may be very efficient, but they may also be exorbitantly expensive. Other collectors may be less efficient, but are much more within the realm of a person with a limited income, and may work well for that person, given the fact that he or she understands exactly what he or she is getting for their dollars.

That is the essential piece of information, that people know what they are buying produces what they want to get out of it.

Senator McINTYRE. How long have you been with Consumer Action?

Ms. LAWRENCE. Five years.

Senator McINTYRE. Are you still as optimistic about solar energy as you were when you first came with them?

Ms. LAWRENCE. More so. I think the development of interest over the past several years has been very significant. It may not come as soon as I think it will come, or it may come more quickly. It depends on so many different factors. But I think its coming is assured.

Senator McINTYRE. Should the States create and enforce standards or should FEA and FTC have the responsibility? We are talking about those standards to protect people.

Ms. LAWRENCE. It is my feeling that FEA is already, in fact, they are holding hearings today on the subject of standards or at least rating energy conservation performance. I think FEA is a logical place to continue that effort. One of the problems with their evaluation is that up until now they have only looked at the country in very broad regions and that has been due so I have been told to not having the funds and the staff to do more than that.

I think if they are going to do that job, and I think it is appropriate that they should, it would have to include area specific information as to price and type of supply.

But I think together with that, it can't be a program that ignores the States. It has to be something that goes hand in hand with the efforts of State energy offices. It can't be a program that is dictated from above.

Senator McINTYRE. Have you ever been over to ERDA?

Ms. LAWRENCE. Yes.

Senator McINTYRE. What is it like over there?

Ms. LAWRENCE. There are no windows.

Senator McINTYRE. No windows? Sometimes in the hustle and bustle of the job I have, I wish I could go and see some of these places.

Well, you mentioned the Dayton, Ohio, loan funds for energy conservation. Could such a fund be used for solar energy as well? And is the Dayton program self-supporting?

Ms. LAWRENCE. I have to preface this by saying I have only talked to the people running this program. There may be another side to the story.

Their belief—they started the program with community development block grant funds and municipal funds, and this is a revolving fund, that is self-supporting.

Senator McINTYRE. Mr. Stanton, the Federal Energy Administration has presented the committee a study of residential insulation supply, indicating few problems with supply or price of retrofit insulation materials.

How does this square with your own testimony?

Let me read from that report, "Supply Response to Residential Insulation Retrofit Demand," page 35, submitted to FEA on June 17, 1977.

Page 35 says:

Our estimates of current production and current and future capacity for cellulosic insulation may be understated. Since the majority of cellulosic insulation is used in the retrofit market, the Commerce data suggest that capac-

ity may be available to produce enough cellulosic insulation for an additional 1-2 million retrofits. Utilization of this plant capacity, however, will depend on the availability of materials such as newsprint and boric acid. In addition, demand may be restrained if some cellulosic insulation products are perceived to be less desirable than mineral wool because of quality problems such as flame retardency and corrosivity.

I have a speech writer, and every time he puts "statistics" in a speech, I get a little upset, even if it is once every 20 pages. But one day about a week ago he had it three times on the same page. And I just managed to make the hurdle, you know. Statistics is a tough one.

What do you have to say about that?

Mr. STANTON. We are glad they at least included the cautionary language, the fine print that says "Utilization of this capacity will depend on the availability of materials such as boric acid."

Nowhere do they explore the fact that boric acid is in short supply and we have few clear prospects of cracking that particular bottleneck. They simply don't explore that issue.

On page 19 of the same report you are talking about, they project an expansion of cellulosic insulation plant of 20 to 25 percent a year, without exploring the problems of availability of borates. We think it is highly irresponsible for them to make that kind of over-optimistic projection without doing the necessary homework first.

We might also add a few other points, if we could. On page 34 you will note they have admittedly shaky numbers. They say insulation material available for retrofit will vary depending on certain assumptions, between 17 million homes by 1980 and 29 million homes by 1980.

First of all, that is a really pretty broad area of disagreement, depending on assumptions.

Second of all, they do admit—in fine print—that they have a shortfall, assuming the lower assumption comes out, to meet the target of 47 million homes to be retrofitted by 1985.

Finally, in the end, the most important part, possibly, is their assumption about price. They interviewed industry sources and came back with a statement that industry sources say since they will be afraid of possible antitrust actions, far be it from them to take advantage of scarce supplies by jacking up the price.

We have had a little history now, oil, coffee, you name it, and we can't depend on the benevolence of industry not to take advantage of scarcity of supply.

Moreover, antitrust enforcement, with the prevalence of consent decrees, and the long time it takes to pursue an antitrust case, is not an adequate deterrent.

Again, the administration has not faced this issue. The FEA admits the contractor spent only 10 days doing the research on this particular report. They are quite candid about that fact. We don't think it qualifies for Senator Proxmire's Golden Fleece Award.

Senator McINTYRE. That is not one of my favorites. Don't mention it, please.

Mr. STANTON. We don't think it qualifies anyway. On the other hand, the report is not the kind of detailed work this committee deserves in order to reach an informed decision.

Senator McINTYRE. Do you think because of the shortages the Government should not provide incentives for insulation?

Mr. STANTON. The Government has to be careful in providing incentives, for example a tax credit, so that it doesn't go out of the consumers pocket into the hands of producers restricting supply and jacking up the price.

Senator McINTYRE. I think that is a great weakness. That is probably why the administration brought the utilities in.

Mr. STANTON. But the utilities are only good for distribution. The bottleneck is further up. It is a question of the utilities' access to insulation.

Senator McINTYRE. Shouldn't the utilities be able to judge whether it is good insulation or not?

Mr. STANTON. It is a question of availability. I hope the utilities will be able to judge the quality.

Senator McINTYRE. It seems they would. What about the fact that if there are shortages, and there is this difference between—I can take and put 3,000 worth of insulation in my home that is already insulated, and I get a 6-percent increase. Should there be some priorities if we have a shortage?

Mr. STANTON. Yes, sir, the Ashley bill properly gives priority to public housing. We think the weatherization for low income people, who are most inclined to have the poorly insulated buildings, should also be pushed to high priority.

Senator McINTYRE. You describe the potential problems of cellulose insulation, that it is not treated with fire retardant borates.

Does the Federal Government have any fire safety standards to cover insulation to your knowledge?

Mr. STANTON. They have very limited fire safety standards. Included in the National Bureau of Standards testimony which I submitted for the record is a very blunt statement that they do not have adequate standards, and, worse, they don't have the test methods.

In other words, even if you have a standard, how do you test a piece of material to see whether or not it meets that standard? NBS is talking about crash programs. We would urge the committee to use strong report language to get them going on it.

Senator McINTYRE. What is the reputation of the National Bureau of Standards?

Mr. STANTON. Mixed.

Senator McINTYRE. Is anybody getting a decent mark with you Nader fellows?

Mr. STANTON. Yes, sir.

Senator McINTYRE. Who. Yourselves?

Mr. STANTON. We find many different programs and goals very valuable. But the reputation of the National Bureau of Standards is mixed. I can't tell you anything else, that is a fact.

Senator McINTYRE. Do you think we ought to fire a letter to the National Bureau of Standards, making them aware of this, the possibility of these flammable things getting into a crash program of insulation and be a fire hazard?

But apparently if it is mixed, we better find somebody else.

Mr. STANTON. No; we think the National Bureau of Standards is the right agency. It is a question of getting top management to allocate priority to this area. We are impressed with the individual members of NBS that we spoke with.

Senator McINTYRE. Ms. Lawrence and Mr. Stanton, our appreciation to you for your presence here today. We may have considerable questions to send you for the record.

I believe that this concludes the committee's hearings on the energy conservation legislation.

[Thereupon, at 12:15 p.m. the hearings were concluded.]

APPENDIX

AMERICAN
BANKERS
ASSOCIATION

1120 Connecticut Avenue, N.W.
Washington, D.C.
20036

EXECUTIVE DIRECTOR
GOVERNMENT RELATIONS

Gerald M. Lowrie
202/467-4097

June 28, 1977

The Honorable William Proxmire
Chairman
Banking, Housing and Urban Affairs Committee
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

We respectfully ask that the attached statement be made part of the hearing record on S.1469, the National Energy Act.

The task which your Committee faces will be a difficult one, as specific recommendations must be made on energy-related issues. The American Bankers Association, while very interested in the broad range of energy-related issues, has chosen to address only the issue of how energy-efficient home improvements will be financed.

We hope that our remarks will be of value as the Committee considers this issue.

Sincerely,



Gerald M. Lowrie

cc: Members of the Committee on Banking, Housing and Urban Affairs.

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STATEMENT OF
THE AMERICAN BANKERS ASSOCIATION

Both President Carter and Congress are to be commended for taking the initiative in what is certain to be a long and arduous struggle with our nation's energy problems.

Many of the specifics recommended by the President's energy specialists are reflected in S.1469, the "National Energy Act," a multi-faceted legislative proposal designed to alleviate some of the strains imposed on our scarce sources of energy. The various aspects of this legislation, therefore, deserve careful deliberation by the Congress and responsive input by the affected entities in both the public and private sectors. Hopefully, all of these interests working together will produce some much needed solutions to the nation's energy dilemma.

The American Bankers Association realizes that the role of the private lender will be vitally important in efforts to implement the proposed national energy plan. That perception accordingly prompts us to focus our attention, as bankers and the primary source of home improvement loans, on Title I, of S.1469 which deals with energy conservation programs for existing residential buildings.

We endorse the objective of this section -- to reduce energy consumption through installation of energy-efficient home improvements. The stated goal of bringing 90% of all residences and many public buildings within minimum Federal energy standards by 1985 would seem an optimistic objective; however, it is not unrealistic, and we encourage its pursuit. It is therefore not the "end" but rather the "means" by which the objective would be achieved that raises certain concerns among bank lenders.

More specifically, those concerns are the burden which would be placed on the utilities to become providers of home improvements loans and the lack of necessity for a "secondary market" for those loans.

While mandating as S.1469 does, that regulated utilities must offer their residential customers a "turnkey" energy conservation service, financed by loans

repaid through monthly utility bills seems logical on its face, there are some flaws in the concept. The most visible defect from a bankers perspective is that the drafters of this proposal have assumed the need for creating through legislation a new source of financing for home improvement loans. Our perceptions are quite the opposite as we anticipate that bankers would quickly respond to the demand for this new type of loan. In fact, home improvement loans are currently offered as a customer service by almost all commercial banks, and it seems only logical that these institutions will again make available these funds as they are needed. A few statistics quickly highlight the commitment commercial banks have already made to provide funds for home improvements -- commercial banks extended approximately \$3.03 billion of the total \$5.03 billion extended on home improvement loans in 1976 and hold some \$5.4 billion in their total home improvement loan portfolios.

Beyond the question of whether or not commercial banks are willing and capable of providing the funds for this new category of loan, there also exist several other related issues which should be examined. It is our understanding that the electric utilities have testified before the House Interstate and Foreign Commerce Committee that they do not wish to become involved in the home improvement loan business. This position seems quite reasonable, particularly under current conditions where the utilities are being faced with unprecedented challenges to provide increasing energy demands from dwindling supplies. In view of these circumstances, it then seems logical for specialists to retain the opportunity to provide those services with which they are most experienced, i.e., utilities supplying energy and bankers supplying loans. It should be noted that only existing financial institutions already have in place the mechanism to quickly and efficiently begin disbursing home improvement loans.

There are several other important ramifications involved in requiring that utilities provide financing for energy efficient home improvements. In this period of soaring utility costs, mass confusion could result over utility bills unless a careful itemization of charges are made on each bill. It would be an important consumer protection measure to require that a full disclosure of charges be provided to utility customers such as provided to bank borrowers by the "Truth in Lending Act." The utility customer would need a precise explanation of the monthly utility bill so that each one would be fully apprised as to the amount applied to energy costs; loan principal; and loan interest.

Possibly the most important consideration in authorizing consumer lending powers for utilities is the effect this would have on the "monopoly" status accorded a public utility. This new authority will probably require licensing by some states and a careful monitoring by the public utility commission in all states to determine the effect the interest earned from these loans will have on the overall profitability of utility companies. This is necessary because of the "fair rate of return" method of regulation traditionally used to insure that monopolies are not taking advantage of their monopoly position. Public utility commissioners may find themselves having to become experts in consumer finance as well as the production and distribution of energy.

The recommendation of the American Bankers Association, in view of the circumstances described above, is that no legislation be enacted at this time which would create new sources of home improvement loans or mandate that any lender be required to make these loans. Instead we suggest that the existing market will meet the demand for these loans so long as a satisfactory rate of return is available and FHA Title I guarantees can be obtained for at least a portion of those loans. We anticipate that the percentage of banks using FHA Title I would significantly increase, particularly in view of the increased risk involved in providing loans to

90% of the nation's utility users. Although fewer banks have been using FHA Title I loans each year, that is largely because banks have found it more profitable to self insure or use private insurance -- it is not because of any basic defect in the Title I program.

The scenario for the future, as we would perceive it, is that a major new market will develop for energy-efficient home improvement loans. This demand will be sparked by increasing energy costs passed on to the consumer in higher utility bills which can be ameliorated somewhat by installation of energy saving home improvements for which a further incentive will be provided in the form of a tax credit. We further envision that this loan demand will be met by existing lenders assured only of an opportunity to receive either prevailing market or FHA Title I interest rates.

We must qualify this assumption partially, however, on the basis of two circumstances which could arise. The first is that lenders could incur major problems caused by the elimination of the traditional rights of a "holder in due course" as proposed and partially finalized under regulations of the Federal Trade Commission. Specifically, the lender would be required to warrant the work of hundreds of home improvement dealers, many of whom will materialize overnight to meet this new demand for home improvement installations. The American Bankers Association has repeatedly attempted to bring the potential harm of this FTC regulation to the attention of Congress, and we would respectfully suggest that the appropriate time to correct the problems created by the regulation would be in the course of making certain that adequate financing will continue to be available to meet the objectives of the National Energy Act. Staff attorneys from ABA are available to discuss in depth the parameters of this specific problem with Members of Congress or the Administration.

The second circumstance which could potentially dampen enthusiasm on the part of lenders for this program would be an increase in the premium rate for FHA insurance on Title I loans occurring prior to the two-year review of this rate as

prescribed in S.1469. The effect of this rate increase would be to reduce the yield received by the lender as a result of increased loan delinquencies being presented as claims to the FHA. It seems logical to expect that loan delinquencies will be higher for energy-related FHA loans as efforts are made to achieve the 90% penetration rate which is a basic objective of the President's proposal. The basis for this prediction is that a fairly significant percentage of this large contingent of borrowers will be substandard credit risks. Therefore, the combination of an expected increase in insurance premium rates and a statutory ceiling on Title I loans will create only one result -- a decrease in loan yields. Accordingly, it is most important that maximum flexibility be included in the final legislation which would allow the Secretary of HUD and the Energy Administrator to be responsive should this circumstance develop, thereby avoiding unnecessary restraints on the usage of the Title I program.

SECONDARY MARKET FOR HOME IMPROVEMENT LOANS

Sections 113 and 114 would authorize expanded powers for the Federal Home Mortgage Corporation and the Federal National Mortgage Association to create a secondary market for energy-efficient home improvement loans. The obvious intent is to enhance the nature of the Title I program, thereby increasing the availability of funds for home improvements designed to conserve energy. Although the intent is laudable, the actual need for this new Federal program seems unnecessary. This apparent lack of necessity for a secondary market is premised largely on the basic difference between the comparatively short term of home improvement loans as compared to the terms of other types of loans which are regularly passed on to a secondary market. Regular residential mortgages with 20-30 year repayment schedules and student loans with 8-10 year pay-outs have been the traditional types of loans which are greatly facilitated by the availability of a secondary market. The obvious value of these secondary markets is that financial institutions are not required

to tie up funds for the entire duration of the loan. This flexibility is thus very important for loans with extended repayment periods; however, the term involved with home improvement loans is short by comparison and it is expected that financial institutions would not find it necessary to seek any secondary market for this type of loan.

There is also another little known form of flexibility for FHA Title I loans that could provide relief for lenders if needed. In an instance where a financial institution elects to reduce its Title I portfolio for whatever reason, those loans can be shifted to another financial institution as they have a negotiability feature and the insurance reserves are transferable as well. (Title 24 Sec. 201.12 of the National Housing Act). This important feature would allow one institution with a disproportionate volume of energy-related home improvement loans to shift a portion of that portfolio to another financial institution.

In view of the rather short term of most home improvement loans and the negotiability of those loans among financial institutions, it is our opinion that the creation of a secondary market for these loans is unnecessary at this time. Instead we feel that the availability of energy-efficient home improvement loans should be carefully monitored by an appropriate Federal agency to determine if additional legislation is needed.

Our recommendation simply stated is that the creation of a new financing source for home improvement loans and a secondary market for those loans is not necessary. We are persuaded that the existing credit mechanism is capable of meeting and servicing this new market demand. However, we do not advocate that either of these alternatives be permanently precluded as future experience could alter present assumptions about supply and demand. If the term of energy-related home improvement loans is extended significantly beyond the current average term of 3-5 years or the consumer participation in this program should dramatically exceed expectations -- then alternatives such as these should be carefully considered. We advocate only

that the existing marketplace be given an opportunity to supply the financing needs contemplated by S.1469.

We appreciate the opportunity to make known our views on this very important legislation and remain available for further consultation with members of this Subcommittee if we can be of assistance.

TESTIMONY OF
EDWARD J. CARLOUGH, GENERAL PRESIDENT
SHEET METAL WORKERS' INTERNATIONAL ASSOCIATION
ON
S. 1469 and S. 805
Before the
SUBCOMMITTEE ON HOUSING AND URBAN AFFAIRS
OF THE
SENATE COMMITTEE ON BANKING, HOUSING AND URBAN AFFAIRS
June 29, 1977

We appreciate this opportunity to express the position of the Sheet Metal Workers' International Association on those sections of S. 1469, The National Energy Act, now under consideration by this Subcommittee, and to present our support of S. 805, which would stimulate commercialization of energy conservation and solar energy through federal low-interest loans and grant programs. We believe that such direct federal financial assistance to homeowners is an essential component of an effective national energy strategy.

Our active interest in solar energy and energy conservation is twofold. It is a tragic irony that although the need to conserve fossil fuel energy and to fully utilize solar energy is so crucial, thousands of sheet metal craftsmen--whose skills can make energy-efficient homes and buildings a reality--stand idle.

The cost to our nation in wasted energy and in lost wages is staggering.

President Carter warned in his Energy message that "We imported more than \$35 billion worth of oil last year, and we will spend much more than

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that this year. The time has come to draw the line." He emphasized that heating and cooling systems are one of the areas "where we waste most of our energy."

There is a second kind of waste. Right now, 30,000 union sheet metal workers are out of jobs. Based on a national average hourly wage of \$8.08 and a 40-hour work week, an incredible \$9.7 million per week in buying power, taxes, and family security is being lost to our economy--to say nothing of productivity.

The Congressional Budget Office White House, and the AFL-CIO have estimated the total loss in government revenues due to lost taxes, payment of unemployment compensation; and costs of health care, food stamps, and other forms of direct and indirect family assistance. Taking an average, it is a staggering \$600 million loss in Federal revenue and \$150 million loss in state and local revenues for each 30,000 wage-earners unemployed. And, we all know that sheet metal workers are not the only Americans suffering from the loss of jobs.

We can and must cut these losses now. We can save energy. But to get started, we must get sheet metal workers off the unemployment rolls, and back on the job.

Energy conservation and the use of solar energy will have a large impact on unemployment. It has been estimated by the Stanford Research Institute that one-fourth of the dollars invested in solar heating and cooling alone will go to the labor costs of installation. In addition, there will be many jobs created fabricating the collectors, storage tanks, ducting, and allied equipment necessary for a solar installation. A massive commitment to residential energy conservation will create thousands of jobs for which sheet metal workers have the unique training and skills.

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We must stress that there is no shortage of skilled manpower to install conservation measures and to build solar installations. In fact, our journeymen sheet metal mechanics have been fully qualified for many years to both fabricate and install solar equipment. There need not be any conservation or solar projects shelved for want of the skilled manpower. Members of the Sheet Metal Workers' International Association are ready to go to work.

We have already taken these steps:

* In 1975 we commissioned the Stanford Research Institute and the Mitre Corporation to make studies of the impact of solar development and energy conservation on our industry. Copies of these studies have been made available to every Member of Congress. The Mitre study forecast that 2.4 million single family residences could be using solar energy by 1985 to 1990. We are gratified that the President has made proposals to back this commitment.

* Through our National Training Fund, we have developed an excellent film on solar energy, and we have aided ongoing solar research.

* We have been educating our membership to the positive savings of energy conservation and solar energy development.

* Sheet metal workers have already put the solar promise to work by installing solar heating systems throughout the country. Practicing what we preach, Local 55 on Long Island converted its Apprenticeship Training School from electric to electric-boosted solar air heating. Solar energy carried about 45 percent of the heating load in our worst winter on record. Local 80 in Detroit has just installed an all-air solar heating system in its new training school facility.

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Looking ahead, the U.S. Energy Research and Development Administration estimates that solar energy will provide 7 percent of our total energy needs by 2000 and up to 25 percent by 2020.

"No country uses as much energy as is contained in the sunlight that strikes just its buildings.", according to the recent Worldwatch Report, "Energy: The Solar Prospect."

We cannot afford to wait. Apathy and the wait-and-see attitude are our worst enemies.

Having acquainted you with our earnest commitment to a sound, national energy program and with the skills and manpower that union sheet metal workers will provide to implement the program, I wish to express our position on specific portions of the bill.

Our union urges early passage of the President's legislative proposals for opening a secondary market for residential energy conservation and solar energy loans through the Federal Home Loan Mortgage Corporation and the Federal National Mortgage Association. This will strongly encourage private lending institutions--many of which have been conservative in their view toward solar loans--to make capital available at reasonable interest rates. We also support the increased funding levels for the residential weatherization program which will not only save energy but also real dollars for those hard-pressed, low-income Americans who can least afford high energy bills.

Advancing the effective date of mandatory standards for new residential and commercial buildings from 1981 to 1980 will be extremely effective in reducing our energy deficit. Currently, almost 25 percent of all energy used in this country is consumed by heating, ventilating, air conditioning

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and related systems. It makes no sense to continue to build energy-guzzling "white elephants" when we have the knowledge to make them energy-efficient. We, therefore, endorse the authorization of funds to assist the states in this effort.

With regard to the President's proposal to make public utilities the major vehicle for accomplishing residential energy conservation, we have strong reservations.

The first is the question of allowing utilities even more of a monopoly in the residential energy field than they now command. If utilities install energy conservation measures with their untrained or hastily retrained personnel, they would drive many independent contractors and small businesses which normally perform such work out of business--with attendant losses in jobs.

Second, the utilities' vast capital would permit large-scale purchases of insulating material and conservation equipment, creating a lock on the supply and killing off private competition. Shortages are already forecast as early as this Fall without the utility program's potential effect. As utilities move inevitably into the solar installation field, they could again, by their capital, dominate the market.

Third, if they acquire solar equipment manufacturing firms, we will be faced with the same monopolistic problems we now have with the large oil companies--suppression of competition, price maneuvering, market manipulation, and dedication to the status quo. And, they would have control over our use or non-use of an inexhaustible energy source.

Solar energy is free. It is the equipment and installation to convert that energy to our use that requires an investment. However, if the utilities control the equipment and the installation, we may end up, in effect, leasing the rays of the sun.

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The administration's proposal to require utilities to offer a conservation program and loans to homeowners is the first step down this road. The bill does not provide adequate safeguards against deceptive practices, anticompetitive activity, price fixing, excessive profit taking, or unreasonable interest rates. The state regulatory commissions will have the responsibility for watchdogging these activities. Yet, we know historically that their record in rate regulation and consumer protection has been poor.

All utility consumers will pay for this program because administrative overhead will be passed on through rate increases. There is nothing in the legislation to prevent it. Those who have already invested in energy conservation or who plan to do so with their own money will be penalized. Carrying it one step further to solar, the Southern California Gas Company has requested a rate hike from the State Public Utility Commission to fund a 5-year solar demonstration grant. The Center for Science in the Public Interest forecasts that if the rate increase is granted, consumers will pay about \$11 million for the utility to install 315 solar heating units. That translates to a cost of \$34,920 per unit—which gives you some indication of how Southern California Gas is promoting solar and profiting from it. The consumer is the loser. In contrast, an April 4th article in "U.S. News and World Report" discussed 22 solar installations in Denver that cost between \$8,000 and \$9,000 each.

Last year, Colorado utilities asked for and received a rate structure change so they could charge solar homes a higher rate for electricity than conventional homes. Why?—To compensate for decreased electricity useage.

Reason finally prevailed, and the decision was reversed. But this is a forerunner of what consumers can expect if the utility program provisions of S. 1469 are passed.

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There is a better way to spur residential energy conservation and speed up the use of solar. We support H.R. 3981, which would provide low-interest loans and grants to homeowners; community, neighborhood, and non-profit groups; and low-interest loans to small businesses for installation of conservation measures and solar space and water heating systems.

The concept is straightforward. It would make the energy savings of conservation and solar available to many Americans who otherwise could not afford the initial investment...it would provide dividends to the Nation as a whole in the form of reduced energy consumption...it would create thousands of jobs for sheet metal workers, other trades, and employees in related businesses, supply companies, and contracting firms...and it would prevent the public utilities from digging even deeper into the consumer's pocketbook.

Americans are rapidly becoming educated about the energy crisis. Many are already suffering seriously from the high costs. All of us want to do our constructive part to help solve the problem. And, we are looking to Capitol Hill to provide the answers as to how. Passage of S. 805 would be a strong incentive to individual action and a clear statement that Congress is committed to bringing order out of chaos and a measure of help to the average American.

If we are to have an effective national energy program, we cannot put a significant portion of that program in the hands of the utilities that have generated poor energy planning, inverted rate structures, blackouts, brownouts, and pollution--and will short-circuit the use of solar energy unless they can put a price on sunlight.

Congress alone can make the hard, legislative choices that will determine the outcome of our energy future and the fate of our unemployed.

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The energy legislation we support, without question, will cut our losses in energy and jobs. It will save fossil fuel, yield a more favorable balance of payments, create thousands of jobs, and contribute to our energy independence.

The Sheet Metal Workers' International Association urges passage.

NATIONAL ASSOCIATION OF MUTUAL SAVINGS BANKS

200 PARK AVENUE

NEW YORK, N.Y. 10017

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Cable Address:
Savings, New York

June 29, 1977

The Honorable William Proxmire
 Chairman
 Committee on Banking, Housing and
 Urban Affairs
 United States Senate
 Washington, D. C. 20510

Dear Mr. Chairman:

The National Association of Mutual Savings Banks (NAMSAB) appreciates this opportunity to present the views of the savings bank industry on Subparts 1, 2, and 3, of Title I of S. 1469, the National Energy Act, and we request that this letter be included in the record of the committee's hearings.

At the outset, we wish to state that the savings bank industry supports the energy conservation effort as an effective means of alleviating our nation's energy crisis. Moreover, as an association whose members are located predominantly in the northeastern part of the country, we recognize the importance of residential conservation as a means of achieving substantial energy savings. Our recognition of the role that savings banks can play in encouraging residential energy conservation has resulted in NAMSAB recently creating a Subcommittee on Energy Implications to deal with this problem.

Before discussing specific provisions of S. 1469, I particularly wish to applaud the Administration's decision to accomplish residential energy savings through tax incentives and voluntary cooperation. We believe that mandatory energy conservation requirements should be imposed only after careful reflection. In this regard, we wish to record our opposition to the action of the House Subcommittee on Energy and Power which would deny mortgage financing, effective January 1, 1982, to housing which fails to meet federal energy efficiency standards. The savings bank industry believes that such a sanction should be imposed only after a considered determination that such a measure is necessary, effective, and not unduly disruptive to the housing and mortgage market. We thus believe that the subcommittee's action was premature, and we urge the Senate Banking Committee to resist efforts to impose mandatory sanctions at this time. We would, however, suggest that the committee adopt provisions similar to those adopted by the House Committee on Banking, Finance and Urban Affairs in reporting out H.R. 7893. Provisions in the bill would require the Department of Housing and Urban Development to study the impact and feasibility of a mandatory residential energy conservation program. We believe that such a study is an essential first step before the voluntary approach is abandoned in favor of mandatory sanctions.

The Honorable William Proxmire

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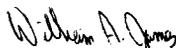
As to the particular provisions of S. 1469, we support expansion of the definition of the term "energy conserving improvements" to include energy conservation repairs. This expansion should increase the availability of economical financing for these effective, energy savings measures.

With regard to the provision of the bill adding public utilities to the list of financial institutions eligible to receive FHA insurance for Title I loans, we would note that the savings bank industry has expertise in the making of both FHA and conventional home improvement loans. We also believe that existing private lenders will be able to provide the necessary financing for the implementation of residential energy conservation measures. It should also be noted that the Subcommittee on Housing and Community Development of the House Committee on Banking, Finance and Urban Affairs deleted the proposal to require utilities to finance energy improvements, and we urge the Senate Banking Committee to take similar action.

We support amending the statutes controlling the Federal Home Loan Mortgage Corporation and the Federal National Mortgage Association so as to permit them to purchase unsecured loans made to finance the installation of energy conservation measures. The capital requirements of this program will undoubtedly not be geographically uniform and the creation of a secondary market for "energy" loans will facilitate required credit flows. Additionally, the pooling and selling of such loans in the secondary market may attract nontraditional home improvement loan investors, thereby further contributing necessary capital.

We would, however, suggest that the bill be amended so as to permit FHLMC and FNMA to purchase conventional as well as FHA-insured energy loans. The bureaucratic delays attendant to the FHA Title I program have diminished its usefulness to many of our members and as a result, the majority of home improvement loans are not FHA-insured. These conventional energy loans must also be transferable in the secondary market if the full potential of the program is to be realized.

Sincerely yours,



William A. James, Chairman
Committee on Mortgage Investments

STATEMENT OF THE NATIONAL OIL JOBBERS COUNCIL

The National Oil Jobbers Council is a federation of 44 state and regional trade associations representing thousands of independent small business petroleum marketers. Members include gasoline and diesel fuel wholesalers, commissioned distributors of gasoline, gasoline reseller-retailers and a large number of retail fuel oil dealers. Members also wholesale or retail many other petroleum products, including kerosene, LP gas, aviation fuels and motor oils as well as residual fuel oil. Together our members market approximately 75 percent of the home heating oils and 25 percent of the gasoline sold in America under either their own private brand or the trademark of their supplier.

Because we are small, highly competitive, independent of the major oil companies, and close to the consumer, we believe we can offer some special insight into the formulation of the national energy plan. Our unique perspective and experience could be of valuable assistance in the development of effective and equitable energy policies.

The independent marketers represented by the National Oil Jobbers Council welcomed Dr. Schlesinger's invitation to submit our ideas for inclusion in the National Energy Plan. The proposals we offered emphasized incentives to achieve conservation in the short term and increase production of energy for the future. We called these recommendations "An American Energy Policy".

On April 20 our members were pleased to learn that many of their suggestions had been incorporated in President Carter's program. Most of the principles which he selected as a basis for his program were similar to ideas we had emphasized

- conservation to reduce demand to a level consistent with the real cost of replacing the energy we use.
- an emphasis on incentives rather than mandatory restrictions on our citizens.
- energy prices which stimulate production and reflect the true replacement cost of oil and natural gas.
- fairness, especially through equal treatment of similarly situated end-users.

And while the principles are not as consistently applied as we should wish, many of the President's specific measures were also quite similar to our own suggestions. Our members strongly supported and continue to support the President's proposals for

- tax credits for thermal efficiency measures in residential buildings
- federal insurance of credit extended for residential energy conservation measures
- a residential energy conservation program in which independent heating oil dealers and heating equipment contractors can compete fairly with electric and gas utilities.

- electric utility rate reform based upon cost of service
- excise taxes on inefficient vehicles coupled with rebates for efficient cars and trucks
- avoiding import quotas and end-user rationing

incentives for the development of all conventional resources including oil, natural gas, coal, and refining capacity both domestically and abroad

maintenance of appropriate environmental guidelines for the development and use of coal

- programs and incentives for the development of oil shale and coal liquefaction
- programs and incentives to develop solar and other renewable resources

use of nuclear power only after safe and standardized technology is in hand and only to the extent that other alternatives cannot meet this nation's energy needs.

With these general observations in mind, let us turn to specific issues within the scope of interest of this committee.

I. Utility Program (Title I, Part A - Energy Conservation Program for Existing Residential Buildings)

While strongly supporting conservation, independent petroleum marketers are reluctant to endorse the particular weatherization program set forth in S. 1469. That program requires electric and natural gas utilities to offer to perform inspection procedures to determine the conservation potential in almost every American home. When the home which is inspected is equipped with electric heat, the proposal has no direct impact on our members. However, almost every home heated with fuel oil is also serviced by an electric utility. Independent heating oil dealers are generally fully capable of conducting the inspection and performing the necessary weatherization measures at a competitive price. Yet, the legislation proposed by the President gives inadequate recognition to the service and competition our members can provide.

The potential adverse effect on competition of the legislation as proposed is large. Given the extremely competitive character of the home heating market, it is impossible for our members to accept the proposition that an electric company energy auditor will enter the homes of fuel oil customers and fairly evaluate the energy efficiency of their heating units. In fact, years of experience in competing with the often misleading promises made about electric heat make it difficult to imagine a more clear cut conflict of interest.

This committee should know that even without the tax-credits or facilitated financing proposed in the bill currently under consideration, several independent heating oil companies for several years have been reinsulating homes and utilizing extended payment programs. This low cost effort could be severely impeded if a monopoly is, in effect, granted to the utilities and oil heating contractors best equipped to do the work are ultimately excluded.

Moreover, there is a real danger that the regulatory formulas used to determine utility profits will encourage these monopolies toward extravagance in the equipment modifications they recommend. Where the return to the utility is a percentage of the costs, higher contractor prices translate directly into higher utility profits. Although the legislation as proposed would require the utilities to provide information regarding alternative methods of insulation installation and financing, there is no provision that assures a competing contractor or heating equipment dealer will be included in the list of available contractors before the list is sent to customers. Nor is there any provision for independent contractors to conduct their own audit and perhaps recommend a more modest but equally effective weatherization program. Both these revisions must be made if the interests of the consumer as well as the viability of the community small businessmen are to be protected. We suggest these specific revisions:

1. Because fuel oil dealers are not regulated public utilities, it would be inappropriate to mandate their participation in the weatherization program. But the FEA or its successor in the DOE should be specifically directed to promulgate regulations directing state energy offices to assist heating oil marketers in offering every service which the legislation requires utilities to offer. This assistance should include technical information about which conservation measures are appropriate for different locales of the state, financing, and state or federal assistance programs for small businessmen offering weatherization services.
2. To give teeth to the requirement that a utility must fairly assemble a list of alternative contractors, the legislation should specifically require approval of the list by the State Energy Office before any offer or list is distributed. The State Energy Office should be required to resolve disputes between the utility and any contractor excluded from the list before approval is granted. A procedure to protect consumers from incompetent or fraudulent contractors should also be established by requiring the listed contractors to post bonds.
3. To prevent subsidizing finance terms with inflated recommendations or prices, the legislation should require that all contractors, including heating oil dealers, have access to utility financing if the terms offered there are better than those which can be obtained elsewhere; or, at the very least, to prevent subsidizing, that utility financing can be no more favorable than that of independent financial institutions serving the independent contractor.
4. To assure efficient and equitable administration, the legislation should require FEA or its successor in the DOE to establish an Industry Advisory Committee which would work with the agency to develop and co-ordinate the national framework for implementation of these plans. Membership on this committee should include a number of heating oil industry spokesmen proportionate to the percentage of homes in the country heated with oil as compared with the number of representatives from the gas and electric industries. It should also include consumer representatives.

Amendments

An additional section should be added to Title I, Part A, sub part 1

"Competition"

a) Part C of Title 3 of the Energy Policy and Conservation Act is amended by adding at the end of Sec. 367(b) (2) (B) the following:

"such program shall include procedures whereby State Energy Offices (or their functional equivalent) will provide independent fuel oil marketers assistance in the undertaking of energy conservation programs for existing residential buildings, including information of both technical and administrative nature which would be of assistance in performing all functions designated for utilities in Sec. 103 of the National Energy Act."

b) The Administrator shall promulgate rules

1. to establish a procedure whereby the list of suppliers and contractors prepared by the public utility pursuant to Sec. 103 (a) (2) (D) (3) be subject to the approval of the State Energy Office (or the functional equivalent thereof) prior to distribution.
2. The rules shall include provisions for notice and comment by interested parties prior to approval of the list.

c) Each utility program shall include procedures whereby approved contractors will be eligible on a non-discriminatory basis for utility financing of purchase and installation costs.

d) The Administrator shall establish an Industry Advisory Committee to assist the agency in development and coordination of the residential energy conservation plans. Members shall include representation from the heating industries proportionate to the approximate national market shares of the industries.

President Carter and the Congress have expressly recognized the important role independent businessmen play in the energy industry. Because we are small, independent businessmen we are committed to the free enterprise system, competition and innovation. Serving the needs of our customers is our top priority.

However, the fact remains that we must compete not only among ourselves but also with the giant oil companies and the large gas and electric utilities. If it is in the public interest to maximize competition in the energy market place it is in the public interest to formulate an energy plan which affords the independent marketer the opportunity to compete fairly with the mammoth financial entities represented by the oil companies and utilities. We urge you to consider the comments we offer in light of this and we look forward to providing further input and assistance in the development of an equitable long range energy plan.



PPG INDUSTRIES, INC. / ONE GATEWAY CENTER / PITTSBURGH, PENNSYLVANIA 15222

June 29, 1977

The Honorable William Proxmire
 Chairman
 Committee on Banking, Housing and Urban Affairs
 5241 Dirksen Senate Office Building
 Washington, D.C. 20510

Dear Senator Proxmire:

PPG Industries is pleased to provide this testimony for the Subcommittee on Housing and Urban Affairs concerning S. 1469, the National Energy Act.

As we have previously expressed before other committees of Congress, there are five points relative to the glass and glazing, window and door industry which should be considered in your review of the Act. These points include:

- . a clear definition of "insulating products".
- . availability of glass and related products for the building industry.
- . value of glass and related products.
- . energy efficiency of glass products.
- . value of solar heating equipment.

1. Definition of insulating products

Numerous terms and phrases have been used to identify window and door insulation; however, we recommend the following revised wording to help clarify the definition of window and door insulating products: "storm windows and doors, multiglazed windows and doors, heat-absorbing or heat-reflective glazed windows and doors"

This broader interpretation is preferable because better window and door insulation can be accomplished through:

- A. The substitution of hermetically sealed insulating glass units, which combine into one glazing system the insulation value of the prime window, plus the storm window.
- B. Replacement of deteriorated existing window sash (to which the addition of a new storm window would be inadvisable), with new sash,

The Honorable William Proxmire
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containing insulating glass, and which new sash utilized existing window frames.

- C. In mild climates with a high incidence of solar radiation, winter heat loss is not the problem. Summer solar heat gain, and its translation into air-conditioning load, is the problem. In such cases, traditional clear glass insulating panels (as storm windows are referred to in mild climates) are not very effective. Reflective glass, single-glazed, is much more effective, so the better solution is the substitution of reflective glass for the existing clear glass, or the addition of an insulating panel containing reflective glass.

Hence, the recommended definition would include all window and door products which could contribute to the conservation of energy desired by the Act.

2. Availability of glass and related products

With respect to the demand level generated by the National Energy Act, the domestic glass industry can supply this demand subject to the availability of energy to make glass and current environmental regulations. At this time, the insulation plan timetable calls for the public utilities to notify their customers of energy saving alternatives by January, 1980, and the implementation thereafter on 60 percent of all existing American homes by the end of 1985. This relatively extended period and the gradual scale-up are compatible with glass industry planning practices.

Storm window and door and insulating glass capacities also have been questioned. Both industries are essentially regional in character and not capital-intensive. Both are capable of responding to any foreseen levels of business generated by the Act under the present timetable. Both businesses are somewhat seasonal, so a general increase in business level might even help their employment seasonality. Finally, both businesses have the manpower necessary to ensure that the current high quality of production and installation of these products could be expected to continue.

3. Value of glass and related products

There are numerous window and door options available to the homeowner, depending on the style, performance, and quality desired. Storm windows typically cost \$30 to \$40 per window installed.

Replacement windows typically cost \$150 to \$300 per window installed. Payback periods for storm windows due to saving of fuel consumption are four to seven years, depending on geographic location. Payback for replacement windows is considerably longer; but the homeowner derives additional benefits, such as better operation, no maintenance costs, improved appearance, and higher value for the home.

The Honorable William Proxmire
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Reflective glass has typically been used for commercial applications and more recently as reflective insulating panels for homes in the South. Reflective glazing adds about \$12 to \$15 per residential window.

4. Energy efficiency of glass products

One of the reasons windows have been maligned during the energy crisis period is a perceived poor energy performance; i.e., heat loss in winter, heat gain in summer. However, the energy efficiency of a window is complex when all the potential benefits are considered. Windows provide: a) proven psychological benefit to the building occupant, b) day-lighting to minimize the use of electric lights, and c) solar heat gain in winter. Additionally, proper window design with multiglazed panels can retain heat and improve occupant comfort in winter, and with reflective panels, reduce solar heat and glare in summer. Both of these measures substantially conserve energy.

Traditionally, when the energy efficiency of windows is calculated, it has been based on only one of these factors, not all (i.e., single-glazed vs. double-glazed vs. triple-glazed). The true energy efficiency of glass products is always better than most people realize.

5. Value of solar heating equipment

Solar heating provides only one feature -- free heat, and thus the only factor of importance is the trade-off of an initial investment against the potential long-term cost of the fuel no longer required.

Solar heating equipment is commercially available, and like automobiles, there are numerous makes, models, and prices. "Subcompacts" (swimming pool heaters) start at \$1,500 installed; "compacts" (hot water) start at \$2,000 installed; "intermediates" (hot water and space heating) start at \$3,000 installed, and "full-sized" (hot water, space heating and cooling) start at \$4,000 installed. Also like cars, there are additional features which can be added for a price. Given sufficient time, the solar system will pay its way and at the same time provide a hedge against fossil fuel shutoff.

Though centuries-old in application, solar equipment for heating is in its infancy as a commercial enterprise in the U.S. Substantial incentives in the form of tax credits are necessary to provide market stimulation to help increase demand so that manufacturers and investors will move more rapidly into the production of better and less costly equipment, and add another important weapon to the arsenal of energy conservation.

The Honorable William Proxmire
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We hope this summary of key points relating to the National Energy Act will help you and your committee to better assess the benefits of glass and insulation-related products and make use of their characteristics to better the energy efficiency of America's homes and buildings.

We would be pleased to discuss any of these points with you or members of your committee.

Sincerely,

A handwritten signature in cursive script that reads "Frank Breeze". The signature is written in dark ink and is positioned to the right of the typed name.

Frank Breeze
Group Vice President-Glass

STATEMENT OF HENRY B. SCHECHTER, DIRECTOR
DEPARTMENT OF URBAN AFFAIRS, AFL-CIO
ON RESIDENTIAL ENERGY CONSERVATION
SUBMITTED TO THE SENATE COMMITTEE
ON BANKING, HOUSING AND URBAN AFFAIRS

June 29, 1977

The AFL-CIO respectfully submits for your consideration and inclusion in the record of the current hearings of your Committee this statement of its views on those parts of the National Energy Act dealing with residential building energy conservation, in Title I, Part A, Subparts 1 and 2 of S. 1469.

At the last biennial convention of the AFL-CIO, in October 1975, a resolution that was adopted on Energy Conservation stated, in part, that one of the steps that must be taken was to "require all new and existing structures to conform to energy efficiency standards." In that context, we support as two of the stated goals to be achieved by 1985, in Section 3 of the bill: "Insulation of 90 percent of all American homes and all new buildings" and "Use of solar energy in more than two and one-half million homes."

We would urge the Congress, however, to give due consideration to the national capacity for production of building insulation materials, particularly those that are used in homes. If, in addition to demands for materials to insulate a current record high level of new 1-family homes, a demand for materials to insulate millions of older homes is created, a severe shortage and price inflation could ensue. As part of the overall program, therefore, there should be provision to encourage such increased capacity for production of insulation materials as would be required to meet the 1985 goals without an inflationary impact.

Although the aforementioned energy conservation goals are addressed to insulation of homes, it should be noted that Part A of Title I deals with Energy Conservation Programs for Existing Residential Buildings and that the term "residential building" is defined to mean "any building developed for residential occupancy, the construction of which commenced prior to one year after date of enactment of this subpart."

Residential Energy Conservation Plans

Each state or non-regulated utility would be permitted to prepare and submit for approval a proposed residential energy conservation plan to the Administrator of the Federal Energy Agency, within 180 days after promulgation of rules for such plans by the Administrator. Each regulated utility in a State would be required under such a plan to carry out a "utility program". If, within 270 days after promulgation of his rules the Administrator determines that the State regulatory authority has not adequately implemented an approved plan, the Administrator must, by order, require each public utility in the State to offer its customers a utility program prescribed in such order which meets requirements specified in Section 103 of the bill.

The Federal energy administrator would be directed, after consultation with the Secretary of HUD and other appropriate agency heads, to issue rules that would include "suggested measures" for energy conservation in residential buildings in different locations. Such measures could include standards for general safety and effectiveness, standards for installation of any residential energy conservation measure and such other requirements as the Administrator might determine would be necessary.

It must be noted, however, that in Section 111, which amends the National Housing Act to make loans for energy financing improvements eligible for Federal insurance, the eligible additions, alterations or improvements which are designed to reduce the total energy requirements of a structure must conform with such criteria and standards prescribed by the Secretary of HUD in consultation with the Administrator of FEA. In order to avoid the possibility of conflicting standards that could be issued by two Federal officials, it should be provided the standards to be issued by the Administrator under Section 102 and by the Secretary under Section 111 shall be the same, as agreed upon by both of them.

We are also concerned that the standards that may be included in rules to be prescribed by the Administrator, under Section 102, might be prescriptive rules. In light of the great number of variations in climatic conditions, prescriptive rules could not be applicable nationally, and a great number of local variations would have to be adopted. To avoid the possibility that a very cumbersome type of national code, with almost unavoidable deficiencies in local application, it is recommended that the standards that might be prescribed be only in terms of thermal efficiency, i.e. utilization of a maximum number of BTUs for major categories of types of structures.

The plan to be submitted to the Administrator by each state energy regulation authority would require each utility regulated by a state authority to implement a program for energy conservation. The state plan also would have to contain provisions for consumer protection, procedures to insure that each regulated utility carried out a utility program; that each utility would charge fair and reasonable prices and the rates of interest to its residential customers in connection with the installation of residential energy conservation measures; and would meet other prescribed requirements.

Utility Programs

Under Section 103, there is a provision that each utility program would have to include procedures to inform residential customers of the suggested measures for energy conservation; the savings and costs of heating and cooling that are likely to result from installation of the suggested measures; and the availability of arrangements under which the public utility, directly or through one or more contractors, would inspect the building and estimate the cost of purchasing and installing the measure, offer to have the measure installed and make or arrange for a lender to make a loan to finance the public and installation.

The proposed required provision that the residential customer be advised of the savings and costs that are likely to result from installation of the suggested energy conservation measures should be expanded. It should be made clear that the residential customer should be advised of the savings or additional costs of heating and cooling that are likely to result from installation of the suggested measures, including the interest and principal payments during

the period of repayment of any loan to finance the addition, alteration or improvement involved.

Financing Program

Subpart 2 of Title I, Part A, would amend several Federal statutes. One amendment would permit FHA insurance of loans to finance energy conservation measure installations, including the installation of solar energy systems. Other amendments would make such loans eligible for purchase by the Federal Home Loan Mortgage Corporation and the Federal National Mortgage Associations.

Such loans moreover, under the provisions of Title I of the National Housing Act and in accordance with the definition of a residential building in S. 1469, could be used for a solar heating device in a multi-unit dwelling. However, the present \$25,000 limit on a Title I FHA-insured improvement loan for an apartment house might be insufficient to finance the installation of a solar energy system for an apartment house. Either an amendment to Title I of the National Housing Act, or an amendment to permit refinancing of insured multi-family mortgages of larger amounts than \$25,000 would probably be required.

There is also no provision in the bill to finance the installation of energy conservation measures in public housing projects which include a total of some 1.2 million dwelling units. If energy conservation, leading to utility costs savings, can be achieved through installation of energy conservation measures in public housing projects, it would result in a reduction of Federal expenditures through reduction of economic rents and required Federal subsidies.

With the modifications that have been recommended, the AFL-CIO supports the approval of Subparts 1 and 2 of Part A in Title I of S. 1469.

STATEMENT ON UTILITY BUILDING CONSERVATION PROGRAM OF S. 1469
SUBMITTED BY AMERICAN PUBLIC POWER ASSOCIATION
TO SENATE COMMITTEE ON BANKING, HOUSING AND URBAN AFFAIRS
June 24, 1977

American Public Power Association is a national service organization representing some 1,400 local public power systems in 48 States, Puerto Rico, the Virgin Islands, and Guam.

APPA supports the implementation of the energy conservation program for existing residential buildings which is contained in Title I, Part A, Subparts 1 and 2 of the National Energy Act, S. 1469, in accord with the attached resolution adopted by the APPA membership at the Association's 1977 Annual Conference.

A number of APPA members have already initiated various programs designed to encourage energy conservation in family dwellings, and we applaud the President's goal of bringing 90% of the Nation's 74 million homes up to minimum energy standards.

As the Committee proceeds through its hearings and mark up of this portion of the National Energy Act, there are at least six items which APPA believes should be given serious consideration.

1. As you know, public utilities which sell less than 750 million kilowatt-hours of electricity (at retail) are excluded from mandatory participation in formulating and implementing conservation plans. APPA believes that there is ample justification for this threshold requirement based on volume of sales. Our research indicates that approximately 55 local publicly-owned electric utilities would be covered under this program, with the remainder of the country's public power systems falling below the threshold level of sales. These systems would have sufficient resources and expertise to implement conservation programs. Conversely, many of our smaller member systems would have considerable financial and administrative problems were they required to formulate and implement such programs. However, at least insofar as APPA members are concerned, there appears to be a sincere desire on the part of smaller systems to join in this program. In fact, the APPA Executive

Committee approved, in late April, a recommendation of the Association's Energy Conservation Task Force encouraging smaller public power systems that are not required to participate in the program to make every effort to offer their consumers all of the features of the energy conservation program described in Title I, Part A, Subpart 1 of the National Energy Act.

S. 1469 could be amended to enable such systems not required to participate under the Act, to nevertheless participate voluntarily where the aims of the program would be advanced. The Administrator could be authorized to establish the guidelines for such participation. Such guidelines should recognize the limited resources available to the smaller systems. Since the greatest burden to these smaller systems will be the administrative costs of implementing energy conservation programs, consideration should be given to methods for minimizing such costs and, perhaps, for providing direct assistance in meeting them.

The insured loan program and financing through secondary markets should be universally available to all utilities, regardless of size.

2. APPA is concerned that there may be insufficient incentives to implement this energy conservation program in rental units. Renters would be entitled to tax credits for the installation of approved energy conservation items, but such credits are of little value to low income individuals. In addition, few renters are willing to make permanent improvements in rental property. Assuming that some renters would be willing to pay for such improvements, it can be anticipated that they would be willing to do so only if they could anticipate a substantial reduction in their utility bill. Renters in multi-unit buildings served by a master meter would not experience any such direct financial benefit.

Investment tax credits would be available to landlords making qualified energy conservation expenditures. In most commercial enterprises, such tax credits, in conjunction with an expectation of lowered utility expenditures, will probably provide a sufficient incentive for the business owners to participate in the energy conservation program. In contrast, in most residential rental situations, lowered

utility bills do not directly benefit the landlord since the renters either pay their utility bills directly or utility costs are passed through in the total rental charge.

In view of this problem, APPA would suggest that Title I of the bill be amended to require the Administrator to conduct a study of the effectiveness of the program as it relates to rental units. The Administration has suggested that if the voluntary program is not effective, it would consider a prohibition on sales of homes not satisfying certain weatherization standards. If the study of insulation of rental units reveals that the program is not effective with respect to such units, then consideration should be given to prohibiting new or renewed leases on units which do not comply with specified energy conservation standards.

3. APPA suggests that consideration be given to the definition of "residential energy conservation measure" in Section 101 (11). The definition specifies that only certain items qualify as residential energy conservation measures, and provides no flexibility to the Administrator to include additional measures.

APPA has taken an active role in encouraging the utilization and installation of various energy-conserving devices. In addition to those items contained in Section 101 (11), APPA has, for instance, recommended the use of heat pumps where climatically appropriate. The energy-conserving properties of heat pumps are well demonstrated, and yet they are not included within the definition. I mention this particular item only as a specific example. Whether or not it is added to the list of approved items, it would appear prudent not to attempt to provide an exclusive list of energy conservation measures. APPA suggests that the Administrator be given the discretionary authority to add to the list, by regulation, those items either currently available or those items which, as we direct our attention and ingenuity to the task of conserving energy, may become available and are proven to be effective in conserving energy.

4. Under Section 103, utilities would be required either to loan, or make arrangements for another lender to loan, funds to residential customers which would

be used to finance the installation of some insulation materials. In several states, direct financing by a publicly-owned utility would be prohibited by state constitution, statute or local charter. Section 106 of the bill attempts to overcome this problem by providing that the Administrator may supersede any law or regulation of any State or political subdivision where such law or regulation prohibits a utility from instituting a conservation program. It is not at all clear that the Administrator, under the authority of that section, could in fact issue an order which would supersede a state constitutional prohibition.

While there seems to us that there is some question about the effectiveness of Section 106, it does not appear that these state constitutional (and statutory) prohibitions pose an insurmountable obstacle. For example, the Congress could establish a National Energy Bank to serve as an alternative source of funds for loans. The bank could be established as a revolving fund within the Treasury and would place no burden on the taxpayers. Utilities prohibited from making direct loans and unable to arrange for loans for residential consumers from other conventional sources could then turn to the National Energy Bank.

5. APPA recommends that your committee consider an amendment to Part A of Title I to establish a national thermogram program. Using existing federal civilian and military equipment, such a program could both identify buildings which have heat loss problems, thereby assisting energy consumers in identifying and correcting the situation, and would reveal, over time, the effectiveness of the program to be established under Title I of this bill.

The Garland Power and Light Department, a municipal electric utility in Garland, Texas, has already conducted a thermogram program on a local basis. An article explaining the program and evaluating its effectiveness in conserving energy is contained in the January-February 1977, issue of Public Power, a magazine published by APPA. A copy of this article is attached for your review.

6. Under Section 105, where a State regulatory authority or a non-regulated utility has not had a conservation plan approved, or has not adequately implemented

an approved plan, the Administrator may order the utilities under the jurisdiction of the State regulatory authority, or the non-regulated utility, respectively, to offer to their customers a utility program which meets the requirements of the Act. The Administrator, upon a determination that such an order is not being complied with, may prohibit any rate increase by the utility in violation, or seek to enjoin the utility from violating the order. In addition, utilities in violation of the Administrator's order are subject to a civil penalty of up to \$25,000 for each violation.

It is possible that, notwithstanding a good faith effort, a utility might not be in compliance with an order of the Administrator. It would seem appropriate to amend Section 105 to provide that a good faith effort may be raised as a defense to the sanctions imposed.

UTILITY INSULATION PROGRAM

WHEREAS, the National Energy Act proposed by President Carter would require electric utilities with annual sales in excess of 750 million kilowatt-hours to formulate and implement residential energy conservation programs in an effort to bring the nation's 74 million homes up to minimum energy conservation standards, and

WHEREAS, the programs formulated under the Act would be designed to inform the utility's residential customers of the energy savings which are likely to result from the installation of various energy conservation items, and

WHEREAS, each utility required to implement a program would be required to offer to inspect homes, determine conservation requirements based on the inspection, provide for the installation of suggested conservation measures, provide or assist in providing financing, and permit repayment of loans made directly by the utility to its customers as part of the utility's periodic bill, and,

WHEREAS, to assist the utilities in financing home energy conservation loans, utilities would be entitled to participate in a Federally insured loan program agreements entered into between utilities and their customers, and

WHEREAS, many publicly-owned utilities may be -- by charter, State statute, or State constitution -- prohibited from financing the purchase of energy conservation measures for installation in private residences;

NOW, THEREFORE, BE IT RESOLVED: That the American Public Power Association (1) endorses the purposes and overall framework of the residential energy conservation program contained in H.R. 6831; (2) urges the Congress to amend the bill to permit the voluntary participation of smaller utility systems under regulations promulgated by the program administrator, which regulations recognize the limited resources and capabilities of the smaller utilities; and (3) supports the implementation of the Federal insured loan program and the creation of a secondary market to purchase from the utilities obligations of indebtedness, which provisions would be available to all utilities (regardless of size) desiring to lend funds to customers for residential energy conservation expenditures and which are not otherwise legally prohibited from doing so.

--Adopted by delegates to the 1977 APPA Annual Conference, June 14, 1977, in Toronto, Canada .

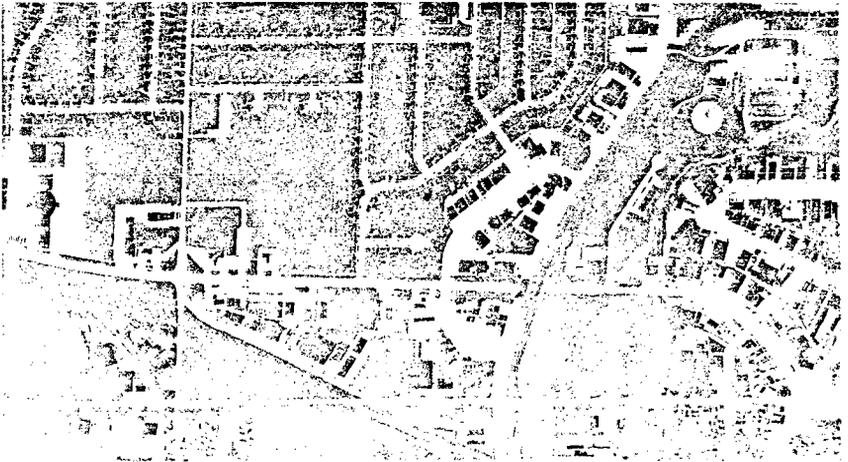


Resembling conventional aerial photographs, these views of Garland, Texas, made in the early morning hours with infrared film show heat rather than light. Paved areas and bodies of water appear as a glowing white because they retain heat, while well insulated structures or unheated buildings or parked cars are black or shades of gray. Under magnification, the infrared film can identify heat loss from individual homes or other structures. In addition to assisting energy conservation efforts, the thermal profile also can be used in land-use mapping, vegetation studies and locating leaks in water mains.

THERMAL PROFILE OF GARLAND BOOSTS ENERGY CONSERVATION

Aerial thermographic map spotlights heat losses from buildings

BY LOU CHIBBARO, *contributing editor*, PUBLIC POWER



Electric heating customers of the Garland, Texas, Power and Light Department can literally see the heat loss from their homes or other buildings, thanks to a thermal profile of the city.

Consumers who call the municipal utility about high bills are invited to the utility office where they are asked to locate their home or other building on a large photographic map. From a numerical grid on the map, a utility employee retrieves a matching video tape cartridge, plugs the cartridge into a television monitor and within a few minutes shows the consumer a picture of his home or building taken with infrared film. If the picture shows a white glow coming from the roof, it indicates heat loss which can be directly responsible for a high bill.

The video display and accompanying prints and slides are products of a thermal profile of Garland initiated by the utility to promote energy conservation by identifying sources of heat loss. The city contracted with William Hazard Associates of Austin, Texas, to develop the profile in Feb., 1976, and fly overs of the city with infrared photography were made in late February and early March.

Two types of equipment were used to obtain thermal imagery, one employing a videotape system and the other a passive infrared imaging system flown by the Texas Instruments Co. The latter was found to be superior and was used in the analyses submitted to the city in June.

The profile report describes the Texas Instruments system this way: "Energy is received by the scanner from the ground, is focused on cryogenic-cooled detectors, converted to light through the use of a light-emitting diode, and by means of a mechanically-coupled recorder exposes the photographic film in the film magazine. The film is moved at a rate proportional to the velocity and height of the aircraft, producing a continuous

photographic record of the radiant energy detected."

The flights, which provided continuous images of scanned terrain along and to the sides of the flight path, were made in the early morning hours at altitudes of from 1,700 feet to 4,000 feet. The report notes that the temperature at the time was 41 degrees F., and that greater surface temperature contrasts could have been obtained if the air temperature had been 10 to 15 degrees F. lower.

Differences in surface temperature indicating possible heat loss appear on the film in varying shades of gray. Warm objects are either lighter or darker than those with lower temperatures, depending on whether a positive or negative polarity was used in the recording process.

In addition to the aerial survey, detailed analyses were made of 24 test homes with ground-level radiometry. The homes were selected by city officials as representative of housing in Garland and were analyzed for heat loss due to poor insulation, air infiltration, glass exposure, building orientation and shading.

■ "A pleasant surprise"

The thermal profile indicated that most buildings in Garland do not have a serious heat loss problem. This finding was "a pleasant surprise," according to George Humphries, customer services supervisor for Garland Municipal Power and Light Department and coordinator of the thermal survey. However, he noted that a number of commercial and industrial customers do appear to have moderate to severe heat loss problems, resulting in wasted energy and needlessly high electric consumption.

Photoprints from the aerial survey were scanned under magnification and structures in Garland were rated on a seven-point scale: 1. no heat loss (cold house); 2. minimum heat loss; 3. slight

heat loss; 4. low heat loss; 5. moderate heat loss; 6. high heat loss; and 7. severe heat loss.

None of the single-family or multiple-family dwellings in Garland was found to have a severe heat loss. Of 21,233 single-family homes, 448, or 2.1% had low heat loss, 32 were scored with moderate heat loss and only two were reported to have high heat loss. Among multiple-family dwellings, 31, or 8% of 385, had low to high heat loss. But nearly 20% of the 959 other structures scored in the profile had low to severe heat loss: 14 (1.5%) were severe; 26 (2.7%) high; 48 (5%), moderate; and 101 (10.5%), low heat loss.

Armed with this information, the city is "making one-on-one calls to follow up on the problem structures," said public information director Dwain Howard, explaining. "We intend to do this to: reduce the customers' bills if they correct the problems; reduce the number of complaining customers; and regain credibility with our customers."

He added, "We also hope that the study will prove that the customer's life style has a great affect on his bill."

In an aerial tour of Garland via the infrared film, sidewalks, streets, parking lots and bodies of water are a glowing white since they retain heat. Structures that keep their heat confined, such as well-insulated buildings, or structures that retain no heat at all, such as unheated warehouses or parked cars, appear black or in dark shades of gray. The picture one sees is a glowing mosaic similar to a lighted city at night. But the brightness is caused by radiated heat rather than lights.

■ Infrared tour of city

While the roofs of most houses are dark, bright spots indicating chimney flues provide a striking contrast. Larger, more prominent light spots on the roofs of factories and warehouses are ventilating ducts. These ducts, used



George Humphries, customer services supervisor for Garland Power and Light Department, demonstrates the three steps in finding heat loss in a Garland building, using the thermal profile of the city: 1. the building is located on a map with a grid showing its location on the infrared film strips; 2. the video tape cartridge is used to display the area of the building; and 3. a visit to the building reveals an inadequately insulated wall causing wasteful loss of heat.

to vent fumes, also eliminate much of the building's heat, Mr. Humphries emphasized, pointing out that they may require twice as much heat to keep the building warm. He said the solution is to recycle the exhaust system to retain the heat while eliminating the fumes.

Some of the houses on the viewing screen showed a glowing brightness surrounding the roofs, and Mr. Humphries said that this indicates heat passing through walls or windows. He speculated that houses showing significant heat loss of this type either have improper wall insulation or large glass surfaces.

The thermal profile showed that the greatest concentration of homes with heat loss problems is in the city's older section near the downtown business district, but heat loss also was detected in varying degrees in a number of newer housing developments. In general, the older homes tended to show more heat loss through the roof than did the newer homes, indicating less ceiling insulation. Newer homes, on the other hand, were found to lose heat from the sides because of the

greater use of glass for picture windows and patio doors.

The profile study also found a higher proportion of multiple-family structures with heat loss problems than single-family units, and the report speculated: "This may well reflect the fact that most apartments are still on a 'utilities included' rental or lease basis. Thus apartment dwellers are not as conscious of monthly utility bills as the homeowner or renter."

On the viewing screen, the difference between an insulated and an uninsulated warehouse is striking. The roof of the insulated structure appears dark gray, while the roof of the uninsulated building is very light, and in some cases glows, indicating massive heat loss. "I think when these industrial people find out they are spending so much money to heat the wide open spaces of the outdoors, they will be more careful," commented Mr. Humphries.

The aerial thermographic survey extended out beyond the built up area of Garland, and Mr. Humphries said, "Another important benefit of this project is in land-use mapping and

vegetation studies." He pointed out that some open fields appear lighter than others, indicating the presence of water and showing which areas may be more suitable for growing crops or planting trees in city parks. Another possible use for the infrared photography's ability to detect water: locating leaks in city water mains.

■ Home heat loss spotted

The second phase of Garland's thermal profile study — interior infrared photographs in 24 test homes — revealed striking cases of heat loss due to cold infiltrating through ceiling joints, poorly insulated walls and joints between floors and wall corners.

Blasts of cold air, which show up on the film as black or dark gray flares, were visible in photographs taken of doors, ceilings and windows. A particularly troublesome spot, according to Mr. Humphries, is the gable under the peak of a cathedral-type ceiling. Often totally without insulation, this area can act as a sieve, draining the room's heat rapidly, he noted.

The thermographic camera often

located whole sections of walls without insulation. A well insulated wall appears white in the infrared photograph, while uninsulated areas show up as black-rectangular sections between the wall studs.

Mr. Humphries said another common problem revealed by the test homes occurs when kitchen cabinets are located on an interior wall perpendicular to an outside wall on which the roof beams are located. The joint between the outside wall and the roof often is uninsulated, permitting cold air to enter the enclosure above the kitchen cabinets. Once inside the space above the cabinets, the chilled air often finds its way through the wall separating the kitchen and an adjacent room, frequently a bathroom. "Many people are surprised to learn that this is why they were feeling a draft without knowing where the cold air was coming from," Mr. Humphries said.

The interior photographs showed that the quality of door and window frames varied by housing contractor and manufacturer, but wooden window frames and sills were found to have much less air leakage than the newer aluminum window units.

Homes with large amounts of glass surfaces clearly lost more heat than homes with less glass. However, the profile study report raises the question of whether heat loss may be offset by other advantages of extensive use of glass. "For example," the report asks, "does the energy saving resulting from the use of natural light outweigh the added energy needed to offset the higher cooling and heating loads through glass doors and windows? Will spaciousness and beauty that well designed glass exposures often provide be seriously curtailed?"

A possible solution to this problem, according to the report, is planning based on the direction in which a house faces. Surfaces facing west and east are considered more susceptible to heat loss than those facing north or south, so windows placed on south-north walls can minimize heat loss. The report observes that external shading in the summer and full

exposure to the sun in the winter can minimize heat gain in summer and heat loss in winter.

The study found that defects in insulation and heat leakage in joints were common in all 24 homes tested, causing increased heating requirements in winter and greater air conditioning loads in the summer. Although insulation and quality of construction varied from builder to builder, both the interior and aerial surveys showed that the highest amounts of cold air infiltration and heat loss were in upper income houses in Garland's south-eastern section. Second highest infiltration was found in middle-income, all-electric homes, and older houses in the central section had the fewest "structural defects associated with air leakage."

Mr. Humphries said that better structural design in some of the older houses was one reason for these results, but he cautioned that a larger sample would be needed in order to make a definitive conclusion about which type of house, on a city-wide basis, is better suited to retain heat.

Garland public information director Howard said the thermal profile has been extremely helpful in drawing public attention to energy conservation. The program received considerable media coverage, and a steady flow of consumers has come to the municipal utility's offices to see the results for their own homes and other buildings.

Thanks to the profile, Garland residents can see where energy loss occurs and how they can take steps to reduce their energy consumption and their utility bills. □

HOME HEAT LOSS PICTURED: Thermovision pictures, right, show heat loss in a Garland home. From top: exterior view shows heat loss through large windows; black flaring indicates air leakage around a door jamb; missing insulation behind a corner wall panel shows up as a black rectangle and black lines along ceiling indicate lack of insulation around a ceiling plate; and, bottom, dark areas show leakage of air through and above a suspended kitchen cabinet and along the joint between the roof boards and walls below a cathedral ceiling.

