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# PART 1
# NATIONAL ENERGY ACT

## HEARINGS

BEFORE THE

## SUBCOMMITTEE ON ENERGY AND POWER

OF THE

## COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE
## HOUSE OF REPRESENTATIVES

NINETY-FIFTH CONGRESS

FIRST SESSION

ON

**H.R. 6831, H.R. 687, H.R. 1562, H.R. 2088, H.R. 2818, H.R. 3317, H.R. 3664, H.R. 6660, and all similar and identical bills**

BILLS TO ESTABLISH A COMPREHENSIVE NATIONAL ENERGY POLICY

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MAY 9, 10, 11, AND 16, 1977

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**Serial No. 95–22**

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Committee on Interstate and Foreign Commerce

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- McConnell, Dan, vice president, planning division.
- Maxwell, Richard D., senior vice president, engineering.

American Association of Homes for the Aging, William D. Hughes, Director of Housing.

American Association of School Administrators, Dr. Shirley Hansen, associate director.

American Council on Education, Dr. Charles B. Saunders, Jr., Director of government relations.

American Gas Association, Kenneth Cuccinelli, manager of energy systems.

American Hospital Association:
- Bertz, Edward, Manager, Department of Health Facilities and Standards.
- Hash, Michael, Director, Division of Legislation.

American Public Power Association, Alex Radin, executive director.

American Society of Heating, Refrigerating and Air Conditioning Engineers, Dan E. Morgenroth.

Association of Home Appliance Manufacturers:
- Baumgart, Guenther, president.
- Berkenkamp, Fred J., Roper Corp.
- Crolius, Theodore F. T., general counsel.
- Lynch, Donald W., chairman, energy coordinating committee.
- Ware, Karl, White Consolidated Industries.

California Energy Resources Conservation and Development Commission, Robert Foster, Administrator, Conservation Division.

California State Department of Education, James H. Orsburn, Chief, Bureau of School Facilities Planning.

Carrier Corp., George D. Hudelson, vice president, engineering.

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- Snell, Jack E., Ph. D., Manager, Energy Conservation Programs, National Bureau of Standards.
- Warshaw, Stanley, I., Ph. D., Director, Center for Consumer Product Technology, Institute for Applied Technology, National Bureau of Standards.
- Williams, Franklin E., Industry Specialist.

Community Services Administration, Patricia Stolfa.

Consumer Product Safety Commission, Michael A. Brown, Acting Executive Director.

Davenport Insulation, Carroll V. Davenport.

Defense, Department of:
- Casberg, Thomas R., staff engineer for design.
- Marshall, Mortimer M., Jr., Director, Construction Standards and Design, Office of Deputy Assistant Secretary for Installations and Housing.
- Miley, Col. James F., Assistant for Energy Conservation, Office of the Secretary.

Delmarco Management, Inc., Howard C. Davis, president.

Meriwether, Ross F., & Associates, San Antonio, Texas, Ross F. Meriwether.

Dow Chemical Company, Thomas E. Werkema, Building Research Advisory Board Task Force.

Edison Electric Institute, Herbert D. Nash, chairman, energy management committee.

Energy Research and Development Administration, Maxine Savitz, Director, Division of Buildings and Community Systems.

Federal Energy Administration:
- Bardin, David J., Deputy Administrator for Policy.
- Hemphill, Robert F., Jr., Associate Assistant Administrator, Energy Conservation and Environment.
- O'Leary, John F., Administrator.
- Smith, Gorman C., Acting Deputy Administrator.
- Yohalem, Harry, Assistant General Counsel for Legislation.

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Federal Trade Commission:
- Reich, Robert B., Assistant Director for Evaluation, Bureau of Consumer Protection.
- Snyder, Wallace S., Acting Assistant Director, Division of National Advertising.

Gas Appliance Manufacturers Association:
- Langmead, Jack, Director, technical services.
- Paynter, Harry, president.
- Schroeder, Stanley, director, legislative services.

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Housing and Urban Development, Department of:
Garrison, David, Deputy Assistant Secretary Designate for Policy Development and Research.
Keplinger, Duane, Deputy Director, Architecture and Engineering Division, Office of Housing.
Nichols, David, Energy Staff.
Schwartz, Harry K., Assistant Secretary for Legislation.
Shalala, Donna A., Assistant Secretary for Policy Development and Research.
Incel Corp., Nile V. Bucher, president.
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National Rural Electric Cooperative Association, David B. Graham, corporate counsel.
New Jersey State Energy Office, Charles Richman, Acting Administrator.
North Carolina Department of Human Resources, Conrad M. Taylor, Chief, Construction Section, Division of Facility Services.
Northern Illinois Gas Co., Maurice E. Halsey, assistant vice president, government relations.
Orange and Rockland Utilities, Inc., Thomas A. Griffin, Jr., executive vice president.
Owens-Corning Fiberglas Corp., Guy O. Mabry, vice president, insulation operating division.
PPG Industries, Inc., James C. Haney, assistant director of production, primary glass.
Public Citizen Congress Watch, Martin H. Rogol, attorney.
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Kloska, Anthony J., group manager, Sears Electromechanical Laboratories.
Knox, Philip M., Jr., vice president, government affairs.
Tennessee Valley Authority, Albert O. Daniels, Director of Power Utilization.
U.S. Catholic Conference, George E. Reed, general counsel.
Washington Gas Light Company, Arthur L. Howard, Manager of Public Affairs.
Whirlpool Corp.:
Elders, Al, director, refrigeration and vertical freezer engineering.
Takacs, Andrew J., director, government affairs.
Whitman, Ray, director, laundry group market planning.

# NATIONAL ENERGY ACT

MONDAY, MAY 9, 1977

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY AND POWER,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
*Washington, D.C.*

The subcommittee met at 10 a.m., pursuant to notice, in room 2123, Rayburn House Office Building, Hon. John D. Dingell, chairman, presiding.

Mr. DINGELL. The subcommittee will come to order. The Chair inquires at this time how many of our panel No. 1 are here present. Mr. Hemphill is here. Mr. Marshall is not. Mr. Carroll, he is here. Mr. Snell, I know you are here. Maxine Savitz, she is here. Mr. Gordon Taylor. Excellent. Mr. Joseph Sherman, he is not here.

We have enough of the panel to commence. If those of panel No. 1 who are present will come forward to the witness table, we will commence our proceedings by hearing you, and while you are coming forward, the Chair will read the opening statement.

Even before President Carter formally delivered the outline of his energy program to Congress last week, all Americans sensed that a comprehensive program calling for major change in the way we use energy was on the way. Now that the program has been presented in detail, we are beginning to ask how it will affect each one of us, and whether its benefits are worth the costs. Given the intense interest of the Congress and, in particular, the commitment of Speaker O'Neill to expeditious consideration of President Carter's proposals, I am optimistic that there will be a timely and constructive legislative response to the program.

The President is to be commended for his willingness to utilize the tools which are already at his disposal in responding to the energy crisis facing the Nation. Past administrations refused to recognize and utilize many of the same authorities which were also available to them. Congress should assist the President with those parts of his program that reach beyond existing law and accelerate progress toward attaining the energy goals which the President has set forth and which most of us have already endorsed.

The focal point for today's hearings is conservation, a subject about which this subcommittee is highly sensitive and on which we place great importance. There is no doubt that we can significantly improve energy efficiency in this country. To accomplish this, our

objectives must be to reduce our dependence upon imported fuels and to husband our domestic resources. Time lost is energy lost. Recognizing this as a pressing concern, the Subcommittee on Energy and Power dedicated its first set of hearings this year to an examination of the potential of conservation and fuel-saving devices. The benefits of retrofit devices through low-cost consumer investments were discussed, as was the virtue of continual use of heating systems designed for low-cost energy. We discovered that retrofit devices could save the consumer 26 percent of his gas bill and 30 percent of his oil heating bill.

Along these same lines, the President has endorsed conservation as a top priority in his energy program. His intention is twofold: Savings in the consumer energy bill and savings in finite resources. He has proposed that FEA will administer the Residential Energy Conservation Plans designed to bring residences up to Federal minimum standards by 1985. Electric and gas utilities, both regulated and nonregulated, will offer utility programs to residential customers, beginning in 1980, supplying information on conservation measures, cost savings, and availability of financing arrangements for installation of conservation measures through monthly utility payments. Both homeowners and home renters are included, but participation is voluntary. Public utilities have the option of offering their own program, if they can demonstrate to FEA that coverage will result in approximately the same number of homes.

Many programs dealing with energy are addressed in terms of billions of dollars. One such program is the Strategic Petroleum Reserve Plan, intended to provide insulation of our economy from severe economic effects of an embargo. The President's tax proposals will raise and rebate to consumers billions of dollars. Oil and natural gas pricing means billions in producer revenues. By comparison, conservation must be approached on a nickel and dime basis. There are literally unlimited options for small savings to be achieved by improved energy utilization. The aggregate saving of energy must be approached progressively in a step-by-step pattern to produce savings of a significant proportion. I am optimistic that we can serve the best interests of the nation by placing conservation in this perspective, and by recognizing that the cumulative impact of a series of conservation initiatives, which in themselves might appear insignificant, could be enormous.

[The text of H.R. 6831 and a departmental report thereon follow:]

95TH CONGRESS
1ST SESSION

# H. R. 6831

IN THE HOUSE OF REPRESENTATIVES

MAY 2, 1977

Mr. WRIGHT introduced the following bill; which was divided and initially referred for a period ending not later than July 13, 1977, as follows: sections 101 through 109 and sections 201 through 603 to the Committee on Interstate and Foreign Commerce; sections 110 through 131, and, concurrently with the Committee on Interstate and Foreign Commerce, those portions of subpart 1 of part A of title I relating to financial assistance to residential customers defined in section 101, to the Committee on Banking, Finance and Urban Affairs; section 701 to the Committee on Government Operations; sections 721 through 746 to the Committee on Public Works and Transportation; title II to the Committee on Ways and Means; and sections 2 through 4 concurrently to all of the above committees

# A BILL

To establish a comprehensive national energy policy.

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

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FINDINGS

SEC. 2. The Congress finds that—

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

(2) unless effective measures are taken to reduce the rate of growth of demand for energy, the United States will become increasingly dependent on the world

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oil market and increasingly vulnerable to interruptions of foreign oil supply;

(3) the United States can significantly reduce its demand for oil and its demand for natural gas for non-essential uses by carrying out an effective conservation and fuel efficiency program in all sectors of energy use, through reform of utility rate structures, and conversion by industrial firms and utilities from oil and natural gas to coal and other fuels; and

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

NATIONAL ENERGY GOALS

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

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

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

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

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

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

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

REFERENCES TO FEDERAL POWER COMMISSION AND FEDERAL ENERGY ADMINISTRATION

SEC. 4. If the Federal Power Commission or the Federal Energy Administration is terminated, then any reference in this Act (or any amendment made thereby) to the Federal Power Commission or the Federal Energy Administration shall be deemed by a reference to the officer, department, or agency in which the principal functions of such Commission or Administration (as the case may be) are vested after such termination.

# TITLE I—PRICING, REGULATORY AND OTHER NONTAX PROVISIONS

## PART A—ENERGY CONSERVATION PROGRAMS FOR EXISTING RESIDENTIAL BUILDINGS

### Subpart 1—Utility Program

DEFINITIONS

SEC. 101. As used in this subpart:

(1) The term "Administrator" means the Administrator of the Federal Energy Administration.

(2) The term "Commission" means the Federal Power Commission.

(3) The term "natural gas" means natural gas as that term is defined in the Natural Gas Act.

(4) The term "nonregulated utility" means a public utility which is not a regulated utility.

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

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

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

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

(9) The term "residential building" means 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.

(10) The term "residential customer" means any person to whom a public utility sells natural gas or electric energy for consumption in a residential building.

(11) The term "residential energy conservation measure" means—

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

(B) furnace efficiency modifications limited to—

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

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

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

(C) clock thermostats;

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

(E) hot water heater insulation; and

(F) storm windows.

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

(13) The term "State" means a State, the District of Columbia, Puerto Rico, and, at the discretion of the Administrator, any territory or possession of the United States.

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

(15) The term "suggested measures" means, with respect to a particular residential building, the residential energy conservation measures which the Administrator, in the rules prescribed pursuant to section 102(a), determines to be appropriate for the location and the category of residential buildings which includes such building.

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

(A) a regulated utility pursuant to a residential energy conservation plan developed by a State regulatory authority;

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

(C) a regulated or nonregulated utility pursuant to

an order of the Administrator issued pursuant to section 105.

RESIDENTIAL ENERGY CONSERVATION PLANS

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

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

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

(2) may include—

(A) standards for general safety and effectiveness of any suggested measure;

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

(C) such other requirements as the Administrator may determine to be necessary to carry out this subpart.

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

State regulatory authority may submit, and each nonregulated utility shall submit a proposed residential energy conservation plan to the Administrator. The Administrator may, upon request of a State regulatory authority or nonregulated utility, extend the time period for submission of a plan by such authority or utility. Each such plan shall be reviewed and approved or disapproved by the Administrator not later than ninety days after submission. If the Administrator disapproves a plan, the State regulatory authority or nonregulated utility may submit a new or amended plan not later than sixty days after the date of such disapproval, or such longer period as the Administrator may, for good cause, allow. The Administrator shall review and approve or disapprove any such new or amended plan not later than ninety days after submission. After approval of a plan, a State regulatory authority or nonregulated utility may submit an amended plan with the consent of the Administrator.

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

(1) requires each regulated utility over which such State regulatory authority exercises ratemaking authority to implement a utility program described in section 103;

(2) contains an adequate program for preventing

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

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

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

(5) meets such other requirements as may be prescribed in the rules promulgated pursuant to subsection (a).

(d) No residential energy conservation plan proposed by a nonregulated utility shall be approved by the Administrator unless such plan—

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

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

(3) meets such other requirements as may be prescribed in the rules promulgated pursuant to subsection (a).

UTILITY PROGRAMS

SEC. 103. (a) Except as provided in subsections (b) and (c), each utility program shall include—

(1) procedures designed to inform, no later than January 1, 1980, each of its residential customers who owns or occupies a residential building in which the suggested measures have not been installed, of—

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

(B) the savings in costs of home heating and cooling that are likely to result from installation of the suggested measures in typical residential buildings in such category; and

(C) the availability of the arrangements described in paragraph (2) of this subsection;

(2) procedures whereby the public utility, no later than January 1, 1980, will offer each such residential customer the opportunity to enter into arrangements with the public utility under which the public utility, directly or through one or more contractors will—

(A) inspect the residential building to deter-

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

(B) offer to have the suggested measures installed;

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

(i) the public utility, or

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

(iii) one or more contractors,

subject to such reasonable requirements as to creditworthiness as may be permitted by the applicable residential energy conservation plan and to the right of the public utility to inspect the residential building to confirm the installation of suggested measures;

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

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

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

(4) procedures whereby the public utility prepares and sends to each of its residential customers a list of banks, savings and loan associations, credit unions, and other public and private lending institutions in its service area which offer loans for the purchase and installation of residential energy conservation measures.

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

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

ALTERNATIVE PROGRAMS

SEC. 104. (a) A State regulatory authority or a public utility (supported in the case of a regulated utility by the appropriate State regulatory authority) may apply for an exemption from the requirements of section 103 at any time prior to one year after enactment of this Act. The Administrator shall grant such an exemption if such authority or utility demonstrates to the satisfaction of the Administrator that it has implemented or will implement an alternative program providing for the installation of residential conservation measures in the homes of its residential customers which program meets the requirements of this subsection. No exemption shall be granted by the Administrator unless the alternative program of such authority or utility includes the following:

(1) procedures whereby the utility informs each of its residential customers who owns or occupies a residen-

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

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

(B) the savings in costs of home heating and cooling that are likely to result from installation of the suggested measures in typical residential buildings in such category; and

(C) the availability of arrangements for purchase and installation of such measures;

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

(3) such other requirements as the Administrator determines.

(b) Any application for exemption pursuant to subsection (A) shall contain such information as the Administrator may by rule require.

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

(d) Any State regulatory authority or public utility may apply for a temporary exemption prior to the promulgation of guidelines pursuant to section 102. A temporary exemption may be granted from the requirements of section 103 for a period not to exceed two years after the date of enactment of this Act, if such authority or utility demonstrates to the satisfaction of the Administrator that it has implemented or proposes to implement an energy conservation program for residential customers which is likely to result in the installation of suggested measures in a substantial proportion of residential buildings.

FEDERAL STANDBY AUTHORITY

SEC. 105. (a) If a State regulatory authority has not had a plan approved under section 102 (c) within two hundred and seventy days after promulgation of rules under section 102 (a), or within such additional period as the Administrator may allow pursuant to section 102 (c) (1), or if the Administrator determines that such State regulatory authority has not adequately implemented an approved plan, the Administrator shall, by order, require each public utility in the State to offer to its residential customers a utility program prescribed in such order which meets the requirements specified in subsection (a) of section 103.

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

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

(c) If the Administrator determines that any public utility to which an order has been issued pursuant to subsection (a) or (b) has failed to comply with such order, he may either order that such public utility may not increase any at which it sells natural gas or electric energy until such time as he determines that such utility has implemented a utility program meeting the requirements of the order issued pursuant to subsection (a) or (b), or petition the district courts of the United States to enjoin such utility from violating an order issued pursuant to this subsection.

(d) Any public utility which violates an order under subsection (b) shall be subject to a civil penalty of not more than $25,000 for each violation. Each day that such violation continues shall be considered a separate violation.

RELATIONSHIP TO OTHER LAWS

SEC. 106. The Administrator may by order upon petition by a public utility and for good cause, supersede any

law or regulation of any State or political subdivision thereof, to the extent that such law or regulation prohibits a public utility from taking any action required to be taken under section 103 of this Act.

CONTRACT PROVISIONS

SEC. 107. No public utility shall be subject to any liability under any provision in any contract which restricts any public utility from lending, borrowing, or entering a new line of business, if such lending, borrowing, or entering a new line of business is required under section 103 of this Act.

RULES

SEC. 108. The Administrator is authorized to promulgate such rules as may be necessary to carry out this subpart.

AUTHORIZATION OF APPROPRIATIONS

SEC. 109. There are hereby authorized to be appropriated to the Administrator such sums as may be necessary to carry out his responsibilities under this subpart.

## Subpart 2—Financing Program

AMENDMENTS TO NATIONAL HOUSING ACT

SEC. 110. Section 2 (a) of the National Housing Act is amended by adding at the end of the first paragraph thereof the following sentence: "For the purpose of this section, the terms 'financial institution' and 'lending institution' shall be deemed to include any public utility which is engaged in making loans or advancing credit for energy conserving

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improvements as defined in subparagraph (2) of the fourth paragraph of this section only for the purposes of such loans or advances of credit. The term 'public utility' means any person or State agency which is engaged in the business of selling natural gas or electric energy for purposes other than resale.".

SEC. 111. Subparagraphs (2) and (3) of the fourth paragraph of section 2(a) of the National Housing Act are amended to read as follows:

"(2) The term 'energy conserving improvements' means (i) energy conservation measures as defined in section 101 of the National Energy Act, or (ii) any addition, alteration, or improvement to an existing or new structure which is designed to reduce the total energy requirements of that structure, and which is in conformity with such criteria and standards as shall be prescribed by the Secretary in consultation with the Administrator of the Federal Energy Administration; and

"(3) the term 'solar energy system' means any addition, alteration, or improvement to an existing or new structure which is designed to utilize solar energy to reduce the energy requirements of that structure from other energy sources, and which is in conformity with such criteria and standards as shall be prescribed by the

Secretary in consultation with the Administrator of the Federal Energy Administration.".

SEC. 112. Section 2 (f) of the National Housing Act is amended by adding the following at the end thereof: "The Secretary shall conduct a study within two years after the enactment of the National Energy Act in order to determine an actuarially sound premium rate for loans for energy conserving improvements authorized under section 2 (a) of this subchapter, and shall, based on this study, no earlier than two years after date of enactment of the National Energy Act, set an actuarially sound premium rate for such loans, which rate may exceed the otherwise applicable 1 per centum limitation of this subsection.".

SEC. 113. Section 302 (h) of the Federal Home Loan Mortgage Corporation Act (12 U.S.C. 1451 (h)) is amended by adding at the end thereof a new sentence, to read as follows: "The term 'residential mortgage' is deemed to include a loan or advance of credit insured under title I of the National Housing Act whose original proceeds are applied for in order to finance energy conserving improvements to residential real estate. The term 'residential mortgage' is also deemed to include a loan or advance of credit for such purposes not having the benefit of such insurance and to include loans made where the lender relies for pur-

poses of repayment primarily on the borrower's general credit standing and forecast of income, with or without other security.".

AMENDMENT TO FEDERAL NATIONAL MORTGAGE ASSOCIATION CHARTER ACT

SEC. 14. Section 302 (b) of the Federal National Mortgage Association Charter Act is amended by adding at the end thereof the following new paragraph:

"(3) The corporation is authorized to purchase, service, sell, lend on the security of, and otherwise deal in loans made for the energy conservation purposes described in section 2 (a) of the National Housing Act, whether or not insured under such section. To be eligible for purchase, any such loan not so insured may be secured as required by the corporation.".

AMENDMENT TO ENERGY CONSERVATION AND PRODUCTION ACT

SEC. 115. Section 422 of the Energy Conservation and Production Act is amended to read as follows:

"AUTHORIZATION OF APPROPRIATIONS

"SEC. 422. There are authorized to be appropriated for purposes of carrying out the weatherization program under this part, not to exceed $55,000,000 for the fiscal year ending September 30, 1977, not to exceed $130,000,000 for the fiscal year ending September 30, 1978, not to exceed

$200,000,000 for the fiscal year ending September 30, 1979, and not to exceed $200,000,000 for the fiscal year ending September 30, 1980, such sums to remain available until expended.".

Subpart 3—New Building Performance Standards Grants

AUTHORIZATION FOR SECTION 307(b) OF ENERGY CONSERVATION AND PRODUCTION ACT

SEC. 131. Section 307(b) of the Energy Conservation and Production Act is amended to read as follows:

"(b) There is authorized to be appropriated for the purpose of carrying out this section, the following amounts—

"(1) for the fiscal year ending September 30, 1977, not to exceed $5,000,000;

"(2) in the fiscal year ending September 30, 1978, not to exceed $10,000,000; and

"(3) in the fiscal year ending September 30, 1979, not to exceed $10,000,000.

Any amount appropriated pursuant to this subsection shall remain available until expended.".

PART B—ENERGY EFFICIENCY STANDARDS FOR CONSUMER PRODUCTS

Subpart 1—Consumer Products Other Than Automobiles

AMENDMENT TO ENERGY POLICY AND CONSERVATION ACT

SEC. 201. (a) Section 325(a) of the Energy Policy and Conservation Act is amended to read as follows:

"(a) (1) (A) Except as otherwise provided in paragraph (3), the Administrator shall, by rule, prescribe an energy efficiency standard for each type or class of covered product specified in paragraphs (1), (2), (5), (6), (9), (12), and (13) of section 322 (a).

"(B) The Administrator may, by rule, prescribe an energy efficiency standard for any type or class of covered products of each of the types specified in paragraphs (3), (4), (7), (8), (10), (11), and (14) of section 322 (a), except that the Administrator may not prescribe an energy efficiency standard for a type or class of covered product described in paragraph (14) of section 322 (a) unless he determines that—

"(i) average per household energy use by products of such type exceeds 150 kilowatt-hours (or its Btu equivalent) per year;

"(ii) aggregate household energy use by products of such type exceeds 4,200,000,000 kilowatt-hours per year; and

"(iii) substantial improvement in the energy efficiency of products of such type is possible.

"(2) No standard for a type (or class) of covered product shall be prescribed pursuant to paragraph (1) unless a test procedure has been prescribed pursuant to section 323 with respect to that type (or class) of product.

"(3) The Administrator shall not prescribe an energy

efficiency standard for a type or class of covered product if he determines that the establishment of such standard is not technologically feasible or not economically justified.

"(4) Energy efficiency standards established pursuant to this section shall be designed to achieve the maximum improvement in energy efficiency which the Administrator determines is technologically feasible and economically justified, and may be phased in over a period of years through the establishment of intermediate standards.

"(5) In determining whether a standard is economically justified pursuant to paragraph (3) or (4), the Administrator shall consider—

"(A) the economic impact of the standard,

"(B) the total projected amount of energy savings likely to result from the imposition of the standard,

"(C) the savings in operating costs throughout the estimated average life of covered products in the type or class, compared to any increase in the price of or in initial charges for, or maintenance expenses of, the covered product which is likely to result from the imposition of the standard,

"(D) any lessening of the utility or the performance of the covered product likely to result from the imposition of the standard,

"(E) any negative effects on competition likely to result from the imposition of the standard,

"(F) the need of the Nation to conserve energy, and

"(G) any other factors he considers relevant.

"(6) A rule prescribing an energy efficiency standard for a type or class of covered product may, for not more than two years, exempt, in whole or in part, from its requirements manufacturers of covered products whose gross revenues from all operations (including but not limited to the manufacture and sale of covered products) do not exceed $8,000,000 per annum, as determined by the Administrator, and with respect to whom the Administrator determines imposition of the standard may result in a substantial lessening of competition.

"(7) A rule prescribing an energy efficiency standard for a type or class of covered product may specify different minimum levels of energy efficiency for covered products within such type or class based upon the kind of energy consumed by such covered products.

"(8) The Administrator shall, not later than five years after promulgation of an energy efficiency standard, conduct a reevaluation in order to determine whether such standard should be modified. In conducting such reevaluation the Administrator shall take into account such information as he deems relevant, including technological developments with respect to the manufacture of the type or class of covered product involved and the economic impact of the standard.".

(b) Section 325(b) of the Energy Policy and Conservation Act is amended by redesignating paragraphs (2) and (3) as paragraphs (3) and (4) respectively, and inserting a new paragraph (2) to read as follows:

"(2) With respect to covered products of each of the types specified in section 325(a)(1)(A), an advance notice of proposed rulemaking with respect to such type or class of covered product shall be promulgated by the Administrator not later than thirty days after a test procedure with respect to that type or class of covered product has been prescribed, or thirty days after enactment of the National Energy Act, whichever is later.".

(c) Part B of title III of the Energy Policy and Conservation Act is further amended as follows:

(1) Section 324(c)(5) is amended by inserting ", including instructions for the maintenance, use, or repair of the covered product," after "energy consumption" in the matter following subparagraph (C).

(2) Section 325(d) is deleted.

(3) Section 326 is amended by adding a new subsection (d), to read as follows:

"(d) The Administrator may require each manufacturer of covered products to submit such information or reports with respect to energy efficiency of such covered products as the Administrator determines may be necessary to establish standards under section 325.".

(4) Section 336(a)(1) is amended by (A) striking out "(1)" and (B) by striking out "325(a)(1), (2), or (3)" in the first sentence thereof and inserting in lieu thereof the following: "325(a)".

(5) Section 336(a)(1)(B) is amended by striking out "paragraph (1), (2), or (3) of" in the first sentence thereof.

(6) Section 336(a)(2) is deleted.

(7) Sections 336(b)(1) and (2) are amended by striking out "section 323 or 324" and inserting in lieu thereof "section 323, 324, or 325".

(8) Section 336(b)(5) is deleted.

(9) Section 339(a) is amended to read as follows:

"(a) There are authorized to be appropriated to the Administrator to carry out his responsibilities under this part not to exceed $1,700,000 for fiscal year 1976, not to exceed $3,056,000 for fiscal year 1977, and for each fiscal year thereafter such sums as may be necessary.".

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

DISCLOSURE IN LABELING

SEC. 221. Section 506(a)(1) of the Motor Vehicle Information and Cost Savings Act (15 U.S.C. 1901 et seq.) is amended by redesignating subparagraph (C) as subparagraph (E) and by adding new subparagraphs (C) and (D) to read as follows:

"(C) containing, in the case of any automobile the sale of which is subject to the fuel inefficiency tax imposed pursuant to section 4064 of the Internal Revenue Code of 1954, a statement indicating that a tax was paid with respect to such sale and indicating the amount of such tax, and

"(D) containing, in the case of any automobile with respect to the sale of which an amount is paid or credited pursuant to section 6429 of the Internal Revenue Code of 1954, a statement indicating that a payment or credit was made with respect to such sale and the amount of such payment or credit.".

DISCLOSURE IN ADVERTISING

SEC. 222. (a) The Federal Trade Commission is authorized to prescribe rules requiring disclosure of any tax imposed under section 4064 of the Internal Revenue Code of 1954 or rebate payable under section 6429 of such Code with respect to any automobile advertised in any television broadcast or advertisement in writing which states the price or fuel economy of an automobile or which advertises an identifiable model type of automobile.

(b) A violation of a rule under subsection (a) shall be deemed an unfair or deceptive act or practice affecting commerce, for purposes of the Federal Trade Commission Act.

(c) Nothing in this section shall be construed as restricting any authority of the Commission under any other law.

PART C—ENERGY CONSERVATION PROGRAM FOR SCHOOLS AND HOSPITALS

AMENDMENT TO ENERGY POLICY AND CONSERVATION ACT

SEC. 301. Title III of the Energy Policy and Conservation Act is amended by adding at the end thereof the following new part:

"PART F—ENERGY CONSERVATION PROGRAM FOR SCHOOLS AND HOSPITALS

"DEFINITIONS

"SEC. 391. For purposes of this part:

"(1) The term 'building' means any structure that includes a heating or cooling system, or both, the construction of which structure was completed on or before April 20, 1977.

"(2) The term 'energy conservation measure' means—

"(A) insulation of walls, ceilings, attics, floors, ducts, and pipes;

"(B) double glazing energy control systems;

"(C) automatic energy control systems;

"(D) solar heating and/or cooling systems;

"(E) solar water heating systems;

"(F) furnace modifications limited to (i) replacement burners designed to reduce the firing rate or to achieve a reduction in the amount of fuel consumed as a result of increased combustion efficiency, and (ii) devices for modifying flue openings which will increase the efficiency of the heating system;

"(G) caulking and weatherstripping of exterior doors and windows;

"(H) reflective glass coatings;

"(I) lighting fixture retrofit, to the extent that such retrofit does not result in any foot candle per square foot increase in the general illumination level of the facility and conserves energy; and

"(J) electrical or mechanical furnace ignition systems which replace standing gas pilot lights, but only as part of a project which includes one or more of the energy conservation measures specified in paragraphs (A) through (I).

"(3) The term 'Governor' means the chief executive officer of a State.

"(4) The term 'hospital' means a public or nonprofit institution which is—

"(A) a general hospital, tuberculosis hospital, or any other type of hospital, other than a hospital furnishing primarily domiciliary care; and

"(B) duly authorized to provide hospital services under the laws of the State in which it is situated.

"(5) The term 'hospital facilities' means buildings housing a hospital and related facilities, including laboratories, outpatient departments, nurses' home and training facilities and central service facilities operated in connection with a hospital, and also includes buildings housing education or training facilities for health professions personnel operated as an integral part of a hospital.

"(6) The term 'public or nonprofit institution' means an institution owned and operated by—

"(A) a State, a political subdivision of a State or an agency or instrumentality of either; or

"(B) an organization exempt from income tax under section 501 (c) (3) of the Internal Revenue Code of 1954.

"(7) The term 'project' means an undertaking to acquire and/or install one or more energy conservation measures in school facilities or in hospital facilities.

"(8) The term 'project costs' shall be limited to costs incurred in the design, acquisition, construction, and installation of energy conservation measures.

"(9) The term 'school' means a public or non-profit institution which—

"(A) provides, and is legally authorized to provide, elementary education or secondary education, or both, on a day or residential basis; or

"(B) (i) provides, and is legally authorized to provide, a program of education beyond secondary education, on a day or residential basis;

"(ii) admits as students only persons having a certificate of graduation from a school providing secondary education, or the recognized equivalent of such certificate;

"(iii) is accredited by a nationally recognized accrediting agency or association; and

"(iv) provides an educational program for which it awards a bachelor's degree or provides not less than a two-year program which is acceptable for full credit toward such a degree at any institution which meets the requirements of subparagraph

(i), (ii), and (iii) and which provides such a program.

Such term also includes any public or nonprofit institution which provides not less than a one-year program of training to prepare students for gainful employment in a recognized occupation and which meets the provisions of subparagraphs (i), (ii), and (iii) of paragraph (B).

"(10) The term 'school facilities' means buildings, housing classrooms, laboratories, dormitories, athletic facilities, or related facilities operated in connection with a school, but does not include any facility used or to be used for sectarian instruction or as a place for religious worship, or any athletic facility used primarily for athletic exhibitions, contests, games, or other events for which admission is charged to the general public.

"(11) The term 'State' means a State, the District of Columbia, and at the discretion of the Administrator, Puerto Rico, or any territory or possession of the United States.

"GRANT AUTHORIZATION

"SEC. 303. (a) The Administrator is authorized to make grants to the States to assist schools and hospitals in the payment of project costs incurred in connection with projects undertaken pursuant to this part.

"(b) The Federal share of the project costs incurred

in connection with any project shall not exceed 40 per centum thereof. The remainder of the project costs shall be provided from sources other than Federal funds.

"STATE PLANS

"SEC. 304. (a) The Administrator shall, by rule, not later than one hundred and twenty days after the date of enactment of this part, prescribe guidelines for the development of State plans for installation of energy conservation measures in school facilities and hospital facilities, including guidelines indicating the types of measures appropriate for each region of the Nation. The Administrator shall invite the Governor of each State to submit, within ninety days after the effective date of such guidelines, or such longer period as the Administrator may, for a good cause, allow, a proposed State plan for such State. Such plan shall include:

"(1) A general description of the State's proposed program for installation of energy conservation measures in school and hospital facilities in such State over the period for which funds are authorized to be appropriated pursuant to section 308, including—

"(A) the types of energy conservation measures considered for installation in school and hospital facilities under projects undertaken pursuant to this part;

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"(B) categories of school and hospital facilities for which installation of energy conservation measures are proposed (as may be required by the guidelines); and

"(C) an estimate of the energy savings anticipated for each type of proposed project.

"(2) The policies and procedures by which the State proposes to allocate funds among eligible projects within the State, including a description of how priorities will be established among competing proposals, based on relative financial needs and capabilities.

"(b) Each State plan shall be reviewed and approved or disapproved by the Administrator not later than ninety days after submission. A Governor may submit a new or amended plan at any time after submission of the original plan if the State obtains the consent of the Administrator.

"(c) Governors submitting plans pursuant to this section shall take reasonable steps to assure that such plans are appropriately coordinated with State health plans required pursuant to section 1523 of the Public Health Service Act.

"FINANCIAL ASSISTANCE

"SEC. 305. (a) The Administrator shall provide financial assistance from sums appropriated for any fiscal year under this part only upon annual application. The Admin-

istrator shall allocate the sums appropriated for that fiscal year among the several States in the following manner:

"(1) Ninety per centum among all States in accordance with a formula to be determined by the Administrator, by rule, taking into account population, climate, and such other factors as the Administrator may deem appropriate.

"(2) Ten per centum among all States as the Administrator shall determine, after taking into account the availability and cost of fuel or any other energy used in schools and hospitals in the several States and such other factors as he deems relevant.

"(b) Any amount allocated to a State for a fiscal year under subsection (a) but not requested by a State or not disbursed pursuant to an approved State plan shall be available for reallocation to the States as the Administrator shall determine in accordance with subsection (a) (2).

"(c) The Administrator shall prescribe rules limiting the amount of funds allocated to a State which may be expended for administrative expenses by such State.

"APPLICATIONS

"SEC. 306. (a) Applications of States for financial assistance under this part shall be made annually to the Administrator, shall be consistent with State plans approved pursuant to section 304, and shall contain or be accompanied

by such information as the Administrator may reasonably require. Such information shall include the number of projects and categories of facilities proposed to be funded within such State, and such information concerning expected expenditures as may be required by rule.

"(b) The Administrator shall not provide financial assistance under this part unless the applicant has provided reasonable assurances that it has—

"(1) established procedures to assure that funds made available under this part will be expended for project costs in compliance with the requirements of this part and rules promulgated under this part;

"(2) established procedures for allocating funds among eligible projects on the basis of relative need, taking into account appropriate financial, climatic, and energy conservation factors;

"(3) established procedures for implementation of energy conserving operational and maintenance procedures in those facilities for which projects are proposed;

"(4) established policies and procedures designed to assure that financial assistance provided under this part will be used to supplement, and not to supplant, State, local or other funds, and, to the extent practicable,

to increase the amounts of such funds that would be made available in the absence of Federal funds for carrying out this part;

"(5) established procedures to provide reports to the Administrator in such form and containing such information (including information for evaluation purposes) as the Administrator may reasonably require and to keep such records and furnish access thereto as the Administrator may find necessary to assure the correctness and verification of such reports; and

"(6) established procedures to insure that equitable consideration is given to all eligible public or nonprofit institutions regardless of type of ownership.

"ADMINISTRATION

"SEC. 307. The Administrator is authorized to prescribe such rules as may be necessary in order to carry out the provisions of this part.

"AUTHORIZATION OF APPROPRIATIONS

"SEC. 308. (a) For purposes of making grants pursuant to this part, there is authorized to be appropriated not to exceed $300,000,000 for each fiscal year in the three consecutive fiscal year period ending September 30, 1980.

"(b) For expenses of the Administrator in administering the provisions of this part, there are authorized to be

appropriated such sums as may be necessary to carry out the provisions of this part for each fiscal year in the three consecutive fiscal year period ending September 30, 1980.

"NONDISCRIMINATION

"SEC. 309. No person in the United States shall on the grounds of race, color, religion, national origin, or sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity funded in whole or in part with funds made available under this part.".

## PART D—NATURAL GAS

### FINDINGS AND PURPOSES

SEC. 401. (a) The Congress finds that—

(1) in the early history of this Nation's petroleum industry natural gas was a byproduct of the production of crude oil, was not easily marketable, and was often flared off and treated as waste or sold at very low prices;

(2) the natural gas market changed dramatically through the course of the last forty years as a national distribution system was built to deliver natural gas to commercial and industrial consumers throughout the Nation;

(3) the Congress enacted the Natural Gas Act in 1938 to provide protection for consumers and to provide

a regulatory structure through which interstate pipelines could be assured a fair rate of return;

(4) in 1954, the Supreme Court held that the Natural Gas Act applied to the wellhead sale of natural gas in interstate commerce, subjecting producers selling interstate gas, but not intrastate gas, to a reasonable rate of return regulatory standard based on a determination of historic production costs;

(5) the differential between the price of natural gas and oil has widened with the continuation of cost-based regulation of natural gas, the fourfold rise in world oil prices in 1973 and 1974, and the increasing pressure to burn natural gas because of its environmentally superior qualities;

(6) as a result, the incentives to find new natural gas have declined along with the proven reserves of natural gas, while demand for this premium and relatively inexpensive fuel has increased;

(7) at the same time, increasing amounts of higher priced gas and wasteful industrial and boiler fuel uses have moved to the intrastate market, resulting in growing critical shortages in the interstate market of the fuel which provides 30 per centum of the Nation's energy;

(8) a new system of natural gas pricing is needed

that recognizes the costs and risks associated with finding future supplies of natural gas as well as the commodity value of substitutable fuels.

(b) The purposes of this part are—

(1) to bring the natural gas market back into better balance by reducing the demand for natural gas and increasing the supply through the establishment of an incentive based pricing approach for new natural gas, wherever it is used, that moderates producer revenues and protects consumers by moving toward a commodity value price ceiling;

(2) to deal with short-term supply shortages of natural gas through extension of the allocation provisions of the Emergency Natural Gas Act of 1977; and

(3) to provide for the conservation of natural gas by pricing natural gas to certain industrial and other users at a level which will provide incentives for conversion to other more plentiful fuels and for conservation.

DEFINITIONS

SEC. 402. (a) As used in this part—

(1) The term "Commission" means the Federal Power Commission.

(2) The term "natural gas" has the same meaning as such term has under section 2(5) of the Natural Gas Act.

(3) The term "producer" means any person who produces natural gas.

(4) The term "person" includes (without limitation) the United States and any State, and any political subdivision, agency, or instrumentality of either.

(5) The term "new natural gas" means natural gas—

(A) which is produced from a new lease on the Outer Continental Shelf; or

(B) which is produced other than on the Outer Continental Shelf from a new well—

(i) the completion location of which is 2.5 statute miles or more (surface measurement) from the completion location of any old well, or

(ii) the completion location of which is at a depth of 1,000 feet or more in excess of the depth of the completion location of any old well with a completion location that is within 2.5 statute miles (surface measurement) provided that the completion location of any such new well is not in the same producing zone as the completion location of any such old well.

(6) The term "Outer Continental Shelf" has the

same meaning as such term has in section 2 of the Outer Continental Shelf Lands Act (43 U.S.C. 1331).

(7) The term "new lease" means a lease, entered into on or after April 20, 1977, of an area which—

(A) was not leased before April 20, 1977; or

(B) which was leased before such date, under a lease which terminated or was abandoned before such date and was not in effect on such date.

(8) The term "new well" means a well the drilling of which was not begun on or before April 20, 1977, or with respect to which a drilling permit had not been issued on or before April 20, 1977, in the case of a well for which such permit is necessary.

(9) The term "old well" means a well that produced or was capable of producing crude oil or natural gas on or before April 20, 1977.

(10) The term "completion location" means the location at which crude oil or natural gas is withdrawn from a producing zone.

(1) The term "depth" means the depth determined by reference to the vertical distance between mean sea level and the lowermost point of the completion location of any old well or by reference to the vertical distance between mean sea level and the uppermost point of the completion location of any new well.

(12) The term "surface measurement" means the distance at mean sea level between the points at which vertical lines, drawn through the nearest points of any two completion locations, would intersect the surface of the earth at mean sea level.

(13) The term "producing zone" means a geological formation having common characteristics that contains crude oil or natural gas, whether or not there is communication between the portions thereof.

(14) The term "old natural gas" means natural gas other than new natural gas.

(15) The term "new contract" means a contract entered into after April 20, 1977, or a renewal after April 20, 1977, of a contract entered into on or before April 20, 1977, if such renewal occurs by agreement of both parties to the contract on or after the expiration of a fixed term specified by the contract.

(16) The term "existing contract" means any contract other than a new contract.

(17) The term "current Btu related price" means the most recently published Btu related price.

(18) The term "Btu related price" means the average per barrel crude oil acquisition cost (excluding any amounts attributable to the tax imposed by section 4996 of the Internal Revenue Code of 1954) for re-

fineries in the United States (with respect to all crude oil produced within the United States) for the most recent calendar quarter for which data are available to the President, divided by a factor of 5.8.

(19) The term "United States" includes the Outer Continental Shelf.

(20) The term "inflation adjustment" means the first revision of the quarterly percent change, seasonally adjusted at annual rates, of the most recent implicit price deflator for the gross national product. Such adjustment shall be computed and published for each calendar quarter by the Department of Commerce.

(b) The President shall have the authority to define, by rule, the terms used in this part in a manner consistent with the purposes of this part.

CALCULATION OF THE CURRENT BTU RELATED PRICE

SEC. 403. As soon as practicable after the date of enactment of this Act, and on a timely basis thereafter as new data become available, the President shall calculate and publish in the Federal Register the current Btu related price.

SALES OF NEW NATURAL GAS

SEC. 404. The President shall, by rule, establish a maximum lawful price applicable to any first sale by a producer of new natural gas delivered in any calendar quarter which

begins on or after the date upon which such rule is promulgated and made effective. Such maximum lawful price shall be a price equal to the current Btu related price (determined as of the date of such delivery).

SALES OF OLD NATURAL GAS UNDER EXISTING CONTRACTS

SEC. 405. The President shall, by rule, establish a maximum lawful price applicable to any first sale by a producer of old natural gas under an existing contract. Such maximum lawful price shall be a price equal to the lesser of—

(1) the contract price; or

(2) the price for sales under such contract which was determined to be just and reasonable by the Commission and was in effect on April 20, 1977 (without regard to any appeal of such determination pending on April 20, 1977), plus the inflation adjustment as defined in section 408 (c).

SALES OF OLD NATURAL GAS UNDER NEW CONTRACTS

SEC. 406. (a) The President shall, by rule, establish the maximum lawful price applicable to any first sale by a producer of old natural gas under a new contract.

(b) In the case of old natural gas referred to in subsection (a) (1) which is committed or dedicated to interstate commerce on April 20, 1977 (other than by reason of a limited term certificate of five years or less or a

temporary emergency contract under section 7(c) of the Natural Gas Act), or (2) which is produced from a new well or a new lease, the maximum lawful price under this section shall not exceed $1.45 per Mcf; plus the inflation adjustment as defined in section 402(a)(20). In establishing any maximum lawful price under this subsection, the President shall take into consideration the maximum lawful price of such gas under the prior contract and the price necessary to maintain production of such gas.

(c) In the case of old natural gas referred to in subsection (a) which is not described in subsection (b), the maximum lawful price under this section shall be equal to the current Btu equivalent price (determined as of the date of delivery of such gas).

EFFECTIVE DATES OF RULES WITH RESPECT TO MAXIMUM LAWFUL PRICES

SEC. 407. The President shall promulgate and make effective rules under sections 404 through 406 within thirty days after the date of enactment of this Act. Such rules shall apply to deliveries which take place after the date of enactment of this Act.

SPECIAL PRICING PROVISIONS

SEC. 408. (a) Notwithstanding any maximum lawful price under sections 404 through 406, the President may, by rule, specify a special price under this section in excess

of any such maximum lawful price, which shall be applied for purposes of such sections if the President determines that such special price is necessary to provide incentives for the production of natural gas or the manufacture of synthetic gas in categories which involve high costs, such as production—

(1) in depths of more than 500 feet of water,

(2) more than 15,000 feet below the surface of the Earth, or

(3) from geopressurized brine.

The President may specify such special prices for categories of production or on a national, geographic area, or case-by-case basis in accordance with section 553 of title 5, United States Code.

(b) In the case of a first sale by a producer of any natural gas with respect to which such producer bears all or part of the cost of transportation or liquefaction of such gas, the President, by rule, may adjust the maximum lawful price determined under sections 404 through 406 or the special price under subsection (a) to reflect such cost.

(c) The Commission may not increase any price for any first sale by a producer of natural gas determined prior to April 20, 1977, by the Commission to be just and reasonable, except that the Commission shall, to the extent permitted by the terms of any contract, cause an inflation adjustment in such prices as defined in section 402 (a) (20).

(d) In addition to his authority respecting first sales by a producer of natural gas, the President may, by rule, establish maximum lawful prices applicable to any sales of natural gas by any other person if he determines that such rules are necessary to prevent circumvention of the pricing policies specified in sections 404 through 408. This subsection shall not apply to sales for resale by such other persons if such sales are subject to the Natural Gas Act.

RELATIONSHIP TO THE NATURAL GAS ACT

SEC. 409. (a) For purposes of sections 4 and 5 of the Natural Gas Act, any price for any natural gas which is not in excess of the maximum lawful price (or special price specified under section 408) applicable to such natural gas under the provisions of this part shall be deemed just and reasonable and the Commission may not disallow any rate which is not in excess of such maximum lawful price.

(b) The Commission may not deny a certificate of public convenience and necessity under section 7 of the Natural Gas Act solely on the basis of the price for the first sale of natural gas sought to be transported pursuant to such certificate, if such price is not in excess of the maximum lawful price (or special price) applicable to such natural gas pursuant to this part.

ENFORCEMENT AND DELEGATION

SEC. 410. (a) Any rule promulgated by the President under this part shall be enforceable to the same extent and

in the same manner as a regulation, or rule, promulgated under the Emergency Petroleum Allocation Act of 1973.

(b) The President may delegate all or any part of the authority granted to him under this part to such officers, departments, or agencies of the United States (including the Commission or any member thereof) as he determines appropriate.

(c) In order to obtain information to carry out his authority under this part, the President may—

(1) sign and issue subpenas for the attendance and testimony of witnesses and the production of books, records, papers, and other documents;

(2) require any person, by general or special order, to submit answers in writing to interrogatories, requests for reports or for other information, and such answers shall be made within such reasonable period, and under oath or otherwise, as the President may determine; and

(3) secure, upon request, any information from any Federal department or executive agency.

(d) The appropriate United States district court may, upon petition of the Attorney General at the request of the President, in the case of refusal to obey a subpoena, or order of the President issued under subsection (c) issue an order requiring compliance therewith, and any failure to obey an order of the court may be punished by the court as a contempt thereof.

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(e) The President may not exercise authority under subsection (c) (3) with respect to information in possession of a Federal agency the disclosure of which to another Federal agency is expressly prohibited by law.

EMERGENCY SALES

SEC. 411. Nothing in this part shall apply to any price for the sale of natural gas which is allowed under section 4 of the Emergency Natural Gas Act of 1977.

SPECIAL RULES

SEC. 412. (a) The Commission may grant abandonment under section 7 (b) of the Natural Gas Act at any time prior to the committing or dedication of natural gas for interstate commerce.

(b) Any contractual provision—

(1) prohibiting the sale or commingling of natural gas subject to such contract with natural gas subject to the provisions of the Natural Gas Act, or

(2) terminating, or granting any party the option to terminate, any obligation under any such contract as a result of such sale or commingling,

is hereby declared against public policy and unenforceable with respect to the sale of any natural gas.

(c) The price of any natural gas determined under this part shall not be taken into account for purposes of any contractual provision which determines the price of any

natural gas (or terminates, or permits renegotiation of, a contract) on the basis of sales of other natural gas.

COVERAGE

SEC. 413. Sections 402 through 412 shall apply only to the sale of any natural gas produced within the United States.

INCREMENTAL PRICING OF NATURAL GAS

SEC. 414. (a) Not later than ninety days after the date of enactment of this Act, the President shall, by rule, provide that, to the maximum extent practicable, any portion of the average cost of natural gas delivered after the date of enactment of this Act to any pipeline company which exceeds the average cost of natural gas to such company during the most recent twelve-calendar-month period ending before the date of enactment of this Act (plus an inflation adjustment as defined in section 402(a)(20)), shall be fully allocated in the rates and charges of such company to low priority uses; except that such rules may not require that such portion be fully allocated for such uses if such allocation would result in rates or charges for such uses equal to an amount no greater than the reasonable price (as determined by the President) of substitute fuels.

(b) For purposes of this section:

(1) The term "low priority use" means a use other than a high priority use.

(2) The term "high priority use" means:

(A) use of natural gas in a residence; or

(B) use of natural gas in a commercial establishment in amounts of less than 50 Mcf on a peak day.

(3) The term "pipeline company" means any person (including a governmental agency) who is engaged in the business of transporting natural gas by pipeline and who sells natural gas for ultimate consumption.

(c) If any pipeline company sells natural gas in violation of rules promulgated by the President under subsection (a), such pipepline company shall be fined not more than $10,000 for each sale made in violation of such rules.

SYNTHETIC GAS

SEC. 415. The Natural Gas Act is amended by redesignating section 24 as section 25, and by inserting after section 23 the following new section:

"COMMISSION JURISDICTION OVER SYNTHETIC

"SEC. 24. (a) (1) Subject to the provisions of paragraph (2), the provisions of this Act shall apply to—

"(A) any facility constructed or operated by a natural-gas company or an affiliate thereof for the manufacture of pipeline-quality gas for the purposes of transportation in interstate commerce or sale in interstate commerce for resale for ultimate public consumption,

"(B) to such transportation or sale by a natural-gas company or affiliate thereof, and

"(C) to natural-gas companies or their affiliates engaged in such manufacture, transportation, or sale.

"(2) The provisions of this Act shall not apply to the mining, production, transportation, sale, delivery, or any other activity related to the furnishing of hydrocarbon-containing material (other than natural gas) to a natural-gas company or its affiliate for the production of such pipeline-quality gas.

"(b) If, prior to the date of enactment of this section, any natural-gas company was engaged in the manufacture of pipeline-quality gas from hydrocarbon-containing material or transportation or sale for resale of such pipeline-quality gas, subject to the jurisdiction of the Commission, or if a certificate of public convenience and necessity has been issued by the Commission authorizing the transportation or sale for resale of such pipeline-quality gas by a natural-gas company, the Commission shall issue a certificate for such manufacture, transportation, or sale for resale of such pipeline-quality gas without requiring further proof that the public convenience and necessity will be served by such operation, and without further proceedings pursuant to the Natural Gas Act or any other provision of law, if application for a certificate is made to the Commission within 90 days after such date of enact-

ment. Pending the determination of any such application, the continuance of such operation shall be lawful.

"(c) For purposes of this section, the term 'pipeline-quality gas' shall mean gas the principal ingredient of which is methane and which is interchangeable and compatible with natural gas as determined by rule by the Commission.".

AMENDMENTS TO THE EMERGENCY NATURAL GAS ACT OF 1977

SEC. 416. The Emergency Natural Gas Act of 1977 is amended—

(1) in section 2, by striking out paragraphs (2), (3), and (4) and inserting in lieu thereof the following:

"(2) The term 'pipeline' means any person engaged in the transportation of natural gas.";

(2) in section 2, by redesignating paragraphs (5), (6), and (7) as (3), (4), and (5), respectively;

(3) in section 4(a)(1), by striking out subparagraphs (A) and (B) and inserting in lieu thereof the following:

"(A) any pipeline to make emergency deliveries of, or to transport, natural gas to any other pipeline or to any local distribution com-

pany for purposes of meeting such requirements; or";

(4) in section 4(a)(1), by redesignating subparagraph (C) thereof as subparagraph (B);

(5) in section 4(a)(1), by striking out "April 30, 1977" and inserting in lieu thereof "April 30, 1979";

(6) in section 4(a)(2), strike out "interstate" wherever it appears;

(7) in section 4(d), strike out "interstate pipeline, intrastate";

(8) in section 4(f)(2)(A), strike out "by August 1, 1977, to the maximum extent practicable" and insert in lieu thereof "as expeditiously as practicable,";

(9) in section 7, strike out "interstate" wherever it appears; and

(10) in section 2(b), after "October 1, 1977,", insert "October 1, 1978, and June 1, 1979,".

PART E—PUBLIC UTILITY REGULATORY POLICIES

Subpart 1—General Provisions

FINDING AND PURPOSES

SEC. 501. (a) The Congress hereby finds that the generation, transmission, and sale of electric energy and the transportation and sale of natural gas affect interstate commerce, and that adequate and reliable supplies of electric

energy and natural gas are necessary for the general welfare and national security.

(b) The purposes of this part are—

(1) to establish national policies with respect to electric utility ratemaking which—

(A) encourage economic efficiency,

(B) insure that electric utility rates are designed to minimize consumption of oil, gas, and other energy resources and to reduce the need for new generating capacity,

(C) provide for fair and reasonable rates to electric consumers, and

(D) assure that States which implement rate reforms are not placed at a relative economic disadvantage in attracting and retaining industry by reason of the failure of other States to implement such reforms;

(2) to provide a mechanism to establish similar policies for gas utilities; and

(3) to increase the efficiency of energy resource use in the generation and transmission of electric power, and the reliability of electric service, through greater use of interconnection, wheeling, economic dispatch, and cogeneration.

DEFINITIONS

SEC. 502. (a) As used in this part:

(1) The term "Administrator" means the Administrator of the Federal Energy Administration.

(2) The term "Commission" means the Federal Power Commission.

(3) The term "electric consumer" means any person, State agency, or Federal agency, to which electric energy is sold other than for purposes of resale.

(4) The term "electric utility" means any person, State agency, or Federal agency, which sells electric energy.

(5) (A) The term "State regulated electric utility" means any electric utility other than a nonregulated utility.

(B) The term "nonregulated utility" means—

(i) an electric utility which is a State agency or Federal agency unless a State regulatory authority has the same ratemaking authority respecting the rates of such utility as such authority has with respect to other electric utilities subject to its jurisdiction, or

(ii) a private cooperatively organized electric utility unless a State regulatory authority has the same ratemaking authority respecting the rates of such utility as such authority has with respect to other electric utilities subject to its jurisdiction.

Such term does not include an electric utility with respect to which the Tennessee Valley Authority has ratemaking authority.

(6) The term "Federal agency" means an executive agency (as defined in section 105 of title 5, United States Code).

(7) The term "rate" means any price, rate, charge, or classification made, demanded, observed, or received with respect to the sale of electric energy, any rule, regulation, or practice respecting any such price, rate, charge, or classification, and any contract pertaining to the sale of electric energy.

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

(9) The term "rate schedule" means a schedule of rates which an electric utility charges electric consumers.

(10) The term "sale" includes an exchange of, or a charge for transmission of, electric energy.

(11) The term "State" means a State, the District of Columbia, or Puerto Rico.

(12) The term "State agency" means a State, a political subdivision thereof, or any agency or instrumentality of either.

(13) The term "State regulatory authority" means any State agency which has ratemaking authority with respect

to the sale of electric energy by any electric utility (other than by such State agency); except that with respect to an electric utility with respect to which the Tennessee Valley Authority has ratemaking authority, such term means the Tennessee Valley Authority.

(14) The term "evidentiary hearing" means (A) in the case of a State agency, a proceeding (i) which includes notice to, and an opportunity for, participants to present direct and rebuttal evidence and to cross-examine witnesses and which results in a written decision based upon evidence appearing in a written record of the proceeding, and (ii) which is subject to judicial review; and (B) in the case of a Federal agency, a proceeding conducted in accordance with section 556 of title 5 of the United States Code.

(b) Section 3 of the Federal Power Act is amended by inserting "(a)" after "SEC. 3" and by adding the following at the end thereof:

"(b) For purposes of this Act, the terms 'electric utility', 'evidentiary hearing', and 'Federal agency' have the same meaning as when used in part E of title I of the National Energy Act".

ANTITRUST LAWS

SEC. 503. Nothing in this part shall affect the applicability of the antitrust laws (as defined in section 3(9) of the

Energy Policy and Conservation Act) to electric utilities or gas utilities.

## Subpart 2—National Electric Rate Design Policies

### COVERAGE

SEC. 511. The requirements of this subpart (other than section 516(d)) apply only to sales of electric energy by an electric utility for purposes other than resale, except that such requirements shall not apply to an electric utility in any calendar year unless such sales of electric energy by such utility during the second preceding calendar year (or any prior year after 1975) exceeded seven hundred and fifty million kilowatt-hours.

### METHODS FOR DETERMINING COST OF PROVIDING ELECTRIC SERVICE

SEC. 512. (a) Each State regulatory authority shall prescribe one or more methods for determining costs associated with providing electric service to electric consumers (and classes thereof) by each electric utility over which it has ratemaking authority. If such authority fails to prescribe such methods within two years after the date of enactment of this Act, the Administrator shall prescribe such methods for each such utility with respect to which such methods have not been so prescribed, which methods shall remain applicable until such time as the Administrator determines that such authority has prescribed such methods.

(b) Such methods shall, to the maximum extent practicable and consistent with section 513 (c), reflect differences in cost-incurrence, for each electric consumer (or class thereof), attributable to daily and seasonal time of use of service. In prescribing such methods, there shall be taken into account the extent to which total costs to an electric utility are likely to change if such consumer (or class) causes—

(1) additional capacity to be added to meet an electric consumer's kilowatt demand during system peak periods,

(2) additional kilowatt-hours of electric energy to be delivered to electric consumers, and

(3) additional electric consumers to be connected to the electric utility.

NATIONAL ELECTRIC RATE DESIGN AND REGULATORY POLICIES

SEC. 513. (a) Each State regulatory authority which has enforcement responsibility under section 516 (a) (1) shall take such action as may be necessary to assure that each State regulated electric utility will in making sales of electric energy subject to this part, comply with the following national policies:

(1) (A) Except as otherwise provided in subsections (b) and (c), rates for providing electric service

to each electric consumer (or class thereof) shall be designed, to the maximum extent practicable, to reflect the costs of providing electric service to such consumer (or class).

(B) A rate shall not be considered as meeting the requirements of subparagraph (A) if the rate per kilowatt-hour, for electric energy during any period to any electric consumer (or class thereof) decreases as kilowatt-hour consumption by such consumer increases.

(2) (A) Each electric utility shall offer each electric consumer—

(i) a time-of-day rate which reflects costs of providing service to such consumer, if such consumer is willing to pay the reasonable costs of metering necessary to utilize such rate, or

(ii) opportunity to install a load management system appropriate to such consumer and to receive a rate which reflects any decrease in cost of service which is associated with the use of such system.

For purposes of this subparagraph, the term "load management system" means any system to reduce maximum kilowatt demand on the electric utility. Such systems may include ripple, radio, or other control mechanisms, or interruptible electrical services, and customer-owned energy storage or load-limiting devices.

(B) Each electric utility shall offer each electric consumer a seasonal rate which shall reflect seasonal differences in the cost of providing service to such consumer.

(C) Each electric utility shall offer each industrial or large commercial electric consumer (as defined in rules under subparagraph (D)) an interruptible rate which reflects the cost of providing interruptible service to such customers.

(D) The Administrator may prescribe rules (i) respecting the terms and conditions of any rate offered under subparagraphs (A) (i), (B), and (C) of this paragraph, and the types of load management systems and terms and conditions of rates offered under subparagraph (A) (ii); and (ii) permitting any State regulatory authority to exempt any electric utility from any requirement of this paragraph if such authority determines in an evidentiary hearing that no significant number of electric consumers will use the rate required to be offered.

(3) For purposes of this section, costs of providing service shall be determined in accordance with methods prescribed in section 512.

(4) Except as otherwise provided by rules of the Administrator, no electric utility may provide electric

service to a building which is metered by a bulk or master meter if the construction of such building commenced more than one year after the date of enactment of this Act. The Administrator may define, by rule, bulk or master meter.

(b) (1) No provisions of this subpart shall prevent an electric utility, a State regulatory authority, or other State agency from fixing, approving, or allowing to go into effect a rate for electric energy applicable to all residential electric consumers (as defined by the State regulatory authority) which is lower than otherwise required by subsection (a) (1) (A). Nothing in this subsection shall authorize a rate which does not comply with subsection (a) (1) (B).

(2) A State regulatory authority which has enforcement responsibility may, upon application of any electric consumer, prescribe a temporary exception pursuant to which an electric utility rate schedule which does not comply with the requirements of this subpart will be fixed, approved, or allowed to go into effect, with respect to such consumer. Any such exception shall comply with the following requirements:

(A) such exception may apply only to the type of use and amount of use of electric energy as does not exceed the amount the electric consumer used prior to the date of enactment of this Act;

(B) the electric consumer who applies for such exception demonstrates to such State regulatory authority in an evidentiary hearing that such exception is necessary to avoid extreme economic hardship to such consumer; and

(C) such exception does not remain in effect more than five years after the date of enactment of this Act.

(c) Nothing in this subpart shall be construed as authorizing or requiring the recovery by an electric utility of revenues, or of a rate of return, in excess of the amount of revenues or a rate of return determined to be lawful under otherwise applicable State or Federal law.

INFORMATION AND REPORTS

SEC. 514. (a) Each electric utility shall gather information under such rules promulgated by the Administrator as the Administrator determines necessary to allow State regulatory authorities (and other persons) to determine the costs associated with providing electric service, including information with respect to—

(1) the factors which cause changes in the daily and seasonal peak loads of such utility and of the electric consumer classes serviced by such utility; and

(2) the costs of serving each electric consumer class and of serving different consumption patterns

within such class, based on voltage level, time of use, and other factors.

(b) The Administrator, by rule, within 180 days after the date of enactment of this Act, shall prescribe the methods, procedure, and format to be employed by each electric utility in gathering the information described in subsection (a). The Administrator may, by rule, exempt an electric utility from gathering all or part of such information, if the Administrator finds (and so states in such rule) that gathering such information is not likely to further the purposes of this part.

(c) Not later than two years after the date of enactment of this Act, and every two years thereafter, each electric utility shall file with the Administrator and any State regulatory authority which has ratemaking authority for such utility the information gathered pursuant to this section (if such information is not otherwise required to be filed with such authority), and publish or otherwise make such information available to the public, in such form and manner as the Administrator shall prescribe.

NONREGULATED UTILITIES

SEC. 515. (a) (1) Each nonregulated utility shall prescribe methods for determining costs associated with providing electric service to its electric consumers (and classes thereof). If such utility fails to prescribe such methods within

two years after the date of enactment of this Act, the Administrator shall prescribe such methods for each such utility.

(2) Such methods shall be prescribed in accordance with section 512 (b).

(b) Each nonregulated utility shall comply with the national policies specified in section 513 in making sales of electric energy subject to this subpart.

IMPLEMENTATION OF NATIONAL RATE DESIGN AND REGULATORY POLICIES

SEC. 516. (a) (1) For purposes of this subpart, a State regulatory authority shall (except as otherwise provided in paragraph (2) (A)) be considered to have enforcement responsibility for a period for which it has notified the Administrator (in such manner as the Administrator shall prescribe by rule) that it will assume responsibility for implementing this subpart with respect to electric utilities with respect to which it has ratemaking authority.

(2) (A) Not later than two years after the date of enactment of this Act (and every two years thereafter), each State regulatory authority which has enforcement responsibility shall submit to the Administrator a report (containing such information as the Administrator by rule may require), describing the extent to which such authority has implemented the national policies specified in section 513. If the Administrator determines (after notice

and opportunity for presentation of views) that such authority has not implemented such policies and if he has not granted an extension under paragraph (3), then effective six months after such determination, such authority shall be considered as not having enforcement responsibility until such time as he determines (after notice and opportunity for presentation of views) that such authority has implemented such policies.

(B) Not later than two years after the date of enactment of this Act (and every two years thereafter), each utility (other than a utility with respect to which a State regulatory authority which has enforcement responsibility has ratemaking authority) shall submit to the Administrator a report (containing such information as the Administrator by rule may require), describing the extent to which such utility has implemented the national policies specified in section 513. If the Administrator determines (after notice and opportunity for presentation of views) that such utility has not implemented such policies and if he has not granted an extension under paragraph (3), then effective six months after such determination, he shall exercise his authority under subsection (b) with respect to such electric utility until such time as he determines (after notice and opportunity for presentation of views) that such utility has implemented such policies.

(3) Upon application in the first report submitted under paragraph (2) by a State regulatory authority or an electric utility, the Administrator may allow such authority or utility not more than three years after the date of enactment of this Act to implement the policies specified in section 513, if he finds that—

(A) it is not practicable to implement such policies within two years, and

(B) such authority or utility will make such reports and comply with such terms and conditions as he may prescribe.

The Administrator may grant one or more additional one-year extensions under this paragraph if he makes the findings under subparagraphs (A) and (B) and if he finds that such authority or utility is unable to implement such policies, despite good faith efforts, solely by reason of a judicial stay of such authority's order implementing such policies.

(b) (1) During any period during which the Administrator is required by subsection (a) (2) (B) to exercise authority under this subsection with respect to any electric utility, such utility may not increase any rate at which it sells electric energy unless the Administrator determines, after such rate is proposed and before it takes effect, in an evidentiary hearing, that such rates meet the national policies specified in section 513. Such proceeding shall be initiated

by the Administrator not later than thirty days after application by such utility for a determination under this paragraph. Such application may be made at any time after such utility gives notice of such proposed increase.

(2) The Administrator may prescribe rules which provide that paragraph (1) shall not apply—

(A) to a rate increase pursuant to a fuel adjustment clause,

(B) in the case of a State regulated utility, to an interim rate increase during any period that such increase is in effect subject to a requirement that it be refunded in whole or part, with interest, if the State regulatory authority subsequently determines it is unlawful, or

(C) another class of rate increase identified in such rules,

if the Administrator, under paragraph (1), has determined not earlier than two years prior to the effective date of such rate increase that such utility's rate meets the requirements of section 513.

(c) Upon request of the Administrator, the Attorney General shall seek to enjoin, in the appropriate district court of the United States, any electric utility from violating subsection (b), and in any such action, the court may enjoin such electric utility from such violation, and may issue a man-

datory injunction requiring compliance with the policies under section 513.

(d) No contract between a Federal agency and an electric utility for sale of electric energy by such Federal agency for purposes of resale may contain any provisions inconsistent with the provisions of section 513.

AUTHORIZATION OF APPROPRIATIONS

SEC. 517. (a) There are authorized to be appropriated to the Administrator to carry out this part such sums as may be necessary for the fiscal year ending September 30, 1978, and each of the two succeeding fiscal years.

(b) Section 207 of the Energy Conservation and Production Act is amended to read as follows:

"AUTHORIZATIONS OF APPROPRIATIONS

"SEC. 207. There are authorized to be appropriated to carry out this title such sums as may be necessary for the fiscal year ending September 30, 1977, and each of the two succeeding fiscal years.".

## Subpart 3—Bulk Power Supply

INTERCONNECTION AND WHEELING

SEC. 521. (a) Section 202 (b) of the Federal Power Act is amended to read as follows:

"(b) (1) Whenever the Commission, on its own motion, or upon application of any State commission or of any

electric utility or any qualifying cogenerator (as defined in section 522(b)(2) of the Public Utility Act of 1977), and after notice to each State commission and electric utility affected and after evidentiary hearing, finds such action necessary or appropriate in the public interest, it shall by order direct an electric utility (other than a Federal agency)—

"(A) to establish physical connection of its transmission facilities with the facilities of any other electric utility or qualifying cogenerator, or

"(B)(i) to sell or deliver energy to, (ii) exchange energy with, (iii) transmit energy for, (iv) provide pooling, wheeling, or other transmission services for, or (v) otherwise coordinate with, such utility or cogenerator.

"(3) The Commission may prescribe the terms and conditions of the arrangement to be made between the persons affected by any order under this subsection, including the apportionment of cost between them and the compensation or reimbursement reasonably due to any of them.

"(4) The Commission shall have no authority under this subsection to compel the enlargement of generating facilities for purposes of this subsection, nor to compel an electric utility to sell or exchange energy if to do so would

unreasonably impair its ability to render adequate service to its customers.".

(b) (1) Section 202 (a) of the Federal Power Act is amended by striking the word "voluntary" from the first sentence.

(2) The first sentence of section 201 (b) is amended by inserting "(other than 202 (b))" after "Part" and by adding the following at the end thereof: "The provisions of section 202 (b) shall apply to the electric utilities and other persons specified therein.".

(3) Section 201 (e) is amended by inserting "(other than facilities subject to such jurisdiction solely by reason of section 202 (b))" before the period at the end thereof.

COGENERATION

SEC. 522. (a) Not later than one year after the date of enactment of this Act, the Administrator shall, after consultation with representatives of State regulatory authorities, prescribe rules requiring electric utilities to offer to sell electric energy to any qualifying cogenerator and to offer to purchase electric energy from such cogenerators. Such rules shall insure that rates for such sales and purchases do not discriminate against such cogenerators, and may, in order to carry out the purposes of this Act, include provisions exempting qualifying cogenerators in whole or part from the

Federal Power Act, the Public Utility Holding Company Act, and from State laws and regulations respecting electric utility regulation, if the Administrator determines such exemption is necessary to carry out the purposes of this part.

(b) For purposes of this section:

(1) The term "cogeneration facility" means a facility owned by a person not primarily engaged in the generation or sale of electric power, which facility produces (A) electric energy and (B) other forms of useful energy (such as steam or heat) which is, or will be used for industrial, commercial, or space heating purposes.

(2) The term "qualifying cogeneration facility" means a cogeneration facility which the Administrator determines—

(A) meets such requirements (including requirements respecting minimum size, fuel use, and fuel efficiency) as the Administrator, by rule, prescribes; and

(B) the owner or operator of which offered (at such time and in such manner as the Administrator may prescribe by rule) each electric utility to which such facility is, or will be, directly connected an opportunity to operate such facility on terms which are agreed upon by the parties.

(3) The term "qualifying cogenerator" means any person who is, or will be, the owner or operator of a qualifying cogeneration facility.

(c) For purposes of enforcement of this section, a rule under this section shall be treated as a rule under the Federal Power Act; except that, for such purposes, any reference in sections 309, 314, 315, and 316 of the Federal Power Act to the Commission shall be deemed to be a reference to the Administrator.

(d) The Administrator may delegate (on such terms and conditions as he determines appropriate) any part of his authority under this section respecting any electric utility (other than a Federal agency) to any State regulatory authority which he determines has the capability of effectively exercising such authority with respect to such utility.

Subpart 4—Natural Gas Rate Design Policies

DEFINITIONS

SEC. 541. (a) As used in this subpart:

(1) The term "gas consumer" means any person, State agency, or Federal agency, to which natural gas is sold other than for purposes of resale.

(2) The term "gas utility" means any person, Federal agency, or State agency which sells natural gas.

(3) The term "natural gas" shall have the same

meaning as such term has under section 2 of the Natural Gas Act.

(4) The terms "State regulated gas utility", "nonregulated utility", "nonregulated public system", "nonregulated cooperative", "rate", "rate schedule", "sale", and "State regulatory authority" shall have the same meaning as such terms have under section 502; except that the term "gas" shall be substituted for "electric" and "electric energy" wherever those terms appear in section 502.

COVERAGE

SEC. 542. The requirements of this subpart apply only to sales of natural gas by a gas utility for purposes other than resale; except that such requirements shall not apply to a gas utility in any calendar year unless such sales by such utility during the second preceding calendar year (or any prior year after 1975) exceeded ten billion cubic feet of gas.

NATURAL GAS RATE DESIGN AND REGULATORY POLICIES

SEC. 543. (a) Each State regulatory authority which has enforcement responsibility shall take such action as may be necessary to assure that—

(1) no State regulated gas utility will make sales of natural gas subject to this subpart under a rate schedule under which the rate per thousand cubic feet

for natural gas during any period to any gas consumer (or class thereof) decreases as natural gas consumption by such consumer increases, and

(2) each State regulated gas utility will in making sales of natural gas subject to this subpart comply with rules promulgated by the Administrator under section 545.

GAS UTILITY RATE DESIGN PROPOSALS

SEC. 544. (a) The Administrator shall develop proposals to improve gas utility rate design. Such proposals shall be designed to encourage energy conservation, and shall include (but not be limited to) proposals with respect to:

(1) Summer-winter rate differentials.

(2) Rates for interruptible service.

(3) Master metering.

(b) The proposals prepared under subsection (a) shall be published not later than twelve months after the date of enactment of this Act. Such proposals shall be accompanied by an analysis of—

(1) the projected savings (if any) in consumption of natural gas, and other energy resources, and

(2) changes (if any) in the cost of natural gas to consumers, which are likely to result from the implementation nationally of each of the proposals published under this subsection.

PROMULGATION OF GAS RATE DESIGN AND REGULATORY RULES

SEC. 545. (a) (1) The Administrator shall, within eighteen months after the date of enactment of this Act, propose rate design and regulatory rules for gas utilities. Such rules shall (subject to subsection (b)) be promulgated not later than six months thereafter, and may include only those rate design and regulatory proposals published in a report issued pursuant to section 544. Such rules shall take effect, for purposes of section 548, not earlier than two years after their promulgation.

(b) Any rule promulgated pursuant to this section shall set out those rate design and regulatory rules which the Administrator determines are necessary for each gas utility to implement in order to conserve natural gas supplies and may include such requirements, terms, and conditions as the Administrator determines appropriate.

INFORMATION

SEC. 546. (a) Each gas utility shall gather information under such rules promulgated by the Administrator as the Administrator determines necessary to allow State regulatory authorities (and other persons) to determine the costs associated with providing gas.

(b) The Administrator, by rule, within one hundred and eighty days after the date of enactment of this Act, shall

prescribe the methods, procedure, and format to be employed by each gas utility in gathering the information described in subsection (a). The Administrator may, by rule, exempt a utility from gathering all or part of such information, if the Administrator finds (and so states in such rule) that gathering such information is not likely to further the purposes of this subpart.

(c) Each gas utility shall, every two years, file with the Administrator and any State regulatory authority which has ratemaking authority for such utility the information gathered pursuant to this section (if such information is not otherwise required to be filed with such authority), and publish or otherwise make such information available to the public in such form and manner as the Administrator shall prescribe.

NONREGULATED UTILITIES

SEC. 547. (a) Each nonregulated utility shall comply with the national policies specified in section 573 in making sales of gas subject to this subpart.

IMPLEMENTATION

SEC. 548. (a) (1) For purposes of this subpart, a State regulatory authority shall (except as otherwise provided in paragraph (2) (A)) be considered to have enforcement responsibility for a period for which it has notified the Administrator (in such manner as the Administrator shall

prescribe by rule) that it will assume responsibility for implementing this subpart with respect to gas utilities with respect to which it has ratemaking authority.

(2) (A) Not later than two years after the date of enactment of this Act (and every two years thereafter), each State regulatory authority which has enforcement responsibility shall submit to the Administrator a report (containing such information as the Administrator by rule may require), describing the extent to which such authority has implemented the national policies specified in section 543 and the requirements of the rules promulgated pursuant to section 545. If the Administrator determines (after notice and opportunity for presentation of views) that such authority has not implemented such policies and requirements and if he has not granted an extension under paragraph (3), then effective six months after such determination, such authority shall be considered as not having enforcement responsibility until such time as he determines (after notice and opportunity for presentation of views) that such authority has implemented such policies and requirements.

(B) Not later than two years after the date of enactment of this Act (and every two years thereafter), each gas utility (other than a utility with respect to which a State regulatory authority which has enforcement responsibility

has ratemaking authority) shall submit to the Administrator a report (containing such information as the Administrator by rule may require), describing the extent to which such utility has implemented the national policies specified in section 543 and the requirements of the rules promulgated pursuant to section 545. If the Administrator determines (after notice and opportunity for presentation of views) that such utility has not implemented such policies and requirements and if he has not granted an extension under paragraph (3), then effective six months after such determination, he shall exercise his authority under subsection (b) with respect to such gas utility until such time as he determines (after notice and opportunity for presentation of views) that such utility has implemented such policies and requirements.

(3) Upon application in the first report submitted under paragraph (1) by a State regulatory authority or a gas utility, the Administrator may allow such authority or utility not more than three years after the date of enactment of this Act to implement the policies specified in section 543 and the rules promulgated pursuant to section 545, if he finds that—

(A) it is not practicable to implement such policies and requirements within two years, and

(B) such authority or utility will make such

reports and comply with such terms and conditions as he may prescribe.

The Administrator may grant one or more additional one-year extensions under this paragraph if he makes the findings under subparagraphs (A) and (B) and if he finds that such authority or utility is unable to implement such policies and requirements, despite good faith efforts, solely by reason of a judicial stay of such authority's order implementing such policies or requirements.

(b) (1) During any period during which the Administrator is required by subsection (a) (2) (B) to exercise authority under this subsection with respect to any gas utility, such utility may not increase any rate at which it sells natural gas unless the Administrator determines, after such rate is proposed and before it takes effect, in an evidentiary hearing, that such rates meet the national policies specified in section 543 and the requirements of the rules promulgated pursuant to section 545. Such proceeding shall be initiated by the Administrator not later than thirty days after application by such utility for a determination under this paragraph. Such application may be made at any time after such utility gives notice of such proposed increase.

(2) The Administrator may prescribe rules which provide that paragraph (1) shall not apply—

(A) to a rate increase pursuant to a fuel adjustment clause,

(B) in the case of a State regulated utility, to an interim rate increase during any period that such increase is in effect subject to a requirement that it be refunded in whole or part, with interest, if the State regulatory authority subsequently determines it is unlawful, or

(C) another class of rate increase identified in such rules,

if the Administrator, under paragraph (1), has determined not earlier than two years prior to the effective date of such rate increase that such utility's rate meet the policies under section 543 and the requirements promulgated pursuant to section 545.

(c) Upon request of the Administrator, the Attorney General shall seek to enjoin, in the appropriate district court of the United States, any gas utility from violating subsection (b), and in any such action, the court may enjoin such gas utility from such violation, and may issue a mandatory injunction requiring compliance with the policies and rules under sections 543 and 545.

(d) No contract between a Federal agency and a gas utility for sale of natural gas by such Federal agency for purposes of resale may contain any provisions inconsistent

with the policies found in section 543 and the rules promulgated pursuant to section 545.

## PART F—AMENDMENTS TO THE ENERGY SUPPLY AND ENVIRONMENTAL COORDINATION ACT

### REVISION OF COAL CONVERSION PROGRAM

SEC. 601. The Energy Supply and Environmental Coordination Act of 1974 is amended by striking out the table of contents and all that follows down through and including section 2, and inserting in lieu thereof the following:

"TABLE OF CONTENTS

"TITLE I—CONVERSION TO COAL AND OTHER FUELS

"Sec. 101. Findings and purposes.
"Sec. 102. Definitions.
"Sec. 103. Territorial application.
"Sec. 104. New electric powerplants.
"Sec. 105. Existing electric powerplants.
"Sec. 106. New major fuel-burning installations.
"Sec. 107. Existing major fuel-burning installations.
"Sec. 108. Public interest temporary exception or exemption.
"Sec. 109. Temporary exception or exemption of qualifying cogeneration facilities.
"Sec. 110. Disruption of natural gas contracts.
"Sec. 111. Coal allocation.
"Sec. 112. Enforcement and penalties.
"Sec. 113. Emergency powers.
"Sec. 114. Rules and regulations.

"TITLE II—OTHER PROVISIONS

"Sec. 201. Suspension authority.
"Sec. 202. Implementation plan revisions.
"Sec. 203. Motor vehicle emissions.
"Sec. 204. Conforming amendments.
"Sec. 205. Protection of public health and environment.
"Sec. 206. Energy conservation study.
"Sec. 207. Report.
"Sec. 208. Fuel economy study.
"Sec. 209. Reporting of energy information.
"Sec. 210. Enforcement.
"Sec. 211. Extension of Clean Air Act authorization.
"Sec. 212. Definitions.

## FUELS

### "FINDINGS AND PURPOSES

"SEC. 101. (a) FINDINGS.—The Congress finds that the protection of public welfare and the preservation of national security require—

"(1) the reduction of national reliance on insecure sources of energy consistent with applicable environmental requirements;

"(2) the capability to use indigenous energy resources of the United States in lieu of imported energy supplies by the use of coal and other fuels in lieu of natural gas and petroleum as an energy source for new electrric powerplants and new fuel-burning installations and for certain existing powerplants and existing fuel-burning installations; and

"(3) the conservation of natural gas and petroleum for uses other than boiler fuel or the generation of electricity, and for which there are no feasible alternative fuels or raw material substitutes.

"(b) PURPOSES.—The purposes of this title are—

"(1) to provide for a means to assist in meeting the essential needs of the United States for energy, in a manner which is consistent, to the fullest extent practicable, with existing national commitments to protect the environment;

"(2) to foster the greater use of coal and other fuels in lieu of natural gas and petroleum as energy sources for electric powerplants and fuel-burning installations;

"(3) to require that any new electric powerplant and any new major fuel-burning installation which proposes to use fossil energy resources as an energy source use coal or other fuel other than natural gas or petroleum except in those circumstances provided for herein;

"(4) to reduce the United States vulnerability to energy supply interruptions; and

"(5) to regulate interstate commerce and for other purposes.

"DEFINITIONS

"SEC. 102. For the purposes of this title:

"(1) The term 'Administrator' means the Administrator of the Federal Energy Administration.

"(2) The term 'person' includes (A) any individual; (B) any corporation, company, partnership, association, firm, society, trust, joint venture, or joint stock company; (C) any State or political subdivision thereof (including the District of Columbia), or any agency or instrumentality of either.

"(3) The term 'natural gas' means natural gas as defined in the Natural Gas Act, including synthetic

natural gas derived from petroleum and liquid petroleum gas, but excluding natural gas produced from a well at the site of use by the user, in commercially unmarketable quantities, as determined by the Administrator, and excluding synthetic natural gas which is derived from coal and (A) which has a British thermal unit content below five hundred British thermal units per thousand cubic feet, or (B) (i) which is owned by the user when it enters a pipeline for transportation to the user, and (ii) which has been approved by the Administrtator for use by an electric powerplant or major fuel-burning installation.

"(4) The term 'petroleum' includes crude oil, residual fuel oil, and refined petroleum products other than liquid petroleum gas and synthetic natural gas derived from petroleum; but does not include process waste gases and waste gas and liquid and solid byproducts of refinery operations within the United States, which are commercially unmarketable, as determined by the Administrator.

"(5) The term 'coal or other fuel' means coal and any fuel other than natural gas or petroleum.

"(6) The term 'electric powerplant' or 'powerplant' means a fossil-fuel-fired electric generating unit,

including a gas turbine unit or a combined cycle unit, that produces electric power for the purpose of sale or exchange which—

"(A) is by design capable of consuming fuel at a fuel heat input rate of one hundred million British thermal units per hour or greater, or

"(B) is a combination of more than one fossil-fuel-fired electric generating unit (excluding any such unit not capable by design of consuming fuel at a fuel heat input rate in excess of a level determined by rule by the Administrator for that type of unit) at the same site which in the aggregate is by design capable of consuming fuel at a fuel heat input rate of two hundred and fifty million British thermal units per hour or greater.

"(7) The term 'major fuel-burning installation' or 'installation' means an installation other than an electric powerplant, consisting of a fossil-fuel-fired boiler or other combustor, a gas turbine unit, combined cycle unit, or internal combusion engine which—

"(A) is by design capable of consuming fuel at a fuel heat input rate of one hundred million British thermal units per hour or greater, or

"(B) is a combination of more than one such installation (excluding installations not capable by

design of consuming fuel at a fuel heat input rate in excess of a level determined by rule by the Administrator for that type of installation) at the same site which in the aggregate is by design capable of consuming fuel at a fuel heat input rate of two hundred and fifty million British thermal units per hour or greater, or

"(C) is designated by the Administrator by rule as included in such term, if he determines that such inclusion is necessary to carry out the purposes of this title.

"(8) The terms 'new electric powerplant' and 'new major fuel-burning installation' mean an electric powerplant or a major fuel-burning installation—

"(A) with respect to which an order was issued pursuant to section 2(c) of the Energy Supply and Environmental Coordination Act of 1974, as in effect prior to the effective date of this title, or

"(B) which is not beyond the planning process on the effective date of this title.

"(9) The term 'planning process' means that period ending when the electric powerplant or major fuel-burning installation can no longer reasonably be designed and constructed so as to be capable of using coal as its energy source without incurring significant financial or

operational detriment, as determined by rule by the Administrator.

"(10) The terms 'existing electric powerplant' and 'existing major fuel-burning installation' mean an electric powerplant or a major fuel-burning installation which is not a new electric powerplant or new major fuel-burning installation as defined in paragraph (8) of this section.

"(11) The term 'energy source' means the fuel or fuels used by an electric powerplant or a major fuel-burning installation except for amounts of fuel required for start-up, testing, flame stabilization, and control uses.

"(12) The term 'applicable environmental requirement' includes any Federal, State, or local government standard, limitation, or other requirement applicable to emissions of environmental pollutants (including air and water pollutants) or disposal of solid waste residues resulting from the combustion of coal or other fuels or operation of air pollution control equipment, and includes any standard, limitation, or other requirement established pursuant to the Clean Air Act, the Federal Water Pollution Control Act, or the Solid Waste Disposal Act.

"(13) The term 'peakload powerplant' means a powerplant which operates less than one thousand five hundred full-load hours per consecutive twelve-month period.

"(14) The term 'cost' means total costs (both operating and capital) incurred over the estimated useful life of a new electric powerplant or new major fuel-burning installation, discounted to present value as determined by the Administrator. Useful life shall not necessarily be determined by depreciable life or other tax-related time periods. In the case of an electric powerplant, cost shall take into account any change in the use of existing electric powerplants in the relevant dispatching system and other economic factors that are included in planning for the production, transmission, and distribution of electric power within such system.

"(15) The term 'qualifying cogeneration facility' means qualifying cogeneration facility as defined in section 522(b)(2) of the National Energy Act.

"TERRITORIAL APPLICATION

"SEC. 103. The provisions of this Act shall apply in the contiguous forty-eight States, Alaska, and the District of Columbia.

"NEW ELECTRIC POWERPLANTS

"SEC. 104. (a) PROHIBITION.—Except as provided in subsection (b) of this section, no new electric powerplant may use natural gas or petroleum as an energy source.

"(b) TEMPORARY EXCEPTION AND EXEMPTION.—

"(1) TEMPORARY EXCEPTION.—The Administrator,

upon application by a person owning, operating, constructing, or proposing to construct or operate a new electric powerplant proposing to use petroleum as an energy source, may grant a temporary exception with respect to petroleum from the prohibitions of subsection (a) of this section for a period of up to five years, or as determined by the Administrator, if such person demonstrates to the satisfaction of the Administrator that during the proposed period of the temporary exception—

"(A) (i) despite diligent good faith efforts, an adequate and reliable supply of coal or other fuel is not expected to be available; or (ii) physical or environmental factors which cannot reasonably be expected to be overcome by diligent good faith efforts by the applicant preclude compliance with the prohibitions of subsection (a) of this section because of site specific limitations, such as access to coal or coal transportation facilities; and

"(B) there is no alternative supply of power which can be obtained from another source without impairing reliability of service.

"(2) GENERAL EXEMPTION.—The Administrator, upon application by a person owning, operating, constructing, or proposing to construct or operate a new electric powerplant proposing to use petroleum as an energy source,

may grant an exemption with respect to petroleum from the prohibitions of subsection (a) of this section if such person demonstrates to the satisfaction of the Administrator that there is no site at which—

"(A) despite diligent good faith efforts, an adequate and reliable supply of coal or other fuel is expected to be available for use during a majority of the useful life of the powerplant and can be used at a cost that does not substantially exceed the cost of using imported petroleum; or

"(B) physical or environmental factors which cannot reasonably be expected to be overcome by diligent good faith efforts by the applicant do not preclude compliance with the prohibitions of subsection (a) of this section because of site specific limitations, such as access to coal or coal transportation facilities; or

"(C) the use of coal or other fuel is financially feasible, and

"(D) there is an alternative supply of power which can be obtained from another source without impairing reliability of service.

"(3) EXEMPTION FOR PEAKLOAD ELECTRIC POWERPLANTS.—The Administrator, upon notice by a person owning, operating, constructing, or proposing to construct or operate a new electric powerplant proposing to use petro-

leum as an energy source, shall grant an exemption for such powerplant from the prohibition of subsection (a) of this section with respect to petroleum if such person certifies that such powerplant is to be constructed or operated solely as a peakload powerplant.

"(4) TEMPORARY EXCEPTION OR EXEMPTION FOR RELIABILITY.—The Administrator, upon application by a person owning, operating, constructing, or proposing to construct or operate a new electric powerplant proposing to use petroluem as an energy source, may grant a temporary exception or an exemption with respect to petroleum from the prohibitions of subsection (a) of this section if such person demonstrates to the satisfaction of the Administrator that the temporary exception or exemption is necessary to prevent impairment of reliability of service.

"(c) DENIAL OF APPLICATION FOR TEMPORARY EXCEPTION OR EXEMPTION.—A denial of an application for temporary exception or exemption from the prohibitions of subsection (a) of this section shall not be deemed to be a major Federal action for purposes of section 102 of the National Environmental Policy Act of 1969 except when such denial relates to a new electric powerplant for which no entity other than the Federal Energy Administration is responsible for carrying out the provisions of such section.

"EXISTING ELECTRIC POWERPLANTS

"SEC. 105. (a) PROHIBITIONS.—

"(1) NATURAL GAS PROHIBITION.—(A) Except as provided in subections (d) and (e) of this section, effective January 1, 1990, no existing electric powerplant may use natural gas as an energy source.

"(B) Except as provided in subsection (d) (2) of this section, no existing electric powerplant using petroleum as its energy source as of April 20, 1977, may thereafter use natural gas as an energy source.

"(C) Except as provided in subsection (d) (2) of this section, no existing electric powerplant may use natural gas as an energy source in greater proportions than the average yearly proportion of natural gas that it used as an energy source in calendar years 1974 through 1976, or in the case of a powerplant beginning operation after January 1, 1974, than the average yearly proportion of natural gas that it used as an energy source during the first two calendar years of its operation.

"(2) NATURAL GAS AND PETROLEUM PROHIBITIONS.—

"(A) CATEGORIES.—The Administrator may by rule identify categories of existing powerplants, including a category consisting of electric powerplants with

the capability to use coal or other fuel which were issued orders pursuant to section 2(a) of the Energy Supply and Environmental Coordination Act of 1974, as in effect prior to the effective date of this title, which, except as provided in subsections (d) and (e) of this section, shall be prohibited from using natural gas prior to January 1, 1990, or petroleum, or both, as an energy source. In identifying other categories of existing electric powerplants pursuant to this paragraph, the Administrator shall take into account any special circumstances or characteristics of the category of such powerplants that will be subject to the prohibition.

"(B) INDIVIDUAL POWERPLANTS.—Subject to the provisions of subparagraph (C) of this paragraph, and of subsections (b), (d), and (e) of this section, the Administrator may, by order, prohibit an existing electric powerplant with the capability to use coal or other fuel as an energy source from using natural gas effective prior to January 1, 1990, or petroleum, or both, as an energy source.

"(C) CRITERIA.—The Administrator may issue an order pursuant to subparagraph (B) if he determines that—

"(i) the existing electric powerplant on June 22, 1974, had or thereafter acquired or is designed with

the capability to use coal or other fuel as an energy source;

"(ii) that the use of coal or other fuel by the powerplant in lieu of natural gas or petroleum is financially feasible; and

"(iii) that the prohibition under subsection (a) (2) (B) will not impair the reliability of service in the dispatching system of the powerplant;

unless the person owning or operating the electric powerplant can demonstrate that an adequate and reliable supply of coal or other fuel will not be available at the site of the powerplant.

"(3) NATURAL GAS AND PETROLEUM PROHIBITION: MIXTURES AND COMBINATIONS OF FUELS.—Subject to the provisions of subsections (d) and (e) of this section, the Administrator may, by order, prohibit an existing electric powerplant in which it is feasible to use a mixture of coal and petroleum as an energy source, or to use a combination of coal and natural gas or petroleum as an energy source from using natural gas or petroleum in greater amounts than is feasible unless the reliability of service in the dispatching system will thereby be impaired.

"(b) OTHER PROVISIONS.—(1) The Administrator may rescind or modify any order issued pursuant to subsection (a) (2) (B) if he determines that any requirement

described in subsection (a) (2) (C) is no longer met, and that such order, as modified, complies with such requirements.

"(2) Before issuing, modifying, or rescinding an order issued under subsection (a) (2) (B) the Administrator shall give notice to the public and afford interested persons an opportunity for oral and written presentations of data, views, and arguments.

"(3) An order (or modification thereof) issued under subsection (a) (2) (B) shall not be effective (A) until the Administrator of the Environmental Protection Agency notifies the Administrator under section 119 (d) (1) (B) of the Clean Air Act, or (B) if such notification is not given until the date which the Administrator of the Environmental Protection Agency certifies pursuant to section 119 (d) (1) (B) of such Act is the earliest date that the powerplant will be able to comply with all applicable requirements of section 119. The order (or modification) shall not be effective during any period certified by the Administrator of the Environmental Protection Agency under section 119 (d) (3) (B) of such Act. Notice or certification pursuant to this paragraph shall be provided within two hundred and seventy days of the date the Administrator of the Environmental Protection Agency receives notice of the issuance of an order under subsection (a) (2) (B).

"(c) PERMIT TO USE PETROLEUM.—(1) The Admin-

istrator shall by rule require that no existing electric powerplant which, on or after April 20, 1977, uses coal, may increase its use of petroleum as an energy source unless it first obtains a permit to authorize such increased use of petroleum. Such a permit shall be issued only if the appropriate State certifies to the Administrator that the increased use of petroleum by the powerplant is necessary to permit the powerplant to comply with the applicable implementation plan, as defined in section 110(d) of the Clean Air Act, and if such person demonstrates why it cannot comply with the applicable implementation plan without the issuance of a permit and establishes the duration of its need for increased petroleum to comply with such plan.

"(2) The Administrator shall by rule provide that an existing electric powerplant which, on April 20, 1977, used natural gas as an energy source, or pursuant to subsection (d) or (e) of this section, may not use petroleum unless it first obtains a permit to authorize such use of petroleum. Such a permit shall be issued only if the person owning or operating the electric powerplant demonstrates why it cannot use coal or other fuel instead of petroleum, and in the case of a powerplant the rates of which are regulated by a State agency, documents that its proposed use of petroleum is approved by such State agency.

"(d) TEMPORARY EXCEPTIONS.—

"(1) SYNTHETIC FUELS EXCEPTION.—(A) The Administrator, upon application by a person owning or operating an existing electric powerplant subject to the prohibitions of subsection (a) of this section, proposing to use natural gas as an energy source, may grant a temporary exception from such prohibition if he determines that the person has demonstrated that—

"(i) the powerplant will comply with the prohibition within five years of its effective date by the use of synthetic fuels derived from coal or by innovative techniques for using coal or other fuel; and

"(ii) that the intention so to comply with the prohibition and the anticipated compliance date are evidenced by the existence of binding contracts for fuels or facilities that would enable the applicant to comply with the prohibition.

"(B) A temporary exception under this subsection may be granted for a period of up to five years beyond the effective date of the prohibition, but not beyond the anticipated compliance date.

"(2) The Administrator, upon application by a person owning or operating an existing electric powerplant subject to the prohibition of subsection (a) (1) (B) or (C) of this section proposing to use natural gas or to increase its

use of natural gas as an energy source, grant a temporary exception from such prohibition if the appropriate State certifies to the Administrator that such use of natural gas is necessary to permit the powerplant to comply with the applicable implementation plan, as defined in section 110(d) of the Clean Air Act, and if such person demonstrates why the powerplant cannot comply with the applicable implementation plan without the temporary exception and establishes the duration of its need for such natural gas to comply with such plan.

"(3) The Administrator, upon application by a person owning or operating an existing electric powerplant proposing to use petroleum as an energy source, may grant a temporary exception of up to five years from the effective date of the prohibition or as determined by the Administrator, from the prohibitions of subsection (a)(2) with respect to petroleum if such person demonstrates to the satisfaction of the Administrator that—

"(A) despite diligent good faith efforts an adequate and reliable supply of coal or other fuel is not expected to be available; or

"(B) physical or environmental factors which cannot reasonably be expected to be overcome by diligent good faith efforts by the applicant preclude compliance

with the prohibitions of subsection (a) (2) because of site specific limitations, such as access to coal or coal transportation facilities.

"(e) EXEMPTIONS.—

"(1) GENERAL EXEMPTION.—The Administrator, upon application by a person owning or operating an existing electric powerplant subject to a prohibition of subsection (a) proposing to use natural gas or petroleum as an energy source, may grant an exemption from such prohibition if such person demonstrates to the satisfaction of the Administrator that—

"(A) physical or environmental factors which cannot reasonably be expected to be overcome by diligent good faith efforts by the applicant preclude compliance with a prohibition of subsection (a) because of site specific limitations such as access to coal or coal transportation facilities; or

"(B) the cost of using coal or other fuel substantially exceeds the cost of using imported petroleum; and

"(C) there is no alternative supply of power which can be obtained without impairing reliability of service.

"(2) EXEMPTION FOR RESALE PURCHASERS.—The Administrator, upon application by a person owning or operating an existing electric powerplant subject to the prohibition of subsection (a) (1), proposing to use natural

gas as an energy source, may grant an exemption for such powerplant from the prohibition if such person demonstrates to the satisfaction of the Administrator that—

"(A) the powerplant is operated solely as a peak-load powerplant; and

"(B) the electricity generated by the powerplant is a substantial portion of the total generating capacity of the applicant; and

"(C) (i) a denial of the application for exemption is likely to result in an impairment of reliability or adequacy of service; or

"(ii) modification of the powerplant to permit compliance with the prohibition is technically infeasible; or

"(iii) such modification would result in an unreasonable cost to the applicant's customers.

"NEW MAJOR FUEL-BURNING INSTALLATIONS

"SEC. 106. (a) PROHIBITIONS.—

"(1) BOILERS.—Except as provided in subsection (b), no new major fuel-burning installation boiler may use natural gas or petroleum as an energy source.

"(2) NONBOILERS—CATEGORIES.—The Administrator may by rule identify categories of new major fuel-burning installations other than boilers which, except as provided in subsection (b), shall be prohibited from using natural

gas or petroleum, or both, as an energy source. In identifying categories of new major fuel-burning installations pursuant to this paragraph, the Administrator shall take into account any special circumstances or characteristics of the category of such installations that will be subject to the prohibition.

"(3) NONBOILERS—INDIVIDUAL INSTALLATIONS.—Subject to the provisions of subsection (b) of this section, the Administrator may, by order, prohibit a new major fuel-burning installation other than a boiler and not subject to paragraph (2) of this subsection, from using natural gas or petroleum, or both, as an energy source.

"(b) TEMPORARY EXCEPTION AND EXEMPTION.—

"(1) TEMPORARY EXCEPTION.—The Administrator, upon application by a person owning, operating, constructing, or proposing to construct or operate a new major fuel-burning installation proposing to use petroleum as an energy source, may grant a temporary exception with respect to petroleum from the prohibitions of subsection (a) of this section for a period of up to five years, or as determined by the Administrator, if such person demonstrates to the satisfaction of the Administrator that during the proposed period of the temporary exemption—

"(A) despite diligent good faith efforts, an adequate

and reliable supply of coal or other fuel is not expected to be available, or

"(B) physical or environmental factors which cannot reasonably be expected to be overcome by diligent good faith efforts by the applicant preclude compliance with the prohibitions of subsection (a) of this section because of site specific limitations such as access to coal or coal transportation facilities.

"(2) EXEMPTION.—The Administrator, upon application by a person owning, operating, constructing, or proposing to construct or operate a new major fuel-burning installation subject to the prohibition of subsection (a) (1) or in a category identified by rule to be subject to the prohibition of subsection (a) (2), proposing to use natural gas or petroleum as an energy source, may grant an exemption from the prohibition if such person demonstrates to the satisfaction of the Administrator that—

"(1) (A) despite diligent good faith efforts an adequate and reliable supply of coal or other fuel is not expected to be available for use during a majority of the useful life of the installation and cannot be used except at a cost that substantially exceeds the cost of using imported petroleum; or

"(B) physical and environmental factors which

cannot reasonably be expected to be overcome by diligent good faith efforts by the applicant preclude compliance with the prohibition because of site specific limitations, such as access to coal or coal transportation facilities; or

"(2) (A) the use of an energy source other than natural gas or petroleum is technically infeasible in direct firing use due to contamination of product or inability to maintain satisfactory combustion control; and

"(B) substitution of steam for direct heat is not possible due to process requirements.

"(c) DENIAL OF APPLICATION FOR TEMPORARY EXCEPTION OR EXEMPTION.—A denial of an application for temporary exception or exemption from the prohibitions of subsection (a) (1) or (2) shall not be deemed to be a major Federal action for purposes of section 102 of the National Environmental Policy Act of 1969 except when such denial relates to a new major fuel-burning installation for which no entity other than the Federal Energy Administration is responsible for carrying out the provisions of such section.

"EXISTING MAJOR FUEL-BURNING INSTALLATIONS

"SEC. 107. (a) PROHIBITIONS.—

"(1) NATURAL GAS AND PETROLEUM PROHIBITIONS—CATEGORIES.—The Administrator may by rule iden-

tify categories of existing major fuel-burning installations with the capability to use coal or other fuel as an energy source including a category consisting of existing major fuel-burning installation which were issued pursuant to section 2(a) of the Energy Supply and Environmental Coordination Act of 1974 as in effect prior to the effective date of this title, which shall be prohibited from using natural gas or petroleum, or both, as their energy source. In identifying categories of existing major fuel-burning installations pursuant to this paragraph, the Administrator shall take into account any special circumstances or characteristics of the category of such installations that will be subject to the prohibition.

"(2) NATURAL GAS AND PETROLEUM PROHIBITION—INDIVIDUAL INSTALLATIONS.—(A) Subject to the provisions of subparagraph (B) of this paragraph and of subsection (b) of this section, the Administrator may, by order, prohibit an existing major fuel-burning installation not subject to paragraph (1) of this subsection with the capability to use coal or other fuel as an energy source from using natural gas or petroleum, or both, as an energy source.

"(B) The Administrator may issue an order pursuant to this paragraph if he determines that—

"(i) the existing installation on June 22, 1974, had or thereafter acquired or is designed with the capa-

bility to use coal or other fuel as an energy source; and

"(ii) that the use of coal or other fuel by the installation in lieu of natural gas or petroleum products is financially feasible;

unless the person owning or operating the installation demonstrates that an adequate and reliable supply of coal will not be available.

"(3) NATURAL GAS AND PETROLEUM PROHIBITION—MIXTURES AND COMBINATION OF FUELS.—Subject to the provisions of subsection (b) of this section, the Administrator may, by order, prohibit an existing major fuel-burning installation in which it is feasible to use a mixture of coal and petroleum as an energy source or to use a combination of coal and petroleum or natural gas as an energy source from using natural gas or petroleum in greater amounts than is feasible unless the reliability of service in the dispatching system will thereby be impaired.

"(4) NATURAL GAS PROHIBITION—CATEGORIES.—The Administrator may by rule identify categories of existing major fuel-burning installations with no capability to use coal which shall be prohibited from using natural gas as an energy source. In identifying categories of existing major fuel-burning installations pursuant to this paragraph, the Administrator shall take into account any special circum-

stances or characteristics of the category of such installations that will be subject to the prohibition.

"(5) NATURAL GAS PROHIBITION—INDIVIDUAL INSTALLATIONS.—(A) Subject to the provisions of subparagraph (B) of this paragraph and of subsection (b) of this section, the Administrator may, by order, prohibit an existing major fuel-burning installation not subject to paragraph (4) of this subsection with no capability to use coal from using natural gas as an energy source.

"(B) The Administrator may issue an order pursuant to this paragraph if he determines that the use of petroleum in lieu of natural gas is financially feasible.

"(b) OTHER PROVISIONS.—(1) The Administrator may rescind or modify any order issued pursuant to subsection (a) (2) or (5) if he determines that any requirement described in subsections (a) (2) (B) or (a) (5) (B), respectively, is no longer met, and that the order as modified complies with such requirement.

"(2) Before issuing, modifying, or rescinding an order under subsection (a) (2) or (5) the Administrator shall give notice to the public and afford interested persons an opportunity for oral and written presentations of data, views, and arguments.

"(3) An order (or modification or rescission thereof)

under subsection (a) (2) or (5) shall not be effective (A) until the Administrator of the Environmental Protection Agency notifies the Administrator under section 119 (d) (1) (B) of the Clean Air Act, or (B) if such notification is not given until the date which the Administrator of the Environmental Protection Agency certifies pursuant to section 119 (d) (1) (B) of such Act is the earliest date that the installation will be able to comply with all applicable requirements of section 119. The order (or modification) shall not be effective during any period certified by the Administrator of the Environmental Protection Agency under section 119 (d) (3) (B) of such Act. Notice or certification pursuant to this paragraph shall be provided within two hundred and seventy days of the date the Administrator of the Environmental Protection Agency receives notice of the issuance of an order subsection (a) (2) (B).

"(c) TEMPORARY EXEMPTION.—The Administrator, upon application by a person owning or operating an existing major fuel-burning installation in a category identified by rule to be subject to the prohibition of subsection (a) (1), proposing to use natural gas or petroleum as an energy source, or to the prohibition of subsection (a) (4), proposing to use natural gas as an energy source, may grant a temporary exemption from such prohibitions for a period of up to five years from the effective date of the prohibition, or as

determined by the Administrator, if such person demonstrates to the satisfaction of the Administrator that—

"(1) despite diligent good faith efforts an adequate and reliable supply of coal or other fuel is not expected to be available, or

"(2) physical or environmental factors which cannot reasonably be expected to be overcome by diligent good faith efforts by the applicant preclude compliance with the prohibitions of subsection (a) (1) or (a) (4) because of site specific limitations, such as access to coal or coal transportation facilities.

"(d) EXEMPTION.—The Administrator, upon application by a person owning or operating an existing major fuel-burning installation in a category identified by rule to be subject to the prohibition of subsection (a) (1), proposing to use natural gas or petroleum as an energy source, or to the prohibition of subsection (a) (4) proposing to use natural gas as an energy source, may grant an exemption from the prohibition if such person demonstrates to the satisfaction of the Administrator that—

"(1) physical or environmental factors which cannot reasonably be expected to be overcome by diligent good faith efforts by the applicant preclude compliance with the prohibition because of site specific limitations, such as access to coal or coal transportation facilities; or

"(2) with respect to the prohibition under subsection (a) (1), the cost of using coal or other fuel substantially exceeds the cost of using imported petroleum; or

"(3) (A) the use of an energy source other than natural gas or petroleum is technically infeasible in direct firing use due to contamination of product or inability to maintain satisfactory combustion control; and

"(B) substitution of steam for direct heat is not possible due to process requirements.

"(e) The Administrator may, with respect to existing major fuel-burning installations subject to a prohibition of subsection (a) of this section, prescribe rules limiting or prohibiting the use by such installations of electrical resistance heating in order to compy with such prohibition.

"GENERAL TEMPORARY EXCEPTION OR EXEMPTION AUTHORITY

"SEC. 108. The Administrator, upon application by a person owning, operating, constructing, or proposing to construct or operate an electric powerplant or a major fuel-burning installation requesting a temporary exception or exemption from any prohibition of this Act, may grant a temporary exception or exemption from the prohibition if he finds that the applicant has demonstrated that compliance with the prohibition is not consistent with the purposes of this Act.

"TEMPORARY EXCEPTION OR EXEMPTION OF QUALIFYING COGENERATION FACILITIES

"SEC. 109. The Administrator, upon application by a person owning, operating, constructing, or proposing to construct or operate a qualifying cogeneration facility requesting an exemption or temporary exception from any prohibition of this title, may grant an exemption or temporary exception from the prohibition if he finds that the applicant has demonstrated that economic and other benefits of cogeneration are unobtainable unless petroleum or natural gas may be used in such facility.

"DISRUPTION OF NATURAL GAS CONTRACTS

"SEC. 110. (a) Whenever the provisions of section 105 or 107 of this title, or an order issued pursuant thereto, prohibit the use by an existing electric powerplant or existing major fuel-burning installation of natural gas to which, but for the operation of such section or order, the powerplant or installation would be entitled by contract in effect on April 20, 1977, such powerplant or installation may sell, exchange, or otherwise transfer its rights under such contract, notwithstanding the provisions of the Public Utility Holding Company Act or any law of any State, or a force majeure clause or other clause of such contract. The price charged in such sale, exchange, or other transfer shall not exceed the maximum lawful price for such natural gas pur-

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suant to the Natural Gas Act of 1977, plus an amount to be paid under subsection (b) of this section.

"(b) A powerplant or installation which sells, exchanges, or otherwise transfers its rights to natural gas under a contract referred to in subsection (a), which contract provides that a pipeline or distribution company, but for the provisions of section 105 or 107 of this title, or an order issued pursuant thereto, would have transported such natural gas, such powerplant or installation shall be liable to such pipeline or distribution company in accordance with any term in such contract providing a measure of damages to such pipeline or distribution company in the event of termination of the contract prior to performance, or in the absence of such provision, for reasonable losses incurred as a result of the termination.

"COAL ALLOCATION

"SEC. 111. (a) In the event the President declares a severe energy supply interruption, as defined in section 3 (8) of the Energy Policy and Conservation Act, or determines that a situation similar to such supply interruption exists on a regional basis, the Administrator may, by rule or order, allocate coal to any person to the extent necessary.

"(b) Whenever a person owning, operating, constructing, or proposing to construct or operate an electric powerplant or major fuel-burning installation demonstrates in con-

nection with an application for an exemption from any prohibition of this title that despite diligent good faith efforts an adequate and reliable supply of coal is not expected to be available, the Administrator may, by rule or order, allocate coal to such person in lieu of granting the requested exemption.

"ENFORCEMENT AND PENALTIES

"SEC. 112. (a) (1) Any person who violates any provision of this title, or rule or order issued thereunder, shall be subject to a civil penalty of not more than $25,000 for each violation. Each day of violation shall constitute a separate violation.

"(2) Any person who willfully violates any provision of this title, or rule or order issued thereunder, shall be subject to a fine of not more than $50,000 or by imprisonment for not more than one year, or both, for each violation. Each day of violation constitutes a separate violation.

"(3) Any individual director, officer, or agent of a corporation who knowingly and willfully authorizes, orders, or performs any of the acts or practices constituting in whole or in part a violation described in paragraphs (1) and (2) of this subsection, shall be subject to penalties under this subsection without regard to any penalties to which the corporation may be subject under paragraphs (1) and (2) except that no such individual director, officer, or

agent shall be subject to imprisonment under paragraphs (1) and (2), unless he also knows, or reasonably should have known, of noncompliance by the corporation.

"(4) Whenever it appears to the Administrator that any person has engaged, is engaged, or is about to engage in acts or practices constituting a violation of the provisions of this Act or any rule or order issued thereunder, the Administrator may request the Attorney General to bring a civil action to enjoin such acts or practices, and upon a proper showing, a temporary restraining order or a preliminary or permanent injunction shall be granted without bond. In such action, the court may also issue mandatory injunctions commanding any person to comply with any provision of this Act or any rule or order issued thereunder.

"(b) Any person owning or operating an electric powerplant granted an exemption under section 104(b)(4) or 105(e) as a peakload electric powerplant which, for any consecutive twelve-month period operates in excess of one thousand five hundred hours, shall be liable for a civil penalty of up to $10 per barrel of oil or $3 per thousand cubic feet of natural gas used in excess of one thousand five hundred hours, except where such person can demonstrate that operation in excess of one thousand five hundred hours was necessary to meet peak load demand and that other peakload

electric powerplants within the system were unavailable for service due to unit or system outages.

"EMERGENCY POWERS

"SEC. 113. (a) (1) In the event the President declares a severe energy supply interruption, as defined in section 3 (8) of the Energy Policy and Conservation Act, the Administrator may, by order, prohibit an electric powerplant or major fuel-burning installation using natural gas or petroleum as an energy source from so using natural gas or petroleum for the duration of such interruption, notwithstanding applicable implementation plans as defined in section 110 (b) of the Clean Air Act or other State or local government standard, limitation, or other requirement, so long as such prohibitions are not likely to result in a violation of primary air quality standards.

"(2) In the event the President determines that such supply interruption is likely to be of sufficiently grave scope and duration that, in his judgment, it is necessary to issue orders under paragraph (1) of this subsection which are likely to result in a violation of primary air quality standards, the President may issue such orders but may not delegate the authority to do so.

"(b) The Administrator may stay or otherwise exempt

for such period as the Administrator deems appropriate, the application of any provisions of this title—

"(1) in the event of national, regional, or system-wide shortages of coal or other fuel supplies or of coal transportation facilities or other necessary facilities which may affect reliability of service of electric power plants subject to such provisions; or

"(2) otherwise as necessary to alleviate or prevent any emergencies directly affecting the public health, safety, or welfare, which would result from electrical power outages.

"(c) The Administrator may stay the application of any provisions of this title for such periods as necessary to implement enforceable air pollution requirements.

"RULES AND REGULATIONS

"SEC. 114. The Administrator shall promulgate such rules, regulations, and procedures as may be necessary to carry out the functions and powers vested in the Administrator by this title.".

CONFORMING AMENDMENTS

SEC. 602. (a) The Energy Supply and Environmental Coordination Act of 1974 is amended—

(1) by redesignating sections 3 through 14 (and all references thereto) as sections 201 through 212, respectively, and

(2) by inserting before section 201 (as so redesignated) the following:

"TITLE II—OTHER PROVISIONS".

(b) The Energy Supply and Environmental Coordination Act of 1974 is amended—

(1) by deleting paragraph (2) of subsection (g) of section 210 (as redesignated), and

(2) redesignating paragraph (1) of subsection (g) as subsection (g).

(c) The Energy Supply and Environmental Coordination Act of 1974 is amended in section 212 (as redesignated) by striking wherever it appears the word "Act" following the phrase "for purposes of this" and inserting in lieu thereof the word "title".

EFFECTIVE DATES

SEC. 603. The amendments to the Energy Supply and Environmental Coordination Act of 1974 made by this part shall take effect one hundred and eighty days after enactment, except that the Administrator is authorized to issue rules pursuant to title I of the Energy Supply and Environmental Coordination Act of 1974 at any time after enactment of this part, which rules may take effect no earlier than one hundred and eighty days after enactment of this part.

PART G—FEDERAL ENERGY INITIATIVES

Subpart 1—Federal Van Pooling Program

SEC. 701. Section 381 of the Energy Policy and Conservation Act is hereby amended by—

(1) inserting "and subsection (c)" before the colon in subsection (b) (2);

(2) redesignating subsection (c) as subsection (d); and

(3) inserting after subsection (b) the following new subsection:

"(c) (1) The Administrator may, by rule, after consultation with the Administrator of the General Services Administration, provide for the establishment of a program or programs pursuant to which van pooling arrangements are offered and provided to officers and employees of the Federal Government. Any such program may be phased over a period of years, and may be limited by the Administrator to one or more reasonable categories of officers and employees determined by the Administrator, including, without limitation, categories determined by such factors as location of residence, location of place of business or regular hours of work. The number or vans in use in van pooling arrangements authorized under this subsection shall at no time exceed six thousand.

"(2) In order to establish, maintain, and operate any

program authorized to be established by the Administrator under paragraph (1) of this subsection, the Administrator of the General Services Administration, in consultation with the Administrator, shall be authorized to—

"(A) acquire vans by purchase, lease, or other arrangement;

"(B) establish and operate training programs for operators of vans;

"(C) establish and maintain, or require departments and agencies to establish and maintain, lists of officers and employees participating, or desiring to participate, in van pooling arrangements;

"(D) permit any person authorized to operate a van pursuant to a van pooling arrangement to—

"(i) operate the van for personal use (other than for use on vacation trips and trips over extended distance, as defined by the Administrator of the General Services Administration), with or without a charge for such personal use as determined by the Administrator of the General Services Administration, and subject to the provisions of paragraph (3) (C) (iv) of this subsection; and

"(ii) retain a portion of the rider charges paid by officers and employees participating in such van pooling arrangements if the Administrator of

the General Services Administration determines that such retention will promote full use of van capacity; and

"(E) exercise such other powers now or hereafter vested in him as he determines to be necessary or appropriate.

"(3) Any program established pursuant to paragraph (1) of this subsection shall include—

"(A) a requirement that officers and employees participating in van pooling arrangements authorized under such program pay a rider charge, including an actuarially determined sum for Government self-insurance against liability which may be imposed on the Federal Government due to van pooling use, in such amount and at such intervals as the Administrator of the General Services Administration may determine, except that the Administrator of the General Services Administration may provide that a person authorized to operate a van pursuant to a van pooling arrangement may not be required to pay a rider charge;

"(B) a requirement designed to assure that van pooling arrangements authorized under such program will insure that, not later than eight years from commencement of the program, all costs and expenses, including estimated administrative expenses, incurred by

the Federal Government in connection with the establishment, maintenance, and operation of such a program, will be repaid from rider charges paid by participating officers and employees; and

"(C) requirements to insure that each person operating a van pursuant to a van pooling arrangement authorized thereunder—

"(i) shall be a regular, full-time Government officer or employee;

"(ii) shall maintain the van in good and safe working order;

"(iii) shall be by law entitled to operate the van in his place of residence, except that nothing in this subparagraph shall be deemed to require that such person be licensed to operate the van for hire; and

"(iv) shall, in the event that such person is authorized to operate and operates the van for personal use, secure and maintain at such person's expense insurance against such risks as the Administrator of the General Services Administration deems necessary to assure payment of any claim that may arise other than in van pooling use.

"(4) For the purposes of section 5 of the Act of July 16, 1914 (chapter 141, 38 Stat. 508, as amended; 31

U.S.C. 638a), and section 601 of Public Law 94–91 (89 Stat. 458; 31 U.S.C. 638c), a van obtained for the purpose of, and operated pursuant to, a van pooling arrangement established pursuant to this subsection shall not be deemed to be a passenger motor vehicle.

"(5) Neither the offering of a van pooling arrangement pursuant to this subsection nor the operation of a van pursuant to such an arrangement shall subject any person to regulation as a motor carrier under part II of the Interstate Commerce Act (49 U.S.C. 303 et seq.), or to any similar regulation under the laws of the District of Columbia or any State or political subdivision thereof.

"(6) Sections 1346(b) and 2679 of title 28, United States Code, shall apply to suits arising from van pooling use.

"(7) The operation of a van pursuant to a van pooling arrangement established pursuant to this subsection shall not be deemed to be operation of a motor vehicle for hire for purposes of any law of the District of Columbia or any State or political subdivision thereof relating to the licensing of operators of motor vehicles for hire.

"(8) Time spent traveling in van pooling arrangements shall not be considered Federal employment for the purpose of any law administered by the Civil Service Commission or by the Department of Labor pursuant to chapter 81 of title

5, United States Code, and rider charges paid the operator of a van pool shall be deemed fees paid to and received by individuals in their private capacity.

"(9) The Administrator of the General Services Administration, with the approval of the Administrator, is hereby authorized to delegate to the heads of Federal departments and agencies whose officers and employees are authorized to participate in van pooling arrangements established pursuant to this subsection such of his functions, powers, and duties as he deems necessary or appropriate to establish, maintain, or operate van pooling programs authorized by this subsection.

"(10) For purposes of this subsection, the term 'van pooling use' means operation or maintenance of a van by an officer or employee of the United States in the course of or incidental to a van pooling arrangement authorized under this subsection, excluding any personal use permitted under paragraph (2) (D) (i).

"(11) All rider charges and other receipts from the operation of vanpooling arrangements established pursuant to this subsection received by the Administrator of the General Services Administration or by the head of any Department or agency exercising authority delegated pursuant to paragraph (9) of this subsection shall be deposited in the general fund of the Treasury of the United States.

"(12) There are authorized to be appropriated to the Administrator such sums as may be necessary to carry out all provisions of this subsection. The Administrator shall be authorized, with the approval of the Director of the Office of Management and Budget, to transfer to the Administrator of the General Services Administration such amounts from the sums so appropriated as may be necessary to carry out the functions, duties and responsibilities assigned to the Administrator of the General Services Administration by this subsection.".

Subpart 2—Amendment to Section 381 of EPCA

SEC. 721. Section 381 of the Energy Policy and Conservation Act is amended by adding at the end thereof the following new subsections:

"(e) The plan developed by the President pursuant to subsection (a) (2) shall be applicable to Executive agencies as defined in section 105 of title 5, United States Code, and to the United States Postal Service.

"(f) In addition to funds authorized in any other law, there are authorized to be appropriated to each executive agency, as defined in section 105 of title 5, United States Code, and to the United States Postal Service, for each fiscal year of the eight fiscal year period ending September 30, 1985, such sums as may be necessary to carry out the purposes of subsection (a) (2).".

## Subpart 3—Demonstration of Solar Heating and Cooling in Federal Buildings

### DEFINITIONS

SEC. 741. As used in this subpart—

(1) The term "agency" means—

(A) an Executive agency as defined in section 105 of title 5, United States Code; and

(B) each entity enumerated in paragraphs (B) through (H) of subsection (1) of section 5721 of title 5, United States Code.

(2) The term "building" means any structure (other than a residential dwelling) owned by the United States or any agency, including any such structure occupied by an agency under a lease-acquisition agreement under which the United States or an agency will receive fee simple title under the terms of such agreement without further negotiation.

(3) The term "solar heating" means with respect to any building, the use of solar energy to meet all or part of the heating needs of such building (including hot water), or all or part of the needs of such building for hot water (where its remaining heating needs are met by other methods).

(4) The term "solar heating and cooling" means with respect to any building, the use of solar energy to provide all or part of the heating needs of such building (including

hot water) and all or part of the cooling needs of such building, or all or part of the needs of such building for hot water (where its remaining heating needs are met by other methods) and all or part of the cooling needs of such building.

(5) The term "solar energy equipment" means equipment for solar heating and solar heating and cooling.

(6) The term "Administrator" means the Administrator of the Federal Energy Administration.

FEDERAL SOLAR PROGRAM

SEC. 742. The Administrator shall develop and carry out a program to demonstrate the application to buildings of solar heating and solar heating and cooling technology in Federal buildings.

DUTIES OF ADMINISTRATOR

SEC. 743. (a) In exercising the authority provided by section 742, the Administrator shall—

(1) solicit and consider proposals by any agency to apply solar heating and solar heating and cooling technology to any existing or proposed building;

(2) promulgate, by rule, criteria by which such proposals will be evaluated, which criteria shall provide for the inclusion in each proposal of a complete analysis of the present value of the costs and benefits of the proposal to the agency, and for the demonstration, to the

maximum extent practicable of innovative and diverse applications to a variety of type of buildings of solar heating and solar heating and cooling technology, and for location of demonstration projects in areas where a private sector market for solar energy equipment is likely to develop;

(3) evaluate each such proposal pursuant to the criteria promulgated pursuant to subsection (a) (2);

(4) provide assistance by interagency agreement for the cost of implementing a proposal (which costs shall be limited to design, acquisition, construction, and installation of solar energy equipment); and

(5) provide, by rule, that agencies report to the Administrator periodically such information as they acquire respecting maintenance and operation of solar equipment.

(b) In carrying out the responsibilities, pursuant to paragraphs (2) and (3) of subsection (a), the Administrator shall provide an opportunity for consultation to the Administrator of the General Services Administration and the Administrator of the Energy Research and Development Administration.

TRANSFER OF APPROPRIATIONS

SEC. 744. In carrying out a proposal for which the Administrator has provided assistance, any agency may use

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funds transferred to it by the Administrator to enter into such contracts as may be necessary to complete the project described in that proposal.

SUBMISSION OF PROPOSALS

SEC. 745. (a) Each agency responsible for the construction of new buildings or operation of existing buildings shall, within one hundred and eighty days after publication of criteria under section 743 (a) (2), submit initial proposals to the Administrator for installation of solar energy systems on selected buildings under its control.

(b) Such initial proposal shall include a list of the specific buildings proposed to be provided with solar energy systems, the funds required for the system, the proposed implementation schedule, the estimated savings in fossil fuels and electricity, the estimated payback time, and such other information as may be required by the Administrator.

(c) Thereafter, each agency may submit proposals to the Administrator for additional solar energy systems for buildings under their control on a schedule established by the Administrator but not greater than two-year intervals.

AUTHORIZATION

SEC. 746. There are authorized to be appropriated to the Administrator through fiscal year 1980 to carry out the purposes of this subpart not to exceed $100,000,000.

## TITLE II—TAX PROVISIONS

SEC. 1001. AMENDMENT OF 1954 CODE.—Except as otherwise expressly provided, whenever in this title an amendment or repeal is expressed in terms of an amendment to, or repeal of, a section or other provision, the reference shall be considered to be made to a section or other provision of the Internal Revenue Code of 1954.

SEC. 1002. NONAPPLICATION TO GOVERNMENTS OF AMERICAN SAMOA, GUAM, AND THE VIRGIN ISLANDS.—The provisions of this title shall not apply to American Samoa, Guam, and the Virgin Islands.

### PART A—RESIDENTIAL ENERGY TAX CREDIT

**SEC. 1101. RESIDENTIAL ENERGY CREDIT.**

(a) GENERAL RULE.—Subpart A of part IV of subchapter A of chapter 1 (relating to credits allowable) is amended by inserting immediately before section 45 the following new section:

**"SEC. 44B. RESIDENTIAL ENERGY CREDIT.**

"(a) GENERAL RULE.—In the case of an individual, there shall be allowed as a credit against the tax imposed by this chapter for the taxable year an amount equal to the sum of—

"(1) in the case of qualified energy conservation expenditures paid or incurred by the taxpayer during

the taxable year with respect to the taxpayer's principal residence, the lesser of $410, or—

"(A) 25 percent of so much of such expenditures as does not exceed $800; plus

"(B) 15 percent of the amount of such expenditures as exceeds $800; and

"(2) in the case of qualified solar expenditures made by the taxpayer with respect to the taxpayer's principal residence—

"(A) during the taxable years ending in 1977, 1978, or 1979, the lesser of $2,000 or—

"(i) 40 percent of so much of such expenditures as does not exceed $1,000, plus,

"(ii) 25 percent of so much of such expenditures as exceeds $1,000;

"(B) during the taxable years ending in 1980 or 1981, the lesser of $1,580 or—

"(i) 30 percent of so much of such expenditures as does not exceed $1,000, plus

"(ii) 20 percent of so much of such expenditures as exceeds $1,000; and

"(C) during the taxable years ending in 1982, 1983, and 1984, the lesser of $1,210 or—

"(i) 25 percent of so much of such expenditures as does not exceed $1,000, plus

"(ii) 15 percent of so much of such expenditures as exceed $1,000.

"(b) LIMITATIONS.—

"(1) APPLICATIONS WITH OTHER CREDITS.—The credit allowed by subsection (a) shall not exceed the amount of the tax imposed by this chapter for the taxable year reduced by the sum of the credits allowable under—

"(A) section 42 (relating to general tax credit),

"(B) section 44A (relating to household and dependent care services),

"(C) section 37 (relating to retirement income),

"(D) section 44 (relating to purchase of new principal residence),

"(E) section 33 (relating to foreign tax credit),

"(F) section 38 (relating to investment in certain depreciable property),

"(G) section 40 (relating to expenses of work incentive programs), and

"(H) section 41 (relating to contributions to candidates for public office).

"(2) PRIOR EXPENDITURES TAKEN INTO ACCOUNT.—

"(A) If the taxpayer made qualified energy conservation expenditures in any prior taxable year with respect to the same principal residence which were taken into account in determining the amount of a credit under this section for such prior taxable year, then subsection (a) (1) (A) shall be applied for the taxable year by reducing the dollar amounts of expenditures specified in such subsection by the amount of expenditures for which credit was allowed in such prior taxable years. In no case shall the total amount of the credit allowed against the tax of any individual under subsection (a) (1) with respect to the same principal residence during the taxable years ending in 1977 through 1984 exceed $410.

"(B) If the taxpayer made qualified solar energy expenditures in a prior taxable year with respect to the same principal residence which were taken into account in determining the amount of a credit under this section for such prior taxable year, then—

"(1) for taxable years ending in 1977, 1978, and 1979 subsection (a) (2) (A) (i), and

"(2) for taxable years ending in 1980 and 1981 subsection (a) (2) (B) (i), and

"(3) for taxable years ending in 1982, 1983, and 1984 subsection (a) (2) (C) (i),

shall be applied in those taxable years by reducing the dollar amounts of expenditures specified in such subsections by the total amount of expenditures for which credit was allowed in prior taxable years. In no case shall the total amount of the credit allowed against the tax of any individual under subsection (a) (2) with respect to the same principal residence during the taxable years 1977 through 1979 exceed $2,000. In no case shall the total amount of the credit allowed against the tax of any individual under subsection (a) (2) with respect to the same principal residence during the taxable years 1977 through 1981 exceed $1,580, unless such credits were allowed only in the taxable years 1977 through 1979, in which case the total amount allowed shall be $2,000. In no case shall the total amount of the credit allowed against the tax of any individual under subsection (a) (2) with respect to the same principal residence during the taxable years 1977 through 1984 exceed $1,210, unless

such credits were allowed only in the taxable years 1977 through 1981, in which case the rule in the preceding sentence applies.

"(c) DEFINITIONS AND SPECIAL RULES.—For purposes of this section—

"(1) QUALIFIED ENERGY CONSERVATION EXPENDITURES.—The term 'qualified energy conservation expenditures' means any amount paid or incurred by an individual for insulation and other energy-conserving components (including amounts for the original installation of such insulation) installed after April 20, 1977, and before January 1, 1985, in a dwelling unit located in the United States which is—

"(A) used by the taxpayer as his principal residence (within the meaning of section 1034), and

"(B) in existence on April 20, 1977.

"(2) QUALIFIED SOLAR ENERGY EXPENDITURES.—The term 'qualified solar energy expenditures' means any amount expended by an individual for the purchase and installation of solar energy property which occurs after April 20, 1977, and before January 1, 1985, in any dwelling unit located in the United States which is—

"(A) used by the individual at the time of such installation as his principal residence (within the meaning of section 1034), or

"(B) part of the purchase price of a newly constructed dwelling unit purchased by an individual for use as his principal residence, but only to the extent that such expenditures are specifically for (i) materials and equipment and (ii) the labor costs associated with onsite assembly or construction of the energy storage medium (excluding swimming pools used as a storage medium), onsite glazing of solar collector units, and onsite assembly of solar collectors, if not shipped preassembled for the solar energy property, as determined in accordance with rules prescribed by the Secretary.

"(3) INSULATION.—The term 'insulation' means any insulation identified by the Secretary by rule—

"(A) which is specifically and primarily designed to reduce, when installed in or on a building (including installations on floors, walls, ceilings, and water heaters), the heat loss or gain of such building,

"(B) the original use of which commences with the taxpayer, and

"(C) which has a useful life of at least 3 years.

"(4) OTHER ENERGY-CONSERVING COMPONENT.—The term 'other energy-conserving component' means—

"(A) a replacement burner for a furnace, which burner is designed to reduce the firing rate or to achieve a reduction in the amount of fuel consumed as a result of increased combustion efficiency,

"(B) a device for modifying flue openings which will increase the efficiency of operation of the heating system,

"(C) an electrical or mechanical furnace ignition system which replaces a standing gas pilot light,

"(D) a storm or thermal window,

"(E) a clock thermostat, and

"(F) caulking and weatherstripping of exterior doors and windows, but only if installed in conjunction with insulation or at least one other energy-conserving component,

which has a useful life of at least 3 years, and the original use of which commences with the taxpayer.

"(5) SOLAR ENERGY PROPERTY.—The term 'solar energy property' means equipment or mechanical or electrical systems which—

"(A) are of a type identified in regulations

prescribed by the Secretary after consultation with the Federal Energy Administrator;

"(B) when installed in or on, or when connected to, a building, use solar energy to heat or cool such building or to heat water for use within such buildings;

"(C) the original use of which commences with the taxpayer; and

"(D) which have a useful life of at least 5 years.

"(6) The Secretary may amend by rule the terms 'insulation', 'other energy conserving component', and 'solar energy property', upon request of the Administrator of the Federal Energy Administration, to add devices or measures which the Secretary determines, when installed in or on a dwelling unit—

"(A) are likely to improve the energy efficiency of the heating, cooling, or water heating systems of the dwelling unit, or reduce the heat loss or gain of such dwelling unit; and

"(B) have a useful life of at least 3 years; and

"(C) are generally safe and effective.

"(7) The Secretary may amend by rule the terms

'insulation', 'other energy conserving component', and 'solar energy property', in consultation with the Administrator of the Federal Energy Administration and such other agencies as he deems appropriate, to exclude specific measures or devices if the Secretary determines that such measures are not generally safe and effective.

"(8) TENANT STOCKHOLDER IN COOPERATIVE HOUSING CORPORATION.—In the case of an individual who holds stock as a tenant stockholder (as defined in section 216) in a cooperative housing corporation (as defined in such section), such individual—

"(A) shall be treated as owning the dwelling unit which he is entitled to occupy as such stockholder; and

"(B) shall be treated as having expended his tenant stockholder's proportionate share (as defined in section 216(b)(3)) of any qualified energy conservation expenditures, or qualified solar energy expenditures, paid or incurred by such corporation.

"(C) The basis of any property shall be reduced, for purposes of this subtitle, by an amount equal to the amount of any credit allowed by this section for qualified energy conservation expenditures or qualified solar energy expenditures with respect to such property.".

(b) The amendments made by this section shall apply to amounts expended after April 20, 1977, in taxable years ending after such date and before January 1, 1985.

(c) (1) The table of sections for such subpart A is amended by inserting immediately before the item relating to section 45 the following new item:

"Sec. 44B. Residential energy property credit.".

(2) Subsection (a) of section 1016 (relating to adjustments to basis) is amended by striking out the period at the end of paragraph (23) and inserting in lieu thereof a semicolon and by inserting after paragraph (23) the following new paragraph:

"(24) to the extent provided in section 44A (c), in the case of property with respect to which a credit has been allowed under section 44B.".

(3) Section 6096 (b) (relating to designation of income tax payment to Presidential Election Campaign Fund) is amended by striking out "and 44A" and inserting in lieu thereof "44A, and 44B".

## PART B—TRANSPORTATION

### Subpart 1—Fuel Efficiency Incentive Tax

**SEC. 1201. FUEL INEFFICIENCY TAX.**

(a) GENERAL RULE.—Part I of subchapter A of chapter 32 (relating to motor vehicle excise taxes) is amended by adding at the end thereof the following new section:

"SEC. 4064. FUEL INEFFICIENCY TAX.

"(a) IMPOSITION OF TAX.—Except as provided in subsection (b), a tax is hereby imposed on the sale by the manufacturer of each automobile, determined in accordance with the following tables:

"(1) In the case of a 1978 model year passenger automobile:

| "If the fuel economy of the model type in which the automobile falls is: | The tax is: |
|---|---|
| At least 18 | 0 |
| At least 17 but less than 18 | $52 |
| At least 16 but less than 17 | 112 |
| At least 15 but less than 16 | 179 |
| At least 14 but less than 15 | 256 |
| At least 13 but less than 14 | 345 |
| Less than 13 | 449 |

"(2) In the case of a 1979 model year automobile:

| "If the fuel economy of the model type in which the automobile falls is: | The tax is: |
|---|---|
| At least 19 | 0 |
| At least 18 but less than 19 | $52 |
| At least 17 but less than 18 | 111 |
| At least 16 but less than 17 | 178 |
| At least 15 but less than 16 | 258 |
| At least 14 but less than 15 | 339 |
| At least 13 but less than 14 | 438 |
| Less than 13 | 553 |

"(3) In the case of a 1980 model year automobile:

| "If the fuel economy of the model type in which the automobile falls is: | The tax is: |
|---|---|
| At least 20 | 0 |
| At least 19 but less than 20 | $52 |
| At least 18 but less than 19 | 111 |
| At least 17 but less than 18 | 176 |
| At least 16 but less than 17 | 249 |
| At least 15 but less than 16 | 333 |
| At least 14 but less than 15 | 428 |
| At least 13 but less than 14 | 538 |
| Less than 13 | 666 |

"(4) In the case of a 1981 model year automobile:

| "If the fuel economy of the model type in which the automobile falls is: | The tax is: |
|---|---|
| At least 21.5 | 0 |
| At least 20.5 but less than 21.5 | $52 |
| At least 19.5 but less than 20.5 | 110 |
| At least 18.5 but less than 19.5 | 174 |
| At least 17.5 but less than 18.5 | 245 |
| At least 16.5 but less than 17.5 | 325 |
| At least 15.5 but less than 16.5 | 416 |
| At least 14.5 but less than 15.5 | 519 |
| At least 13.5 but less than 14.5 | 637 |
| At least 12.5 but less than 13.5 | 774 |
| Less than 12.5 | 935 |

"(5) In the case of a 1982 model year automobile:

| "If the fuel economy of the model type in which the automobile falls is: | The tax is: |
|---|---|
| At least 23 | 0 |
| At least 22 but less than 23 | $57 |
| At least 21 but less than 22 | 120 |
| At least 20 but less than 21 | 189 |
| At least 19 but less than 20 | 266 |
| At least 18 but less than 19 | 351 |
| At least 17 but less than 18 | 446 |
| At least 16 but less than 17 | 553 |
| At least 15 but less than 16 | 674 |
| At least 14 but less than 15 | 812 |
| At least 13 but less than 14 | 972 |
| Less than 13 | 1,159 |

"(6) In the case of a 1983 model automobile:

| "If the fuel economy of the model type in which the automobile falls is: | The tax is: |
|---|---|
| At least 24.5 | 0 |
| At least 23.5 but less than 24.5 | $57 |
| At least 22.5 but less than 23.5 | 119 |
| At least 21.5 but less than 22.5 | 188 |
| At least 20.5 but less than 21.5 | 262 |
| At least 19.5 but less than 20.5 | 345 |
| At least 18.5 but less than 19.5 | 437 |
| At least 17.5 but less than 18.5 | 539 |
| At least 16.5 but less than 17.5 | 653 |
| At least 15.5 but less than 16.7 | 782 |
| At least 14.5 but less than 15.5 | 929 |
| At least 13.5 but less than 14.5 | 1,098 |
| At least 12.5 but less than 13.5 | 1,294 |
| Less than 12.5 | 1,524 |

"(7) In the case of a 1984 model year automobile:

| "If the fuel economy of the model type in which the automobile falls is: | The tax is: |
|---|---|
| At least 26 | 0 |
| At least 25 but less than 26 | $62 |
| At least 24 but less than 25 | 129 |
| At least 23 but less than 24 | 203 |
| At least 22 but less than 23 | 283 |
| At least 21 but less than 22 | 371 |
| At least 20 but less than 21 | 467 |
| At least 19 but less than 20 | 574 |
| At least 18 but less than 19 | 693 |
| At least 17 but less than 18 | 825 |
| At least 16 but less than 17 | 974 |
| At least 15 but less than 16 | 1,143 |
| At least 14 but less than 15 | 1,336 |
| At least 13 but less than 14 | 1,559 |
| Less than 13 | 1,819 |

"(8) In the case of a 1985 or later model year automobile:

| "If the fuel economy of the model type in which the automobile falls is: | The tax is: |
|---|---|
| At least 27.5 | 0 |
| At least 26.5 but less than 27.5 | $67 |
| At least 25.5 but less than 26.5 | 140 |
| At least 24.5 but less than 25.5 | 219 |
| At least 23.5 but less than 24.5 | 304 |
| At least 22.5 but less than 23.5 | 397 |
| At least 21.5 but less than 22.5 | 499 |
| At least 20.5 but less than 21.5 | 610 |
| At least 19.5 but less than 20.5 | 733 |
| At least 18.5 but less than 19.5 | 869 |
| At least 17.5 but less than 18.5 | 1,021 |
| At least 16.5 but less than 17.5 | 1,192 |
| At least 15.5 but less than 16.5 | 1,384 |
| At least 14.5 but less than 15.5 | 1,603 |
| At least 13.5 but less than 14.5 | 1,854 |
| At least 12.5 but less than 13.5 | 2,146 |
| Less than 12.5 | 2,488 |

"(b) ALTERNATIVE TAX.—If the average fuel economy standard prescribed under section 502 o fthe Motor Vehicle Information and Cost Savings Act (15 U.S.C. 2002) applicable to any class of automobiles differs from the lowest

fuel economy level for which no tax is imposed under subsection (a) for the model year, then the tax imposed with respect to such class by subsection (a) for the model year shall be determined in accordance with a table prescribed for such year by the Secretary. Such table shall take the same general form as that in subsection (a) except that no tax shall be imposed at or above the level of fuel economy which is equal to the average fuel economy standard prescribed for that class of automobile for the model year. The tax for each whole mile per gallon below the level at which no tax is imposed shall be determined by multiplying the tax correction factor for the year by the difference between a fraction created by dividing 100,000 by the fuel economy for which the tax is to be imposed, and a fraction created by dividing 100,000 by the average fuel economy standard. The maximum tax prescribed by the Secretary for any class of automobiles for any model year may not exceed the maximum tax prescribed in subsection (a) for that model year. The Secretary shall prescribe such table prior to the beginning of the model year.

"(c) DEFINITIONS AND SPECIAL RULES.—For purposes of this section—

"(1) AUTOMOBILE, ETC.—The terms 'automobile', 'passenger automobile', 'fuel economy', 'average fuel economy standard', 'model type', and 'model year' have

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the same meaning as such terms have under section 501 of the Motor Vehicle Information and Cost Savings Act (15 U.S.C. 2001).

"(2) MANUFACTURER.—The term 'manufacturer' includes a producer or importer.

"(3) TAX CORRECTION FACTOR.—For purposes of the alternative tax on subsection (b) of this section, the tax correction factor for each model year is as follows:

| | |
|---|---|
| "1978 | 16.16 cents |
| 1979 | 18.04 cents |
| 1980 | 20.00 cents |
| 1981 | 23.10 cents |
| 1982 | 29.08 cents |
| 1983 | 33.00 cents |
| 1984 | 40.55 cents |
| 1985 and thereafter | 49.14 cents.". |

(b) DENIAL OF CERTAIN EXEMPTIONS AND REFUNDS.—

(1) TAX-FREE SALES.—Subsection (a) of section 4221 (relating to certain tax-free sales) is amended by adding a new sentence at the end thereof to read as follows: "Paragraphs (4) and (5) shall not apply to the tax imposed by section 4064.".

(2) DENIAL OF REFUNDS FOR CERTAIN USES.—Paragraph (2) of section 6416(b) (relating to tax payments considered overpayments in the case of specified uses and resales) is amended by adding a new sentence at the end thereof to read as follows: "Sub-

paragraphs (C) and (D) shall not apply in the case of any tax paid under section 4064.".

(c) PAYMENT OF TAX IN CASE OF LEASED AUTOMOBILES.—Section 4217 (relating to leases) is amended by adding at the end thereof the following new subsection:

"(e) LEASES OF CERTAIN AUTOMOBILES.—

"(1) IN GENERAL.—In the case of an initial lease of an automobile by a manufacturer taxable under section 4064, there shall be paid by the manufacturer upon each lease payment that portion of the total fuel inefficiency tax which bears the same ratio to such total fuel inefficiency tax as such payment bears to the total amount to be paid under such initial lease. In any case where an automobile which has been leased is sold or otherwise disposed of before the total fuel inefficiency tax has been paid, there shall be paid by the manufacturer upon such sale or disposition the difference between the tax paid on the lease payments and the total fuel inefficiency tax.

"(2) LEASE OTHER THAN INITIAL LEASE NOT CONSIDERED AS SALE.—Any lease of an automobile by the manufacturer, producer, or importer, other than the initial lease of such automobile, shall not be considered under subsection (a) as a sale of such automobile.

"(3) SALE AFTER TOTAL FUEL INEFFICIENCY TAX PAID.—If an automobile taxable under section 4064 is sold after the total fuel inefficiency tax is paid, no tax shall be imposed under this chapter on such sale.

"(4) TOTAL FUEL INEFFICIENCY TAX DEFINED.—For purposes of this subsection, the term 'total fuel inefficiency tax' means the tax imposed by section 4064 computed at the rate in effect on the date of the initial lease.".

(d) CLERICAL AMENDMENT.—The table of sections for part I of subchapter A of chapter 32 is amended by adding at the end thereof the following new item:

"Sec. 4064. Fuel Inefficiency Tax.".

**SEC. 1202. FUEL EFFICIENCY REBATE.**

(a) GENERAL RULE.—Subchapter B of chapter 65 (relating to rules of special application in the case of abatements, credits, and refunds) is amended by adding at the end thereof the following new section:

**"SEC. 6429. FUEL EFFICIENCY REBATE.**

"(a) IN GENERAL.—An amount shall be paid or credited to the manufacturer with respect to the sale of—

"(1) each 1977 passenger automobile and each 1978 or later model year automobile which is domestically manufactured and which is sold by the manufacturer after May 1, 1977;

"(2) each 1977 model year passenger automobile which is not manufactured domestically, and which is sold by the manufacturer after May 1, 1977, but only to the extent provided in an executive agreement applicable to such automobile which is entered into after April 30, 1977, and before May 1, 1978, and which, pursuant to such agreement, is to be effective for the time during which such passenger automobile is sold; and

"(3) each 1978 and later model year automobile which is not manufactured domestically, and which is sold by the manufacturer after May 1, 1977, but only to the extent provided in an executive agreement applicable to such automobile which takes effect after May 1, 1977.

Such amount shall be equal to the lesser of $500 or the amount determined by multiplying the base rebate determined under subsection (b) or (c) by the rebate coefficient determined in accordance with subsection (e). Any executive agreement entered into with any country to provide for a payment or credit under this section shall be designed to assure that manufacturers of domestically manufactured automobiles are not disadvantaged by the system of taxes and rebates under section 4064 and this section.

"(b) BASE REBATE.—(1) Except as provided in paragraphs (2) and (3), the base rebate is an amount determined as follows:

"(1) In the case of a 1977 or 1978 model year passenger automobile:

| "If the fuel economy of the model type in which the automobile falls is: | The base rebate is: |
|---|---|
| At least 18 but less than 19 | 0 |
| At least 19 but less than 20 | $47 |
| At least 20 but less than 21 | 89 |
| At least 21 but less than 22 | 128 |
| At least 22 but less than 23 | 163 |
| At least 23 but less than 24 | 195 |
| At least 24 but less than 25 | 224 |
| At least 25 but less than 26 | 251 |
| At least 26 but less than 27 | 276 |
| At least 27 but less than 28 | 299 |
| At least 28 but less than 29 | 321 |
| At least 29 but less than 30 | 341 |
| At least 30 but less than 31 | 359 |
| At least 31 but less than 32 | 377 |
| At least 32 but less than 33 | 393 |
| At least 33 but less than 34 | 408 |
| At least 34 but less than 35 | 423 |
| At least 35 but less than 36 | 436 |
| At least 36 but less than 37 | 449 |
| At least 37 but less than 38 | 461 |
| At least 38 but less than 39 | 473 |
| More than 39 | 473 |

"(2) In the case of a 1979 model year passenger automobile:

| "If the fuel economy of the model type in which the automobile falls is: | The base rebate is: |
|---|---|
| At least 19 but less than 20 | 0 |
| At least 20 but less than 21 | $47 |
| At least 21 but less than 22 | 90 |
| At least 22 but less than 23 | 129 |
| At least 23 but less than 24 | 165 |
| At least 24 but less than 25 | 197 |
| At least 25 but less than 26 | 227 |
| At least 26 but less than 27 | 255 |
| At least 27 but less than 28 | 281 |
| At least 28 but less than 29 | 305 |
| At least 29 but less than 30 | 327 |
| At least 30 but less than 31 | 348 |
| At least 31 but less than 32 | 367 |
| At least 32 but less than 33 | 385 |
| At least 33 but less than 34 | 402 |
| At least 34 but less than 35 | 416 |
| At least 35 but less than 36 | 433 |
| At least 36 but less than 37 | 448 |
| At least 37 but less than 38 | 461 |
| At least 38 but less than 39 | 474 |
| More than 39 | 474 |

"(3) In the case of a 1980 model year passenger automobile:

| "If the fuel economy of the model type in which the automobile falls is: | The base rebate is: |
|---|---|
| At least 20 but less than 21 | 0 |
| At least 21 but less than 22 | $47 |
| At least 22 but less than 23 | 90 |
| At least 23 but less than 24 | 130 |
| At least 24 but less than 25 | 166 |
| At least 25 but less than 26 | 199 |
| At least 26 but less than 27 | 230 |
| At least 27 but less than 28 | 259 |
| At least 28 but less than 29 | 285 |
| At least 29 but less than 30 | 310 |
| At least 30 but less than 31 | 333 |
| At least 31 but less than 32 | 354 |
| At least 32 but less than 33 | 374 |
| At least 33 but less than 34 | 393 |
| At least 34 but less than 35 | 411 |
| At least 35 but less than 36 | 428 |
| At least 36 but less than 37 | 444 |
| At least 37 but less than 38 | 459 |
| At least 38 but less than 39 | 473 |
| More than 39 | 473 |

"(4) In the case of a 1981 model year passenger automobile:

| "If the fuel economy of the model type in which the automobile falls is: | The base rebate is: |
|---|---|
| At least 21.5 but less than 22.5 | 0 |
| At least 22.5 but less than 23.5 | $47 |
| At least 23.5 but less than 24.5 | 91 |
| At least 24.5 but less than 25.5 | 131 |
| At least 25.5 but less than 26.5 | 168 |
| At least 26.5 but less than 27.5 | 202 |
| At least 27.5 but less than 28.5 | 234 |
| At least 28.5 but less than 29.5 | 264 |
| At least 29.5 but less than 30.5 | 291 |
| At least 30.5 but less than 31.5 | 317 |
| At least 31.5 but less than 32.5 | 340 |
| At least 32.5 but less than 33.5 | 363 |
| At least 33.5 but less than 34.5 | 385 |
| At least 34.5 but less than 35.5 | 405 |
| At least 35.5 but less than 36.5 | 423 |
| At least 36.5 but less than 37.5 | 441 |
| At least 37.5 but less than 38.5 | 458 |
| At least 38.5 but less than 39.5 | 474 |
| More than 39.5 | 474 |

"(5) In the case of a 1982 model year passenger automobile:

| "If the fuel economy of the model type in which the automobile falls is: | The base rebate is: |
|---|---|
| At least 23 but less than 24 | 0 |
| At least 24 but less than 25 | $52 |
| At least 25 but less than 26 | 101 |
| At least 26 but less than 27 | 145 |
| At least 27 but less than 28 | 187 |
| At least 28 but less than 29 | 225 |
| At least 29 but less than 30 | 261 |
| At least 30 but less than 31 | 295 |
| At least 31 but less than 32 | 326 |
| At least 32 but less than 33 | 355 |
| At least 33 but less than 34 | 383 |
| At least 34 but less than 35 | 409 |
| At least 35 but less than 36 | 433 |
| At least 36 but less than 37 | 456 |
| At least 37 but less than 38 | 478 |
| At least 38 but less than 39 | 499 |
| More than 39 | 499 |

"(6) In the case of a 1983 model year passenger automobile:

| "If the fuel economy of the model type in which the automobile falls is: | The base rebate is: |
|---|---|
| At least 24.5 but less than 25.5 | 0 |
| At least 25.5 but less than 26.5 | $52 |
| At least 26.5 but less than 27.5 | 101 |
| At least 27.5 but less than 28.5 | 147 |
| At least 28.5 but less than 29.5 | 189 |
| At least 29.5 but less than 30.5 | 228 |
| At least 30.5 but less than 31.5 | 265 |
| At least 31.5 but less than 32.5 | 299 |
| At least 32.5 but less than 33.5 | 331 |
| At least 33.5 but less than 34.5 | 361 |
| At least 34.5 but less than 35.5 | 390 |
| At least 35.5 but less than 36.5 | 417 |
| At least 36.5 but less than 37.5 | 442 |
| At least 37.5 but less than 38.5 | 467 |
| More than 38.5 | 490 |

"(7) In the case of a 1984 model year passenger automobile:

| "If the fuel economy of the model type in which the automobile falls is: | The base rebate is: |
|---|---|
| At least 26 but less than 27 | 0 |
| At least 27 but less than 28 | $57 |
| At least 28 but less than 29 | 111 |
| At least 29 but less than 30 | 161 |
| At least 30 but less than 31 | 207 |
| At least 31 but less than 32 | 251 |
| At least 32 but less than 33 | 292 |
| At least 33 but less than 34 | 330 |
| At least 34 but less than 35 | 366 |
| At least 35 but less than 36 | 400 |
| At least 36 but less than 37 | 433 |
| At least 37 but less than 38 | 463 |
| At least 38 but less than 39 | 492 |
| More than 39 | 492 |

"(8) In the case of a 1985 or later model year passenger automobile:

| "If the fuel economy of the model type in which the automobile falls is: | The base rebate is: |
|---|---|
| At least 27.5 but less than 28.5 | 0 |
| At least 28.5 but less than 29.5 | $62 |
| At least 29.5 but less than 30.5 | 121 |
| At least 30.5 but less than 31.5 | 176 |
| At least 31.5 but less than 32.5 | 227 |
| At least 32.5 but less than 33.5 | 275 |
| At least 33.5 but less than 34.5 | 320 |
| At least 34.5 but less than 35.5 | 362 |
| At least 35.5 but less than 36.5 | 403 |
| At least 36.5 but less than 37.5 | 440 |
| At least 37.5 but less than 38.5 | 476 |
| At least 38.5 but less than 39.5 | 493 |
| More than 39.5 | 500 |

"(c) In the case of an electric automobile, the payment or credit is equal to the highest payment or credit available for passenger automobiles of that model year.

"(d) SOURCE OF PAYMENT.—The payment of credit

described in subsection (a) shall be made from the General Fund of the Treasury from funds not otherwise appropriated.

"(e) REBATE COEFFICIENT. (A) A rebate coefficient shall be determined by the Secretary, in consultation with the Administrator of the Environmental Protection Agency, for the automobiles manufactured in model years 1977 and 1978, and for each subsequent model year thereafter. The Secretary shall publish the rebate coefficient in the Federal Register no later than 30 days after date of enactment in the case of the 1977 and 1978 model years and, in the case of each subsequent model year, no later than the end of the preceding model year. Rebate coefficients for automobiles with respect to which payments are required to be paid under subsection (a) shall be determined so that the aggregate amount for the model years 1977 and 1978, or for any subsequent model year, paid or credited under this section with respect to such automobiles approximates, as closely as possible, an estimate made by the Secretary, prior to the beginning of the model year, of the amount of tax to be collected under section 4064 with respect to sales of model year automobiles, less the expenses of administration of the requirements of this subpart.

"(B) For purposes of this section, section 503 (b) (2) (E) of the Motor Vehicle Information and Cost Savings Act

(15 U.S.C. 2003) shall apply in determining if an automobile is manufactured domestically.

"(f) If the average fuel economy standard prescribed under section 502 of the Motor Vehicle Information and Cost Savings Act (15 U.S.C. 2002) applicable to any class of passenger automobiles for a model year differs from the highest fuel economy for which no base rebate is prescribed under subsection (b) for the model year, then the base rebate with respect to such class for the model year shall be determined in accordance with a table prescribed for such year by the Secretary. Such a table shall take the same general form as that in subsection (b) except that no base rebate shall be prescribed at or below the level of the average fuel economy standard prescribed for passenger automobiles for the model year. The base rebate for each whole mile per gallon above the level at which no base rebate is prescribed shall be determined by multiplying the base rebate correction factor for the year by the difference between a fraction created by dividing 100,000 by the fuel economy for which the base rebate is to be prescribed, and a fraction created by dividing 100,000 by the average fuel economy standard. No base rebate shall be prescribed which exceeds the maximum base rebate specified in the table for the model year under subsection (b). The Secretary shall prescribe the table each year prior to the beginning of the model year.

"(g) If the average fuel economy standard prescribed under section 502 of the Motor Vehicle Information and Cost Savings Act (15 U.S.C. 2002) applicable to any class of nonpassenger automobiles for a model year is higher than the average fuel economy standard for passenger automobiles for that model year, then the base rebate with respect to such class for the model year shall be determined in accordance with a table prescribed for such year by the Secretary. Such a table shall take the same general form as that in subsection (b) except that no base rebate shall be prescribed at or below the level of the average fuel economy standard prescribed for such class of nonpassenger automobiles for the model year. The base rebate for each whole mile per gallon above the level at which no base rebate is prescribed shall be determined by multiplying the base rebate correction factor for the model year by the difference between a fraction created by dividing 100,000 by the fuel economy for which the base rebate is to be prescribed, and a fraction created by dividing 100,000 by the average fuel economy standard. No base rebate shall be prescribed which exceeds the base rebate specified in the table for the model year under subsection (b). The Secretary shall prescribe the table each year prior to the beginning of the model year.

"(h) If the average fuel economy standard prescribed under section 502 of the Motor Vehicle Information and Cost Savings Act (15 U.S.C. 2002) applicable to any class of automobiles is below the average fuel economy standard for passenger automobiles for the model year, then the base rebate with respect to such class for the model year shall be determined in the same manner as that for passenger automobiles for the model year.

"(i) DEFINITIONS AND SPECIAL RULES.—For purposes of this section—

"(1) AUTOMOBILE, ETC.—The terms 'automobile', 'passenger automobile', 'fuel economy', 'model type', 'average fuel economy standard' and 'model year' have the meaning prescribed by section 501 of the Motor Vehicle Information and Cost Savings Act (15 U.S.C. 2001).

"(2) ELECTRIC AUTOMOBILE.—The term 'electric automobile' means an automobile which is powered primarily by an electric motor drawing current from rechargeable storage batteries or other portable sources of electric current.

"(3) MANUFACTURER.—The term 'manufacturer' has the meaning prescribed by section 4064(c)(2).

"(4) BASE REBATE CORRECTION FACTOR.—The

term 'base rebate correction factor' for each model year has the same meaning as the term 'tax correction factor' used in section 1201 4064 (c) (3).

"(j) LEASE CONSIDERED SALE.—For purposes of this section, the initial lease of an automobile by the manufacturer shall be considered a sale. Any lease other than an initial lease shall not be considered a sale.

"(k) CREDIT ON RETURNS.—Any manufacturer entitled to a payment under this section may, instead of filing a claim for refund, take credit therefor against taxes imposed by chapter 31 or 32 due on any subsequent return.

"(l) DISALLOWANCE OF PAYMENT OR CREDIT.—Notwithstanding any other provisions of this section:

"(1) No amount shall be paid or credited under this section with respect to the sale of any automobile by the manufacturer for export (by any person).

"(2) No amount shall be paid or credited under this section with respect to the sale by the manufacturer of any automobile after May 1, 1977, unless such manufacturer has paid such amount to the ultimate purchaser of such automobile and has in his possession evidence of such payment as may be required by regulations prescribed by the Secretary under this subsection.".

(b) CLERICAL AMENDMENT. The table of sections for subchapter B of chapter 65 is amended by adding at the end thereof the following new item:

"Sec. 6429. Fuel Efficiency Rebate.".

**SEC. 1203. FUEL INEFFICIENCY TAX RECEIPTS AND REBATE PAYMENTS.**

(a) The Treasury of the United States shall record as receipts to the General Fund amounts collected under section 4064 of the Internal Revenue Code of 1954 (relating to fuel inefficiency tax), reduced by the amounts credited or refunded as overpayments of amounts so collected.

(b) The Treasury of the United States shall record as outlays the amounts required to be paid by section 6429 of the Internal Revenue Code of 1954 (relating to fuel efficiency rebates).

(c) APPROPRIATION AUTHORIZATION.—There are authorized to be appropriated such amounts as may be necessary for payment of the fuel efficiency rebates.

**SEC. 1204. EFFECTIVE DATES.**

The amendments made by sections 1201 and 1202 shall apply in the case of sales by the manufacturer after the date of enactment of this Act, except as otherwise specified therein.

**Subpart 2—Gasoline Conservation Program**

**SEC. 1221. STANDBY GASOLINE TAX.**

(a) GENERAL RULE. Part III of subchapter A of chapter 32 (relating to petroleum products) is amended by redesignating subparts B and C as subparts C and D, respectively, and by inserting after subpart A the following new subpart:

**"Subpart B—Standby Gasoline Tax**

"Sec. 4086. Imposition of tax.
"Sec. 4087. Cross reference.

**"SEC. 4086. IMPOSITION OF TAX.**

"(a) IMPOSITION OF TAX.—In addition to any tax imposed by section 4081, there is hereby imposed on gasoline sold during any gasoline tax year by the producer or importer thereof, or by any producer of gasoline, a tax of 5 cents a gallon for each full percentage point that domestic consumption of gasoline in the preceding determination year exceeded the annual national gasoline consumption target for such preceding determination year, except that—

"(1) the tax imposed under this subsection for any gasoline tax year cannot increase or decrease more than 5 cents a gallon from the tax imposed in the preceding gasoline tax year, and

"(2) the total under this subsection shall not exceed a tax of more than 50 cents per gallon.

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"(b) DETERMINATION OF DOMESTIC CONSUMPTION.—Not later than November 15 of each calendar year, the Administrator of the Federal Energy Administration shall make and publish in the Federal Register a determination of whether the domestic consumption of gasoline for the 12-month period ending on September 30 of such calendar year (referred to in this section as the 'determination year') exceeded the annual national gasoline consumption target level specified in section (c) for such determination year. If the domestic consumption of gasoline for such determination year exceeded by a full percentage point or more the annual national gasoline consumption target for that year, then on January 1 following such determination year, the rate of tax as determined in subsection (a) will be effective.

"(c) ANNUAL NATIONAL GASOLINE CONSUMPTION TARGET LEVELS.—The annual national gasoline consumption target levels are—

| "12-month period ending September 30 of determination year: | Million barrels average daily consumption: |
|---|---|
| 1978 | 7.350 |
| 1979 | 7.400 |
| 1980 | 7.450 |
| 1981 | 7.400 |
| 1982 | 7.200 |
| 1983 | 7.000 |
| 1984 | 6.800 |
| 1985 | 6.600 |
| 1986 | 6.550 |
| 1987, and thereafter | 6.500 |

"(d) DOMESTIC CONSUMPTION DEFINED.—For purposes of this section, the term 'domestic consumption of gasoline' for any determination year means the average daily usage of gasoline for such determination year within the United States as determined by the Administrator.

**"SEC. 4087. CROSS REFERENCE.**

**"For provisions relating to credit for standby gasoline tax, see section 6430.".**

(b) FLOOR STOCKS TAXES.—Subchapter G of chapter 32 is amended by inserting after section 4225 the following new section:

**"SEC. 4226. FLOOR STOCK TAXES.**

"(a) IN GENERAL.—

(1) STANDBY GASOLINE TAX.—

"(A) IMPOSITION OF TAX.—On gasoline (as defined in section 4082(b)) which, on a gasoline tax increase date, is held by a dealer for sale, there is hereby imposed a floor stocks tax at a rate equal to the difference between (i) the tax (if any) imposed by section 4086 on the sale of such gasoline by the producer or importer, and (ii) the tax which would have been imposed by such section on such sale if that sale had occurred on such gasoline tax increase date. The tax imposed by this subpara-

graph shall not apply to gasoline in retail stock held at the place where intended to be sold at retail.

"(b) DUE DATES OF TAXES.—Any tax imposed by subsection (a) (1) shall be paid at such time as may be prescribed by the Secretary but not sooner than 90 days after the gasoline tax increase date in respect of which such tax was imposed.".

(c) DENIAL OF CERTAIN EXEMPTIONS AND REFUNDS.—

(1) TAX-FREE SALES.—Subsection (a) of section 4221 (relating to certain tax-free sales) is amended by adding at the end thereof the following new sentence: "Paragraphs (4) and (5) shall not apply to the tax imposed by section 4086.".

(2) USE IN FURTHER MANUFACTURE.—Paragraph (6) (C) of section 4221 (d) (relating to use in further manufacture) and paragraph (3) (f) of section 6416 (b) (relating to tax-paid articles used for further manufacture, etc.) are each amended by striking out "section 4081" and inserting in lieu thereof "section 4081 or 4086.".

(3) DENIAL OF REFUNDS FOR CERTAIN USES.—Paragraph (2) of section 6416 (b) (relating to tax payments considered overpayments in the case of specified uses and resales) is amended by adding a new sentence

at the end thereof to read as follows: "Subparagraphs (C) and (D) shall not apply in the case of any tax paid under section 4086.".

(d) TECHNICAL AND CONFORMING AMENDMENTS.—

(1) The table of subparts for part III of subchapter A of chapter 32 is amended by striking out the last two items and inserting in lieu thereof the following:

"Subpart B. Standby Gasoline Tax.
"Subpart C. Lubricating oil.
"Subpart D. Special provisions applicable to petroleum products."

(2) The subpart heading for subpart C of such part III (as redesignated by subsection (a)) is amended to read as follows:

**"Subpart C—Lubricating Oil"**

(3) The subpart heading for subpart D of such part III (as redesignated by subsection (a)) is amended to read as follows:

**"Subpart D—Special Provisions Applicable to Petroleum Products"**

(4) Subsections (a) and (b) of section 4082 are each amended by striking out "in this subpart" and inserting in lieu thereof "in this subpart and subpart B.".

(5) Section 4083 is amended by striking out "section 4081" and inserting in lieu thereof "section 4081 or 4086".

(6) Section 4101 is amended by striking out "section 4081 or section 4091" and inserting in lieu thereof "section 4081, 4086, or 4091".

(7) Section 6412 (relating to floor stock refunds) is amended by redesignating paragraph (2) of subsection (a) as paragraph (3) and adding a new paragraph (2) to read as follows:

"(2) STANDBY GASOLINE TAX.—Whenever gasoline subject to the tax imposed by section 4086 has been sold by the producer or importer thereof before a gasoline tax decrease date and on such date is held by a dealer and is intended for sale, there shall be credited or refunded (without interest) to the producer or importer an amount equal to the difference between the tax under section 4086 paid by such producer or importer on his sale of the gasoline and the amount of the tax under section 4086 made applicable to such gasoline on or after the tax decrease date, if (A) a claim for such credit or refund is filed with the Secretary on or before the end of the 10-month period beginning with the month following the tax decrease date, such claim shall be based on a request submitted to the producer or importer before the end of the 7-month period beginning with the month following the tax decrease date, by the dealer who held the gasoline in respect of which the credit or refund is

claimed, and (B) on or before the end of said 10-month period beginning with the tax decrease date, reimbursement has been made to such dealer by the producer or importer for the tax reduction on such gasoline or written consent has been obtained from such dealer to allowance of such credit or refund. No credit or refund shall be allowable under this paragraph with respect to gasoline in retail stocks held at the place where intended to be sold at retail, nor with respect to gasoline held for sale by a producer or importer of gasoline. For purposes of this paragraph, the term 'gasoline tax decrease date' means any day on which the rate imposed by section 4086 is less than the rate of such tax in effect on the preceding day.".

(8) Paragraph (a) (2) of section 6420 is amended by striking out "section 4081" and inserting in lieu thereof "sections 4081 and 4086".

(9) Section 6420(d) is amended by striking out "section 4081" and inserting in lieu thereof "section 4081 or 4086".

(10) Paragraph (e) (1) of section 6420 is amended by striking out "section 4081" and inserting in lieu thereof "section 4081 or 4086".

(e) EFFECTIVE DATE.—The amendments made by this section shall take effect after December 31, 1977.

**SEC. 1222. PER CAPITA PAYMENT OF STANDBY GASOLINE TAX RECEIPTS.**

(a) IN GENERAL.—Subchapter B of chapter 65 (relating to rules of special application for abatements, credits, and refunds) is amended by adding at the end thereof the following new section:

**"SEC. 6430. PER CAPITA PAYMENT OF STANDBY GASOLINE TAX RECEIPTS.**

"(a) GENERAL RULE.—Each individual shall be treated as having made a payment against the tax imposed by chapter 1 for the taxable year in which there is a tax imposed under section 4086 equal to the gasoline tax rebate, multiplied by each exemption provided by subsections (b) and (e) of section 151 for which the taxpayer is allowed a deduction for such taxable year.

"(b) TAX REBATE.—The Secretary, in consultation with the Administrator of the Federal Energy Administration, shall publish in the Federal Register the amount of the per capita payment for the succeeding gasoline tax year not later than November 15 of each year. The Secretary shall determine the per capita payment based on estimated revenues to be derived from the tax imposed under section 4086 during the taxable year reduced by the anticipated revenue loss from business deductions for the tax imposed by section 4086 allowable under the Internal Revenue Code of 1954.

The per capita payment shall reflect the administrative costs incurred in connection with the per capita payment.

"(c) LIMITATION BASED ON AMOUNT OF TAX.—

"(1) IN GENERAL.—The amount treated as paid by reason of this section shall not exceed the amount of the taxpayer's liability for tax imposed by chapter 1 (unreduced by any credits) for the taxable year.

"(2) REFUND MADE TO CERTAIN TAXPAYERS.—Paragraph (1) shall not apply to any individual who—

"(A) is entitled to a credit under section 43 (relating to credit for earned income), or

"(B) (i) has a dependent child who lived with such individual,

"(ii) has earned income, and

"(iii) if married, filed a joint return.

For purposes of subparagraph (B) (ii), the term 'earned income' has the meaning given to such term by section 43 (c) (2), except that 'self-employment income (as defined in section 1402 (b))' shall be substituted for 'net earnings from self-employment' in clause (ii) of section 43 (c) (2) (A).

"(d) DATE PAYMENT DEEMED MADE.—The payment provided by this section shall be deemed made on whichever of the following dates is the later:

"(1) the date prescribed by law (determined

without extensions) for filing the return of tax under chapter 1 for the taxable year, or

"(2) the date on which the taxpayer files his return of tax under chapter 1 for the taxable year.

"(e) CERTAIN PERSONS NOT ELIGIBLE.—This section shall not apply to any estate or trust, nor shall it apply to any nonresident alien individual.".

(b) TECHNICAL AMENDMENT.—Subpart A of Part IV of chapter 1 (relating to credits allowable) is amended by inserting after section 33 the following new section:

**"SEC. 34. FOR CREDIT AGAINST THE TAX IMPOSED BY THIS CHAPTER ALLOWED FOR STANDBY GASOLINE TAX, SEE SECTION 6430.".**

(c) CLERICAL AMENDMENT.—The table of sections for subchapter B of chapter 65 is amended by adding at the end thereof the following new item:

"Sec. 6430. Per capita payment of standby gasoline tax receipts.".

(d) EFFECTIVE DATE.—The amendments made by this section shall take effect after December 31, 1977.

**SEC. 1223. ENERGY PAYMENTS.**

Payments in an amount equal to the per capita payment of standby gasoline tax receipts determined under section 6430 shall be made to recipients of benefits under certain retirement and survivor benefit programs in accordance with

section 1404 of the National Energy Act, recipients of aid to families with dependent children under approved State plans in accordance with section 1405 of such Act, and certain individuals in accordance with section 1406 of such Act.

**Subpart 3—Motorboat Gasoline and Fuels for General Aviation**

AMENDMENT OF MOTORBOAT AND GENERAL AVIATION FUEL PROVISIONS

SEC. 1231. (a) (1) Section 4041 (b) (relating to special motor fuels) is amended by inserting "a motorboat or in" before "a highway vehicle" the first time that the words appear in the second and third sentence of such subsection.

(2) Section 4041 (c) (relating to noncommercial aviation) is amended by deleting "7" in paragraph (1) and inserting "11" in lieu thereof, by substituting "7" and "9½" respectively for "3" and "5½", respectively in paragraph 3 and by deleting paragraph 5.

(b) Section 6421 (a) is amended by inserting "a motorboat or in" before "a highway vehicle" the first time that it appears.

AIRPORT AND AIRWAY TRUST FUND AMENDMENTS

SEC. 1232. Section 208 of the Airport and Airway Revenue Act of 1970 (49 U.S.C. 1742) is amended—

(1) by adding at the end of subsection (b) the

following new sentence: "After September 30, 1977, the amounts appropriated by paragraph (1) with respect to the taxes under subsections (c) and (d) of section 4041 shall be based on a tax rate of 7 cents a gallon and paragraph (2) shall not apply.", and

(2) by adding at the end of subsection (f) the following new paragraph:

"(4) The amounts referred to in paragraphs (2) and (3) shall be reduced in appropriate amount to reflect the reduction in amounts transferred to the Trust Fund after September 30, 1977, as provided for by section 208(b).".

LAND AND WATER CONSERVATION FUND AMENDMENTS

SEC. 1233. Section 201(b) of the Land and Water Conservation Fund Act of 1965 is amended by deleting all that follows "equivalent to" and inserting "the amounts paid before July 1, 1978, under section 6421 of Title 26 (relating to amounts paid in respect of gasoline used for certain nonhighway purposes or by local transit systems) with respect to gasoline used after December 31, 1964, in motorboats, on the basis of claims filed for the period ending before October 1, 1979.".

HIGHWAY TRUST FUND AMENDMENTS

SEC. 1234. Section 209 of the Highway Revenue Act of 1956 (as amended) (23 U.S.C. 120 note) is amended by

adding at the end of subsection (c) (5) the following new sentence: After September 30, 1977, the amounts described in paragraph (1) (A) and 3 (A) (before the application of this subsection) shall be further reduced by appropriate amounts to reflect the amount of taxes under subsections (c) and (d) of section 4041 (taxes on aviation fuel) and under section 4081, with respect to gasoline used in aircraft, which are not required to be transferred to the Airport and Airway Trust Fund.".

EFFECTIVE DATE

SEC. 1235. The amendments made by this part shall take effect on October 1, 1977.

**Subpart 4—Removal of Excise Tax on Buses**

**SEC. 1241. REMOVAL OF EXCISE TAX ON BUSES.**

(a) GENERAL RULE.—Section 4063 (relating to exemptions from tax on trucks, etc.) is amended by revising paragraph 6 of subsection (a) to read as follows:

"(6) BUSES.—The tax imposed under section 4061 (a) shall not apply in the case of automobile bus chassis or automobile bus bodies.".

(b) FLOOR STOCK REFUNDS.—

(1) IN GENERAL.—Where, before the day after the date of the enactment of this Act, any tax-repealed article (as defined in subsection (e)) has been sold by the manufacturer, producer, or importer and on such

day is held by a dealer and has not been used and is intended for sale, there shall be credited or refunded (without interest) to the manufacturer, producer, or importer an amount equal to the tax paid by such manufacturer, producer, or importer on his sale of the article, if—

(A) claim for such credit or refund is filed with the Secretary before the first day of the 10th calendar month beginning after the day after the date of the enactment of this Act based upon a request submitted to the manufacturer, producer, or importer before the first day of the 7th calendar month beginning after the day after the date of the enactment of this Act by the dealer who held the article in respect of which the credit or refund is claimed; and

(B) on or before the first day of such 10th calendar month reimbursement has been made to the dealer by the manufacturer, producer, or importer in an amount equal to the tax paid on the article or written consent has been obtained from the dealer to allowance of the credit or refund.

(2) LIMITATION ON ELIGIBILITY FOR CREDIT OR REFUND.—No manufacturer, producer, or importer shall be entitled to credit or refund under paragraph (1)

unless he has in his possession such evidence of the inventories with respect to which the credit or refund is claimed as may be required by regulations prescribed by the Secretary under this subsection.

(3) OTHER LAWS APPLICABLE.—All provisions of law, including penalties, applicable with respect to the taxes imposed by section 4061(a) shall, insofar as applicable and not inconsistent with paragraphs (1) and (2) of this subsection, apply in respect of the credits and refunds provided for in paragraph (1) to the same extent as if the credits or refunds constituted overpayments of the tax.

(c) REFUNDS WITH RESPECT TO CERTAIN CONSUMER PURCHASES.—

(1) IN GENERAL.—Except as otherwise provided in paragraph (2), where after April 20, 1977, with respect to any article which was subject to the tax imposed by section 4061(a)(1) (as in effect on the before the date of the enactment of this Act), and on or before such date of enactment, a tax-repealed article (as defined in subsection (e)) has been sold to an ultimate purchaser, there shall be credited or refunded (without interest) to the manufacturer, producer, or importer of such article an amount equal to the tax paid

by such manufacturer, producer, or importer on his sale of the article.

(2) LIMITATION ON ELIGIBILITY FOR CREDIT OR REFUND.—No manufacturer, producer, or importer shall be entitled to a credit or refund under paragraph (1) with respect to an article unless—

(A) he has in his possession such evidence of the sale of the article to an ultimate purchaser, and of the reimbursement of the tax to such purchaser, as may be required by regulation prescribed by the Secretary under this subsection;

(B) claim for such credit or refund is filed with the Secretary before the first day of the 10th calendar month beginning after the day after the date of the enactment of this Act based upon information submitted to the manufacturer, producer, or importer before the first day of the 7th calendar month beginning after the day after the date of the enactment of this Act by the person who sold the article (in respect of which the credit or refund is claimed) to the ultimate purchaser; and

(C) on or before the first day of such 10th calendar month reimbursement has been made to the ultimate purchaser in an amount equal to the tax paid on the article.

(3) OTHER LAWS APPLICABLE.—All provisions of law, including penalties, applicable with respect to the taxes imposed by section 4061 (a) shall, insofar as applicable and not inconsistent with paragraph (1) or (2) of this subsection, apply in respect of the credits and refunds provided for in paragraph (1) to the same extent as if the credits or refunds constituted overpayments of the tax.

(d) CERTAIN USES BY MANUFACTURER, ETC.—Any tax paid by reason of section 4218 (a) (relating to use by manufacturer or importer considered sale) shall be deemed an overpayment of such tax with respect to any article which was subject to the tax imposed by section 4061 (a) (1) as in effect on the day before the date of the enactment of this Act if the tax was imposed on such article by reason of such section 4218 (a) after April 20, 1977.

(e) DEFINITIONS.—For purposes of this section—

(1) The term "dealer" includes a wholesaler, jobber, distributor, or retailer.

(2) An article shall be considered as "held by a dealer" if title thereto has passed to such dealer (whether or not delivery to him has been made) and if for purposes of consumption title to such article or possession thereof has not at any time been transferred to any person other than a dealer.

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(3) The term "tax-repealed article" means an article on which a tax was imposed by section 4061 (a) as in effect on the day before the date of the enactment of this Act and is exempted from such tax by section 4063 (a) (6) as in effect on the effective date of this Act.

(f) TECHNICAL AND CONFORMING AMENDMENTS.—

(1) Section 4221 (e) (relating to special rules for tax free sales) is amended by deleting paragraph 5.

(2) Section 6416 (b) (2) (I) is deleted.

(g) EFFECTIVE DATE.—

"(1) The amendments made by this section shall apply with respect to articles sold after April 20, 1977.

(2) For purposes of paragraph (1), an article shall not be considered sold on or before April 20, 1977, unless possession or right to possession passes to the purchaser before such day.

(3) In the case of—

(A) a lease,

(B) a contract for the sale of an article where it is provided that the price shall be paid by installments and title to the article sold does not pass until a future date notwithstanding partial payment by installments,

(C) a conditional sale, or

(D) a chattel mortgage arrangement wherein it is provided that the sale price shall be paid in installments,

entered into on or before April 20, 1977, payments made after such date with respect to the article leased or sold shall, for purposes of this subsection, be considered as payments made with respect to an article sold after such date, if the lessor or vendor establishes that the amount of payments payable after such date with respect to such article has been reduced by an amount equal to that portion of the tax applicable with respect to the lease or sale of such article which is due and payable after such date. If the lessor or vendor does not establish that the payments have been so reduced, they shall be treated as payments made in respect of an article sold on or before April 20, 1977.

## PART C—BUSINESS ENERGY TAX CREDIT

### SEC. 1301. BUSINESS ENERGY CREDIT.

(a) ALLOWANCE OF CREDIT.—Section 46 (a) (2) (relating to amount of investment credit for the current taxable year) is amended as follows:

(1) Subparagraph (A) is amended by striking out "subparagraph (B)" and inserting in lieu thereof "subparagraphs (B), (E), and (F)".

(2) Subparagraph (B) is amended by striking out "the amount of the credit" and inserting in lieu thereof "except as otherwise provided in subparagraphs (E) and (F) the amount of the credit".

(3) Subparagraph (C) is amended by striking out "In the case of property" and inserting in lieu thereof "Except as otherwise provided in subparagraphs (E) and (F), in the case of property".

(4) New subparagraphs (E), (F), and (G) are added to read as follows:

"(E) BUSINESS ENERGY PROPERTY.—In the case of a property that is business energy property (as defined in section 48(l)(1)), other than special business energy property, the amount of credit determined under this paragraph for the taxable year shall be the amount equal to—

"(i) except as provided in clause (ii), in the case of such property described in subparagraph (D), 20 percent of the qualified investment (as determined under subsections (c) and (d));

"(ii) in the case of property described in subparagraph (D) and a corporation to which subparagraph (B) applies, the amount which would be determined under subparagraph (B)

with respect to qualified investment in such property (except that the figure "21 percent" shall be substituted for "11 percent" in applying subparagraph (B) (i)); and

"(iii) in the case of property not described in subparagraph (D), an amount equal to 17 percent of the qualified investment (as determined under subsections (c) and (d)).

In the case of cogeneration property (as defined in section 48 (l) (4) or alternative energy property (as defined in section 48 (l) (5)) to which this subparagraph applies, the figure "20 percent" shall be substituted for "17 percent" in applying clause (iii).

"(F) SPECIAL BUSINESS ENERGY PROPERTY.—Except as otherwise provided in this subparagraph, in the case of property that is a special business energy property (as defined in section 48 (l) (3)), the amount of the credit determined under this paragraph for the taxable year shall be an amount equal to 10 percent of the qualified investment (as determined under subsections (c) and (d)). In the case of a property described in the preceding sentence that is either cogeneration property (as defined in subsection 48 (l) (4)) or alternative energy property (as defined in section 48 (l)

(5)) the figure "20 percent" shall be substituted for "10 percent". In the case of property to which subparagraph (D) applies and a corporation to which subparagraph (B) applies, the amount of the credit determined under this paragraph for the taxable year shall be an amount equal to the amount which would be determined under subparagraph (B) with respect to qualified investment in such property, except that if the property is cogeneration property or alternative energy property, the figure "21 percent" shall be substituted for "11 percent" in applying subparagraph (B) (i).

"(G) LIMITATION WITH RESPECT TO BUSINESS ENERGY PROPERTY.—The provisions of subparagraphs (E) and (F) shall apply only to—

"(i) property to which subsection (d) does not apply, the construction, reconstruction, or erection of which is completed by the taxpayer after April 20, 1977, but only to the extent of the basis thereof attributable to the construction, reconstruction, or erection after April 20, 1977, and before January 1, 1983,

"(ii) property to which subsection (d) does not apply, acquired by the taxpayer after April 20, 1977, and before January 1, 1983,

and placed in service by the taxpayer before January 1, 1983, and

"(iii) property to which subsection (d) applies, but only to the extent of the qualified investment (as determined under subsections (c) and (d)) with respect to qualified progress expenditures made after April 20, 1977, and before January 1, 1983.

In the case of property to which subsection (d) does not apply, subparagraphs (E) and (F) shall apply only with respect to new section 38 property. In the case of property to which subsection (d) applies, subparagraphs (E) and (F) shall apply only to property which, at the later of the dates specified in subsection (d) (2) (A), it is reasonable to believe will be, in the case of subparagraph (E), business energy property other than special business energy property, or in the case of subparagraph (F), special business energy property, when placed in service.".

(b) DEFINITIONS.—Section 48 (relating to definitions and special rules) is amended as follows:

(1) Paragraph (1) of subsection (a) is amended by striking out the period at the end of subparagraph

(C) and inserting ", or" in lieu threeof, and by adding a new subparagraph (D), to read as follows:

"(D) Special business energy property, as defined in subsection (l) (3) but only if the credit allowed by section 38 with respect to such property is determined under section 46 (a) (2) (F).".

(2) Paragraph (3) of subsection (a) is amended by striking out "and" at the end of subparagraph (B), by inserting a comma in lieu of the period at the end of subparagraph (C), and adding a new subparagraph (D), to read as follows:

"(D) Business energy property, as defined in subsection (l) (1), but only if the credit allowable by section 38 with respect to such property is determined under section 46 (a) (2) (E) or (F).".

(3) Subsection (l) is redesignated as subsection (m) and a new subsection (l) is added to read as follows:

"(l) (1) BUSINESS ENERGY PROPERTY.—Except as otherwise provided in paragraph (2), the term "business energy property" means property which is an integral part of, or used in connection with, a building or other structure located in the United States that has been substantially completed on or before April 20, 1977, and which is either—

"(A) cogeneration property (as defined in paragraph (4)),

"(B) alternative energy property (as defined in paragraph (5)),

"(C) solar equipment (as defined in paragraph (6)), or

"(D) of a class identified by regulations of the Secretary as having as its principal purpose reducing the amount of energy consumed—

"(i) to heat or cool the building or other structure, or

"(ii) to carry on any manufacturing or production process in the building or structure.

In prescribing the regulations under this paragraph, the Secretary shall consult with the Federal Energy Administrator. The Secretary shall not identify any class of property under subparagraph (D) (ii) unless the property is a new identifiable property which does not significantly alter the manufacturing or production process.

"(2) EXCEPTION FOR CERTAIN PROPERTY.—Property shall not be business energy property where—

"(A) any portion of the cost of such property to any person is treated, by reason of section 6431 (a), as being

a payment against any tax imposed by chapter 45 (relating to oil and gas conservation taxes), or

"(B) the property is used to carry on any manufacturing or production process which is first carried on in the building or other structure described in paragraph (1) after April 20, 1977.

"(3) SPECIAL BUSINESS ENERGY PROPERTY.—The term 'special business energy property' means business energy property which is property other than property described in subparagraph (A), (B), or (C) of subsection (a) (1).

"(4) COGENERATION PROPERTY.—The term 'cogeneration property' means property which produces steam, heat, or other forms of useful energy other than electric energy which is, or will be, used for industrial, commercial, or space heating purposes which together with such production, generates electric energy, and which property meets such requirements respecting minimum fuel efficiency as the Secretary by regulations prescribes, after consultation with the Federal Energy Administrator.

"(5) ALTERNATIVE ENERGY PROPERTY.—The term 'alternative energy property' means property which is—

"(A) a coal fired boiler,

"(B) a coal fired combustor other than a boiler,

"(C) a facility for the conversion of coal into syn-

thetic gas which has a heat content of 500 British thermal units or less per standard cubic foot,

"(D) a facility where coal is used as a feedstock for manufacture of chemicals or other products (other than coke),

"(E) equipment used for the unloading, transfer, storage, reclaiming from storage, or preparation (including washing, crushing, drying, and weighing at the point of use) of coal for use in, or with respect to, a boiler, combustor, or facility described in subparagraph (A), (B), (C), or (D),

"(F) a boiler (including a boiler fueled by waste materials or waste heat), the primary fuel for which is not petroleum, natural gas, or products derived from petroleum or natural gas,

"(G) equipment for the burning of coal in combustors other than boilers, but only a burner and such equipment that is used to supply coal to a burner, or

"(H) pollution control equipment required by Federal, State, or local regulations to be installed on, or with respect to, any property described in subparagraph (A), (B), (C), (D), (E), (F), or (G).

For purposes of this paragraph the terms 'facility' and 'equipment' do not include a building or other structure.

"(6) SOLAR ENERGY EQUIPMENT.—The term 'solar energy equipment' means equipment which is a type identified in regulations prescribed by the Secretary after consultation with the Federal Energy Administrator which, when installed in or on, or when connected to a building uses solar energy to heat or cool a building or any part thereof, or to heat water or to provide process heat.

"(7) ITEMS TO BE INCLUDED.—In prescribing the regulations under paragraph (1), the Secretary, in consultation with the Federal Energy Administrator, shall include the following items:

"(A) recuperators,

"(B) heat wheels,

"(C) regenerators,

"(D) heat exchangers,

"(E) waste heat boilers,

"(F) heat pipes,

"(G) insulation,

"(H) double glazing,

"(I) heat pumps,

"(J) reflective glass coatings,

"(K) automatic energy control systems,

"(L) turbulators,

"(M) preheaters,

"(N) combustible gas recovery systems, and

"(O) economizers.

However, in the event that the Secretary, after consultation with the Federal Energy Administrator, determines that any class of property described in subparagraphs (A) through (O) does not meet the criteria set forth in paragraph (1) (D), the Secretary is not required to identify such class of property in the regulations prescribed under paragraph (1)."

(c) RECAPTURE.—Subsection (a) of section 47 (relating to certain dispositions etc., of section 38 property) is amended by striking out "paragraph (2)" in paragraph (4) and inserting in lieu thereof "paragraph (2) or (8)" and by adding a new paragraph (8) at the end thereof to read as follows:

"(8) CHANGE IN BUSINESS ENERGY PROPERTY.—If during the taxable year any property taken into account as business energy property in computing the credit under section 38—

"(A) Becomes property that is not business energy property before the close of the useful life which was taken into account in computing the credit under section 38, or before expiration of 7 years from the date the property was placed in service, whichever is less, or

"(B) With respect to property which was taken into account under section 46(d), ceases (by reason of sale or other disposition, cancellation, or abandonment of contract, or otherwise) to be property, which when placed in service, will be business energy property,

then the tax under this chapter for such taxable year shall be increased by an amount equal to the aggregate decrease in credits allowed under section 38 for all prior taxable years which would have resulted solely from treating the property, for purposes of computing the credit under section 38, as property other than business energy property, after giving due regard to the period before the change in use. If this paragraph applies to a change in use to which paragraph (2) applies, or if the application of this paragraph to any property is followed by the application of paragraph (1), (2), or (3) to such property, proper adjustment shall be made in applying paragraph (1), (2), or (3). Similar rules shall apply if business energy property which was taken into account as cogeneration property, or as alternative energy property, becomes business energy property that is not cogeneration property or alternative energy property, or ceases to be property, which, when placed in service, will be business energy property that is cogen-

eration property or alternative energy property. This paragraph shall not apply to a cessation to which paragraph (1) or (3) applies.".

(d) SPECIAL RULE FOR POLLUTION CONTROL FACILITIES.—Section 46(c)(5) (relating to applicable percentage of qualified investment in the case of certain pollution control facilities) is amended to read as follows:

"(5) APPLICABLE PERCENTAGE IN THE CASE OF CERTAIN POLLUTION CONTROL FACILITIES.—

"(A) GENERAL RULE.—Notwithstanding subsection (c)(2), in the case of property—

"(i) with respect to which an election under section 169 applies, and

"(ii) the useful life of which (determined without regard to section 169) is not less than 5 years,

50 percent shall be the applicable percentage for purposes of applying paragraph (1) with respect to so much of the adjusted basis of the property as (after the application of section 169(f)) constitutes the amortizable basis for purposes of section 169.

"(B) SPECIAL RULE FOR CERTAIN BUSINESS ENERGY PROPERTY.—In the case of any property described in subparagraph (A) which is—

"(i) business energy property (as defined in section 48(l)), and

"(ii) any part of the cost of which is financed by the proceeds of an obligation issued by a State, a territory, or a possession of the United States, or any political subdivision of any of the foregoing, or of the District of Columbia, the interest on which is excluded from gross income under section 103, the figure '25 percent' shall be substituted for '50 percent' in applying subparagraph (A).".

(e) EFFECTIVE DATE.—(1) The amendments made by subsections (a), (b), and (c) shall apply to taxable years ending after April 20, 1977, and to credit carrybacks from such years.

(2) Section 46(c)(5)(A) of the Internal Revenue Code of 1954, as added by subsection (d), shall apply to property acquired by the taxpayer after December 31, 1976, and to property the construction, reconstruction, or erection of which was completed by the taxpayer after December 31, 1976 (but only to the extent of the basis thereof attributable to construction, reconstruction, or erection after such date), in taxable years beginning after such date. Section 46(c)(5)(B) of the Internal Revenue Code of 1954, as added by subsection (d), shall apply to property acquired by the tax-

payer after April 20, 1977, and before April 1, 1983, and placed in service by the taxpayer before January 1, 1983, and to property the construction, reconstruction, or erection of which is completed by the taxpayer after April 20, 1977, but only to the extent of the basis thereof attributable to the construction, reconstruction, or erection after April 20, 1977, and before January 1, 1983.

## PART D—CRUDE OIL TAX

### SEC. 1401. CRUDE OIL EQUALIZATION TAX.

(a) Subtitle D (relating to miscellaneous excise taxes) is amended by adding at the end thereof the following new chapter:

## "CHAPTER 46—CRUDE OIL EQUALIZATION TAX

### "SEC. 4996. CRUDE OIL EQUALIZATION TAX.

"(a) IMPOSITION OF 1978 INTERIM TAX.—A tax is hereby imposed on the delivery to the refinery or other place of first use after December 31, 1977, and before January 1, 1979, of crude oil classified as first tier (refinery) crude oil in an amount per barrel equal to $3.50.

"(b) IMPOSITION OF 1979 INTERIM TAX.—A tax is hereby imposed on the delivery to the refinery or other place of first use in each calendar month beginning after December 31, 1978, and before January 1, 1980, of crude

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oil classified as first tier (refinery) crude oil in an amount per barrel equal to the difference for such month (if any) between the national weighted average cost of all such crude oil and the national weighted average cost of all crude oil classified as second tier (refinery) crude oil.

"(c) IMPOSITION OF PERMANENT TAX.—A tax is hereby imposed on the delivery to the refinery or other place of first use in each calendar month beginning after December 31, 1979, of controlled crude oil of each classification (other than crude oil classified as uncontrolled (refinery) crude oil) in an amount per barrel equal to the difference for such month (if any) between the national weighted average cost of all crude oil of the same classification and the national weighted average cost to domestic refineries of crude oil exclusive of any tariffs or import fees.

"(d) PRESIDENTIAL AUTHORITY TO SUSPEND INCREASE OF TAX.—The President, by Executive order, may suspend for such period as he prescribes any increase in the crude oil equalization tax if he finds such suspension is necessary to protect the domestic economy from increases in the average cost to domestic refineries of imported crude oil which significantly exceed the inflation adjustment (as defined in section 402 (a) (20) of the National Energy Act).

"(e) LIABILITY FOR TAX.—The tax imposed by this section shall be paid by the refiner.

"(f) DEFINITIONS.—For purposes of this section:

"(1) FIRST TIER.—The term 'first tier (refinery) crude oil' means crude oil (other than uncontrolled (refinery) crude oil) delivered to a refinery which oil is certified as having been sold pursuant to the lower tier ceiling price rule of section 212.73 of title 10, Code of Federal Regulations (as in effect on April 20, 1977 or thereafter).

"(2) SECOND TIER.—The term 'second tier (refinery) crude oil' means crude oil (other than uncontrolled (refinery) crude oil) delivered to a refinery, which oil is certified as having been sold pursuant to the upper tier ceiling price rule of section 212.74 of title 10, Code of Federal Regulations (as in effect on April 20, 1977 or thereafter).

"(3) UNCONTROLLED.—The term 'uncontrolled (refinery) crude oil' means crude oil delivered to a refinery, which oil is either not subject to any first sale ceiling price rule or, if subject to such first sale ceiling price rule, such rule does not have the effect of reducing the cost of such crude oil to a refiner to less than the cost of an equivalent grade and quality of imported crude oil.

"(4) REFINER.—The term 'refiner' means a refiner of crude oil or any other first user of crude oil.

"(5) REFINERY.—The term 'refinery' means a location where refining of crude oil or other first use of crude oil takes place.

"(g) SPECIAL RULES.—The officer or agency to which the President delegates his authorities under the Emergency Petroleum Allocation Act of 1973 shall have authority under this section to—

"(1) prescribe by regulation such different or additional classifications of crude oil with respect to refiner acquisition costs as are deemed necessary or appropriate for purposes of subsection (c) of this section.

"(2) prescribe regulations specifying the application of the crude oil classification regulations to crude oil that is exchanged prior to its delivery to a refinery,

"(3) prescribe regulations whereby the national weighted average cost of each classification of crude oil shall be determined or prescribed, and

"(4) to further define the terms used in this section with respect to crude oil and the classifications and costs thereof, consistent with the purposes of this section.

"(h) TRANSPORTATION OUTSIDE THE UNITED STATES.—The transportation of crude oil outside the United States for refining or ultimate use outside the United States shall be treated as delivery to the refiner, and the person

owning the crude oil at the time of such transportation shall be deemed the refiner of such crude oil.".

(b) EFFECTIVE DATE.—The amendments made by this section apply to deliveries of crude oil to the refinery after December 31, 1977.

**SEC. 1402. REFUNDS OF CRUDE OIL EQUALIZATION TAX.**

(a) IN GENERAL.—Subchapter B of chapter 65 (relating to rules of special application for abatements, credits, and refunds) is amended by adding at the end thereof the following:

**"SEC. 6431. FUEL USED FOR HEATING RESIDENCES.**

"(a) (1) PAYMENTS.—Except as provided in subsection (f), if domestically refined distillate fuel oil has been sold and delivered into the tank of a residential structure for use in such structure, the Secretary shall pay (without interest) to the ultimate vendor of such distillate fuel oil an amount per gallon determined as presented in subsection (c).

"(2) PROOF REQUIRED TO QUALIFY FOR PAYMENT.—Payment under paragraph (1) shall be conditional upon the ultimate vendor furnishing evidence, as required under regulations of the Secretary, that he has reduced the price of the distillate fuel oil for which payment is claimed to fully reflect the amount of payment claimed.

"(b) TIME FOR FILING CLAIMS; PERIOD COVERED.—

"(1) GENERAL RULE.—Except as provided in paragraph (2), not more than one claim may be filed under subsection (a) by any person with respect to distillate fuel oil sold during his taxable year. No claim shall be allowed under this paragraph unless filed by such person not later than the time prescribed by law for filing a claim for credit or refunds of overpayment of income tax for such taxable year. For purposes of this subsection, a person's taxable year shall be his taxable year for purposes of subtitle A.

"(2) EXCEPTION.—If $1,000 or more is payable under this section to any person with respect to distillate fuel oil sold during any of the first three quarters of this taxable year, a claim may be filed under this section by such person with respect to distillate fuel oil sold during such quarter. No claim filed under this paragraph shall be allowed unless filed on or before the last day of the first quarter following the quarter for which the claim is filed.

"(c) DETERMINATION OF AMOUNT TO BE CLAIMED.—

"(1) IN GENERAL.—The amount per gallon of distillate fuel oil for which claim may be filed shall be determined by the Federal Energy Administrator. Such Administrator shall determine the average per barrel tax

liability of refiners under section 4996 for each calendar quarter and publish such determination by the end of the second month of the following quarter. The refiner of distillate fuel oil shall include on all invoices of such oil for the quarter following the publication of the average quarterly tax liability by such Administrator a statement of such average amount (converted to a per gallon basis if pertinent). Each subsequent seller of such oil shall include a similar statement of tax on his invoice, except that the ultimate vendor need not include such statement if the oil is not to be delivered into the tank of a residential structure. Vendors subsequent to the refiner of the crude oil shall determine the tax to be included on their invoice by using the first-in first-out inventory method.

"(2) INTERIM DETERMINATION.—For the first two calendar quarters beginning with the quarter of imposition of the tax under section 4996, the amount of tax to be stated on invoices of distillate fuel oil sold by refiners shall be an amount as estimated and published by the Federal Energy Administrator. Such Administrator shall publish the estimate by November 30, 1977, or within 10 days after enactment of this section, whichever comes later.

"(d) APPLICABLE LAWS.—

"(1) IN GENERAL.—All provisions of law, including penalties, applicable in respect of the tax imposed by section 4996 shall, insofar as applicable and not inconsistent with this section, apply in respect of the payments provided for in this section to the same extent as if such payments constituted refunds of overpayments of the tax so imposed.

"(2) EXAMINATION OF BOOKS AND WITNESSES.—For the purpose of ascertaining the correctness of any claim made under this section, or the correctness of any payment made in respect of any such claim, the Secretary shall have the authority granted by paragraphs (1), (2), and (3) of section 7602 (relating to examination of books and witnesses) as if the claimant were the person liable for tax.

"(e) REGULATIONS.—The Secretary may in the regulations prescribe the conditions, not inconsistent with the provisions of this section, under which payments may be made under this section.

"(f) INCOME TAX CREDIT IN LIEU OF PAYMENT.—

"(1) PERSONS NOT SUBJECT TO INCOME TAX.—Payment shall be made under subsection (a) only to—

"(A) the United States or an agency or instrumentality thereof, a State, a political subdivision

of a State, or an agency or instrumentality of one or more States or political subdivisions, or

"(B) an organization exempt from tax under section 501(a) (other than an organization required to make a return of the tax imposed under subtitle A for its taxable year).

"(2) EXCEPTION.—Paragraph (1) shall not apply to a payment of a claim filed under subsection (b)(2).

"(3) ALLOWANCE OF CREDIT AGAINST INCOME TAX.—For allowance of credit against the tax imposed by subtitle A for distillate fuel oil sold for residential use, see section 39.

"(g) CROSS REFERENCES.—

**"(1) For civil penalty for excessive claims under this section, see section 6675.**

**"(2) For fraud penalties, etc., see chapter 75 (section 7201 and following, relating to crimes, other offenses, and forfeitures).".**

(b) TECHNICAL AMENDMENT.—Section 39 is amended by:

(1) Changing the heading to read: "**Certain uses of gasoline, special fuels, lubricating oil, and distillate fuel oil.**"

(2) By adding a new paragraph to subsection (a) to read as follows:

"(5) under section 6431 with respect to distillate fuel oil used for heating residences.".

(3) By inserting "6431," after "6427," each place that it appears in subsection (b), and

(4) By deleting "and" after paragraph (3) of subsection (a), deleting the period after paragraph 4 and inserting ", and".

(c) EFFECTIVE DATE.—The amendments made by this section shall take effect after December 31, 1977.

**SEC. 1403. PER CAPITA PAYMENT OF CRUDE OIL EQUALIZATION TAX RECEIPTS.**

(a) IN GENERAL.—Subchapter B of chapter 65 (relating to rules of special application for abatements, credits, and refunds) is amended by adding at the end thereof the following new section:

**"SEC. 6432. PER CAPITA PAYMENT OF CRUDE OIL EQUALIZATION TAX RECEIPTS.**

"(a) GENERAL RULE.—Each individual shall be treated as having made a payment against the tax imposed by chapter 1 for the taxable year in which there is a tax imposed under section 4996 equal to the crude oil per capita payment, multiplied by each exemption provided by subsections (b) and (e) of section 151 for which the taxpayer is allowed a deduction for such taxable year.

"(b) TAX REBATE.—The Secretary, in consultation with the Federal Energy Administrator, shall publish in the Federal Register the amount of the crude oil per capita pay-

ment for each year. The Secretary shall determine the per capita payment based on estimated revenues to be derived from the tax imposed under section 4996 during the taxable year reduced by (1) the anticipated revenue loss from business deductions for the tax imposed by section 4996 allowable under this title, and (2) anticipated payments under section 6431. The per capita payment shall reflect the administrative costs incurred in connection with the per capita payment.

"(c) LIMITATION BASED ON AMOUNT OF TAX.—

"(1) IN GENERAL.—The amount treated as paid by reason of this section shall not exceed the amount of the taxpayer's liability for tax imposed by chapter 1 (unreduced by any credits) for the taxable year.

"(2) REFUND MADE TO CERTAIN TAXPAYERS.—Paragraph (1) shall not apply to any individual who—

"(A) is entitled to a credit under section 43 (relating to credit for earned income), or

"(B) (i) has a dependent child who lived with such individual,

"(ii) has earned income, and

"(iii) if married, filed a joint return.

For purposes of subparagraph (B) (ii), the term 'earned income' has the meaning given to such term by section 43 (c) (2), except that 'self-employment income (as defined

in section 1402 (b) )' shall be substituted for 'net earnings from self-employment' in clause (ii) of section 43 (c) (2) (A).

"(d) DATE PAYMENT DEEMED MADE.—The payment provided by this section shall be deemed made on whichever of the following dates is the later:

"(1) the date prescribed by law (determined without extensions) for filing the return of tax under chapter 1 for the taxable year, or

"(2) the date on which the taxpayer files his return of tax under chapter 1 for the taxable year.

"(e) CERTAIN PERSONS NOT ELIGIBLE.—This section shall not apply to any estate or trust, nor shall it apply to any nonresident alien individual."

(b) TECHNICAL AMENDMENT.—Subpart A of part IV of chapter 1 (relating to credits allowable) is amended by inserting after section 33 the following new section:

"SEC. 34. For credit against the tax imposed by this chapter allowed for crude oil equalization tax, see section 6432."

(c) CLERICAL AMENDMENT.—The table of sections for subchapter B of chapter 65 is amended by adding at the end thereof the following new item:

"Sec. 6432. Per Capita Payment of Crude Oil Equalization Tax Receipts."

(d) EFFECTIVE DATE.—The amendments made by this section shall take effect on January 1, 1978.

**SEC. 1404. ENERGY PAYMENT TO RECIPIENTS OF BENEFITS UNDER CERTAIN RETIREMENT AND SURVIVOR BENEFIT PROGRAMS.**

(a) PAYMENT.—In the month of September 1979, and in each successive September, the Secretary of the Treasury shall make an energy payment in an amount equal to the per capita payment of crude oil equalization tax receipts determined under section 6432 (relating to per capita payment of crude oil equalization tax receipts) and under section 6430 (relating to per capita payment of standby gasoline tax receipts) if applicable. The per capita payment is to be made to each individual who—

(1) is a resident of the United States, and for the immediately preceding June, was entitled (without regard to sections 202(j)(1) and 223(b) of the Social Security Act, and section 5(a)(ii) of the Railroad Retirement Act of 1974) to a benefit (other than a lump sum death payment) payable by the United States under title II or title XVI of the Social Security Act, the Railroad Retirement Acts of 1935, 1937, or 1974;

(2) to whom a check was issued as payment of such benefit prior to September 1, 1979, with respect to calendar year 1979, and prior to each succeeding

September 1 with respect to each calendar year succeeding calendar year 1979; and

(3) who, by reason of insufficient taxable income, is unable to claim any portion of the energy payment credit (as provided by section 1222 of the National Energy Act) for his most recent taxable year ending prior to January 1 preceding such month of entitlement.

(b) For the purpose of facilitating the energy payment provided by subsection (a), the Secretary of Health, Education, and Welfare shall, prior to July 30, 1979, with respect to calendar year 1979, and prior to each succeeding July 30 with respect to each calendar year succeeding calendar year 1979, provide to the Secretary of the Treasury the name, address, and social security number of each individual who was entitled to receive, with respect to the immediately preceding month, a benefit payable by the United States described in subsection (a). The Secretary of the Treasury shall reimburse the Secretary of Health, Education, and Welfare for his administrative costs under this subsection.

**SEC. 1405. ENERGY PAYMENT TO RECIPIENTS OF AID TO FAMILIES WITH DEPENDENT CHILDREN UNDER APPROVED STATE PLANS.**

(a) PAYMENT.—Every State (as defined in section 1101(a) of the Social Security Act) which has in effect a plan for aid and services to needy families with children

approved under section 402 (a) of such Act, shall, at the earliest practicable date, beginning in 1979 and each year thereafter make an energy payment in amount equal to the per capita payment of crude oil equalization tax receipts determined under section 6432 (relating to per capita payment of crude oil equalization tax receipts) and under section 6430 (relating to per capita payment of standby gasoline tax receipts) if applicable, to each individual who is a resident of the United States and who received aid to families with dependent children as a child or relative under such plan prior to September 1, 1979, with respect to calendar year 1979, and prior to each succeeding September 1 with respect to each calendar year succeeding calendar year 1979.

(b) FULL FEDERAL REIMBURSEMENT OF STATE COSTS.—The Secretary of the Treasury shall pay to each State by way of reimbursement the full amount of all payments made by such State under subsection (a), plus an additional sum, as compensation for the administrative costs incurred in connection with such payment, equal to the product of 75 cents multiplied by the number of people receiving payments.

SEC. 1406. SPECIAL ENERGY PAYMENTS.

(a) PAYMENTS.—Every State (or the District of Columbia) at the earliest practicable date beginning in 1979 and each year thereafter make an energy payment in an

amount equal to the per capita payment of crude oil equalization tax receipts determined under section 6432 (relating to per capita payment of crude oil equalization tax receipts) and under section 6430(b) (relating to per capita payment of standby gasoline tax receipts) if applicable, to each individual who is a resident of the United States and his dependents if such individual filed with the appropriate agency after September 30 of such year a form stating that such individual—

(A) did not receive a payment during the year pursuant to section 1405 of the National Energy Act,

(B) did not have taxable income in such year, and

(C) was not claimed as a dependent by another taxpayer (in the case of a student, the social security number of the parents is to be provided).

Such individual shall also indicate on such form the names of the dependents (and their social security numbers) claimed by him. The Governor of each State, and the Mayor in the case of the District of Columbia, shall designate the agency responsible for making such payments.

(b) FULL FEDERAL REIMBURSEMENT OF STATE COSTS.—The Secretary of the Treasury shall pay to each State by way of reimbursement the full amount of all payments made by such State under subsection (a), plus an

additional sum, as compensation for the administrative costs incurred in connection with such payment, equal to the product of 75 cents multiplied by the number of people receiving payments.

**SEC. 1407. PER CAPITA REBATE DISREGARDED IN THE ADMINISTRATION OF FEDERAL PROGRAMS AND FEDERALLY ASSISTED PROGRAMS.**

Any payment considered to have been made by any individual by reason of section 6430 (relating to per capita payment of standby gasoline tax receipts) and section 6432 (relating to per capita payment of crude oil equalization tax receipts), and payments made by reason of sections 1404, 1405, and 1406 of the National Energy Act shall not be regarded as income of such individual (or of the family of which he is a member) for purposes of any Federal, State, or local program which undertakes to furnish aid or assistance to individuals or families, where eligibility to receive such aid or assistance (or the amount of such aid or assistance) under such program is based on the need therefor of the individual or family involved. The requirement imposed by the preceding sentence shall be treated as a condition for Federal financial participation in any such State or local program of aid or assistance.

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**SEC. 1408. PER CAPITA REBATE NOT TO BE CONSIDERED INCOME OR A REDUCTION IN FEDERAL INCOME TAXES UNDER STATE LAW.**

Payments considered to have been made by reason of section 6430 (relating to per capita payment of standby gasoline tax receipts) and section 6432 (relating to per capita payment of crude oil equalization tax receipts) and payments made by reason of sections 1404, 1405, and 1406 of the National Energy Act shall not be considered as gross income for purposes of such Code, and shall not be considered as income or a reduction in tax imposed by subtitle A of such Code for purposes of any law of any State (or the District of Columbia) relating to the taxation of income.

**SEC. 1409. WITHHOLDING TAX.**

Subsection (a) of section 3401 (relating to income tax collected at source) is amended to read as follows:

"(a) REQUIREMENT OF WITHHOLDING.—Except as otherwise provided in this section, every employer making payment of wages shall deduct and withhold upon such wages a tax determined in accordance with tables prescribed by the Secretary. With respect to wages paid after December 31, 1978, the tables so prescribed shall be the same as the tables prescribed under this subsection which were in effect on January 1, 1976, except that such tables will be

modified to the extent necessary to reflect the amendment made by section 1403 of the National Energy Act (relating to per capita payment of crude oil equalization tax receipts) and further modified if a payment under section 1222 of such Act (relating to per capita payment of standby gasoline tax receipts) is required. For purposes of applying such tables, the term 'amount of wages' means the amount by which the wages exceed the number of withholding exemptions claimed, multiplied by the amount of one such exemption as shown in the table prescribed under subsection (b) (1).".

## PART E—OIL AND GAS CONSUMPTION TAXES

### SEC. 1501. OIL AND GAS CONSUMPTION TAXES.

(a) GENERAL RULE.—Subtitle D (relating to miscellaneous excise taxes) is amended by adding at the end thereof the following new chapter:

## "CHAPTER 45—OIL AND GAS CONSUMPTION TAXES

"Sec. 4991. Oil consumption tax.
"Sec. 4992. Natural gas consumption tax.
"Sec. 4993. Exemptions.

### "SEC. 4991. OIL CONSUMPTION TAX.

"(a) IMPOSITION OF TAX ON UTILITY USE.—A tax is hereby imposed on any taxable electric utility use of petroleum during each calendar year after calendar year 1982 of 25 cents per million British thermal units (hereafter in

this section referred to as 'Btu') used, plus the inflation adjustment pursuant to subsection (c) (5) as applied by the Secretary for the last calendar quarter preceding the year in which the tax liability is incurred.

"(b) IMPOSITION OF TAX ON OTHER USES.—A tax is hereby imposed on any taxable use of petroleum (other than a taxable electric utility use) during each calendar year after 1978 in an amount per million Btu's used, determined in accordance with the following table and increased by the inflation adjustment pursuant to subsection (c) (5):

| "If the taxable use occurs— | Tax in dollars per million Btu's is: |
|---|---|
| In 1979 | $0.15 |
| In 1980 | .30 |
| In 1981 | .30 |
| In 1982 | .35 |
| In 1983 | .40 |
| In 1984 | .45 |
| In 1985 | .50 |
| After 1985 | .50 |

"(c) DEFINITIONS.—For purposes of this section—

"(1) TAXABLE USE.—(A) The term 'taxable use' means any use of petroleum or petroleum and natural gas by a person in any trade or business during

the calendar year determined in accordance with the following table:

| "If total petroleum and natural gas use (in billions of Btu's) is— | Taxable use (in billions of Btu's) is— |
|---|---|
| Not more than 500 | 0. |
| At least 500 but not more than 600 | 0, plus 60% of use over 500. |
| At least 600 but not more than 700 | 60, plus 80% of use over 600. |
| At least 700 but not more than 800 | 140, plus 100% of use over 700. |
| At least 800 but not more than 900 | 240, plus 120% of use over 800. |
| At least 900 but not more than 1,000 | 360, plus 140% of use over 900. |
| At least 1,000 but not more than 1,100 | 500, plus 160% of use over 1,000. |
| At least 1,100 but not more than 1,200 | 660, plus 180% of use over 1,100. |
| At least 1,200 but not more than 1,300 | 840, plus 200% of use over 1,200. |
| At least 1,300 but not more than 1,400 | 1,040, plus 220% of use over 1,300. |
| At least 1,400 but not more than 1,500 | 1,260, plus 240% of use over 1,400. |
| At least 1,500 or more | All use. |

"(B) For purposes of determining taxable use under this paragraph, a component member of a controlled group shall be treated as using the petroleum and natural gas used by all component members of such controlled group. The term 'controlled group' for purposes of this paragraph has the meaning by section 1563 except that in applying such section '50 percent' shall be used in lieu of '80 percent'.

"(C) In the case of a user of both natural gas and petroleum, only that portion of taxable use (as determined under subparagraph (A)) which bears the same ratio to taxable use as such user's total use of petroleum bears to his total petroleum and natural gas use shall be subject to the tax imposed by this section.

"(2) TAXABLE ELECTRIC UTILITY USE.—The term 'taxable electric utility use' means taxable use of petroleum by an electric utility for the purpose of generating electric energy.

"(3) PETROLEUM.—The term 'petroleum' means crude oil, residual fuel oil, refined petroleum products and natural gas liquids (other than lubricating oils, greases, waxes, petroleum coke, pitch, asphalt, and related products as described in regulations prescribed by the Secretary, and natural gas as defined in section 4992(c)(2)).

"(4) ELECTRIC UTILITY.—The term 'electric utility' means any person engaged in the business of sale or exchange of electric energy, or a qualifying cogenerator (as defined in section 522(b)(3) of the National Energy Act).

"(5) INFLATION ADJUSTMENT.—The term 'inflation adjustment' means the first revision of the quarterly percent change, seasonally adjusted at annual rates, of

the most recent implicit price deflator for the gross national product. Such adjustment shall be computed and published for each calendar quarter by the Department of Commerce.

"(d) NO DEDUCTION.—No deduction shall be allowed under this title for any amount of tax imposed by this section which is treated as having been paid under section 6431(a).

"(e) BTU CONTENT.—The Secretary shall by regulation establish standard Btu content per barrel for the various types and grades of petroleum.

**"SEC. 4992. NATURAL GAS CONSUMPTION TAX.**

"(a) IMPOSITION OF TAX.—A tax is hereby imposed on any taxable use of natural gas during each calendar year after 1982 in the case of any taxable use by an electric utility, and after 1978 in the case of any other taxable use, in an amount per million British thermal units (hereinafter in this section referred to as 'Btu') used during such year equal to the excess, if any, of—

"(1) the natural gas target price for the calendar year, over

"(2) the user acquisition cost for the calendar year.

"(b) NATURAL GAS TARGET PRICE.—The natural gas target price for the calendar year is an amount equal to the Btu equivalency price for the calendar year adjusted by

subtracting the amount (if any) specified in the following tables less the inflation adjustment pursuant to subsection (e) (5) as applied by the Secretary for the last calendar quarter preceding the year in which the tax liability is incurred.

"Adjustments for Taxable Use by an Electric Utility (in dollars per million Btu's)

| "If the taxable use occurs in calendar year— | The amount subtracted is— |
|---|---|
| 1983 | $0.50 |
| 1984 | .50 |
| 1985 | .50 |
| 1986 | .25 |
| 1987 | .25 |
| 1988 | 0 |
| After calendar year 1988 | 0 |

"Adjustments for Any Other Taxable Use (in dollars per million Btu's)

| "If the taxable use occurs— | The amount subtracted is— |
|---|---|
| In 1979 | $1.05 |
| In 1980 | .40 |
| In 1981 | .35 |
| In 1982 | .25 |
| In 1983 | .20 |
| In 1984 | .15 |
| In 1985 | 0 |
| After calendar year 1985 | 0 |

"(c) USER ACQUISITION COST.—

"(1) IN GENERAL.—Except as provided in paragraph (2), the user acquisition cost for the calendar year is the aggregate amount paid by a person for natural gas for a taxable use during the calendar year divided by the number of Btu's so used.

"(2) SPECIAL RULES FOR CERTAIN USES.—In the case of natural gas used by the producer thereof or by any person who is a member of the same affiliated group (within the meaning of section 1504) as such producer, the user acquisition cost shall be deemed to be an amount equal to the maximum lawful price (or special price) applicable to such natural gas under part D of title II of the National Energy Act (or which would be applicable if such natural gas were sold, in the case of natural gas which is not sold by the producer thereof) including reasonable transportation costs, if any.

"(d) LIABILITY FOR TAX.—The tax imposed by this section shall be paid on or before June 30 of the succeeding calendar year by the natural gas user.

"(e) DEFINITIONS.—For purposes of this section—

"(1) TAXABLE USE.—(A) The term 'taxable use' means any use of natural gas or natural gas and petroleum by a person in any trade or business during

the preceding calendar year determined in accordance with the following table:

| "If total petroleum and natural gas use (in billions of Btu's) is— | Taxable use (in billions of Btu's) is— |
|---|---|
| Not more than 500 | 0. |
| At least 500 but not more than 600 | 0, plus 60% of use over 500. |
| At least 600 but not more than 700 | 60, plus 80% of use over 600. |
| At least 700 but not more than 800 | 140, plus 100% of use over 700. |
| At least 800 but not more than 900 | 240, plus 120% of use over 800. |
| At least 900 but not more than 1,000 | 360, plus 140% of use over 900. |
| At least 1,000 but not more than 1,100 | 500, plus 160% of use over 1,000. |
| At least 1,100 but not more than 1,200 | 660, plus 180% of use over 1,100. |
| At least 1,200 but not more than 1,300 | 840, plus 200% of use over 1,200. |
| At least 1,300 but not more than 1,400 | 1,040, plus 220% of use over 1,300. |
| At least 1,400 but not more than 1,500 | 1,260, plus 240% of use over 1,400. |
| At least 1,500 or more | All use. |

"(B) For purposes of determining taxable use under this paragraph, a component member of a controlled group shall be treated as using the natural gas and petroleum used by all component members of such controlled group. The term 'controlled group' for purposes of this paragraph has the meaning provided by section 1563 except that in applying such section '50 percent' shall be used in lieu of '80 percent'.

"(C) In the case of a user of both natural gas and petroleum, only that portion of taxable use (as deter-

mined under subparagraph (A)) which bears the same ratio to taxable use as such user's total use of natural gas bears to his total petroleum and natural gas use shall be subject to the tax imposed by this section.

"(2) NATURAL GAS.—The term 'natural gas' means all petroleum or natural gas or products thereof, with API gravity of 110 or more and heat content of 500 Btu's or more per standard cubic foot.

"(3) BTU EQUIVALENCY PRICE.—The term 'Btu equivalency price' for the calendar year means, in the case of a taxable use of natural gas, the average regional price according to Petroleum Administration for Defense Districts of all numbered 2 grade distillate oil sold for all taxable use (as defined in section 4991(c)(1)) in the District in which such gas is used during the calendar year, as determined by March 31 of the succeeding calendar year by the Administrator of the Federal Energy Administration. Such price shall be determined without regard to tax paid under section 4991.

"(4) ELECTRIC UTILITY.—The term 'electric utility' means any person engaged in the business of sale or exchange of electric energy, or a qualifying cogenerator (as defined in section 522(b)(3) of the National Energy Act).

"(5) INFLATION ADJUSTMENT.—The term 'inflation adjustment' means the first version of the quarterly percent seasonally adjusted at annual rates, of the most recent implicit price deflator for the gross national product. Such adjustment shall be computed and published for each calendar quarter by the Department of Commerce.

"(f) NO DEDUCTION.—No deduction shall be allowed under this title for any amount of tax imposed by this section which is treated as having been paid under section 6431(a).

**"SEC. 4993. EXEMPTIONS.**

"(a) EXEMPTED FUELS.—The taxes imposed by this chapter shall not apply—

"(1) to any petroleum taxable under chapter 31 or 32, or

"(2) to any petroleum which would be taxed under either such chapter but for section 4221(a)(3).

"(b) EXEMPTED USES.—The taxes imposed by this chapter shall not apply to—

"(1) use in any aircraft,

"(2) use for purposes of rail or water transportation,

"(3) use on a farm for farming purposes (within

the meaning of section 6420(c)), and any drying of grains and feed grasses or irrigation pumping,

"(4) use for production of anhydrous ammonia or ammonia liquor (except use of natural gas as fuel),

"(5) use of petroleum or natural gas (other than as a fuel) by a refinery or natural gas processing plant to produce refined petroleum products, or

"(6) natural gas reinjected for repressuring or cycling use, natural gas used at the point of consumption which is not practically marketable.".

(b) CONFORMING AMENDMENT.—Section 162 (relating to trade or business expenses) is amended by adding a new subparagraph (3) at the end of subsection (h), to read as follows:

**"(3) For special rule relating to amounts treated as payment of a tax imposed by chapter 45, see sections 4991 and 4992.".**

(c) CLERICAL AMENDMENT.—The table of sections for subtitle D is amended by adding at the end thereof the following new item:

"CHAPTER. 45. Oil and Natural Gas Consumption Taxes.
"Sec. 4991. Oil consumption tax.
"Sec. 4992. Natural gas consumption tax.
"Sec. 4993. Exemptions.".

(d) EFFECTIVE DATE.—The amendments made by this section apply to taxable uses after December 31, 1977.

**SEC. 1502. INDUSTRIAL OIL AND GAS CONSERVATION REBATE.**

(a) GENERAL RULE.—Subchapter B of chapter 65 (relating to rules and special application in the case of abatements, credits and refunds) is amended by adding at the end thereof the following section:

**"SEC. 6431. INDUSTRIAL OIL AND GAS CONSERVATION REBATE.**

"(a) IN GENERAL.—If this section applies, any person other than an electric utility shall be treated as having made a payment against the taxes imposed by chapter 45 for the calendar year in an amount equal to its investment made after December 31, 1977, during the calendar year in alternative energy property. For purposes of this subsection, an investment in alternative energy property by a component member of a controlled group shall be treated as an investment by all of the component members of such controlled group. The term 'controlled group' for purposes of this subsection has the meaning provided by section 1563 except that in applying such section, '50 percent' shall be used in lieu of '80 percent'.

"(b) ELECTION OF REBATE.—This section shall apply if an election is made at the time the person first credits against the tax expenditures for alternative energy property under regulations prescribed by the Secretary.

"(c) INVESTMENT CARRYOVER.—The excess, if any, of the amount of an investment during the calendar year made by a person other than an electric utility over the taxes imposed by chapter 45 on such person for the calendar year shall be carried over to the next succeeding calendar year. An amount so carried over shall be treated as an investment made by such person in alternative energy property during such succeeding calendar year.

"(d) DEFINITIONS.—For purposes of this section—

"(1) ELECTRIC UTILITY.—The term 'electric utility' has the meaning prescribed by section 4991 (c) (4).

"(2) ALTERNATIVE ENERGY PROPERTY.—The term 'alternative energy property' means the following property—

"(A) coal-fired boilers;

"(B) boilers whose primary fuels will not be petroleum or natural gas;

"(C) facilities for the conversion of coal into synthetic natural gas having a heat content of 500 Btu's per standard cubic foot or less;

"(D) equipment for the burning of coal in combustors other than boilers including only equipment used to supply coal to a burner, and the burner;

"(E) pollution control equipment required to be installed on equipment (described in subparagraph (D)) by local, State, or Federal regulations, except equipment required to be installed under regulations in effect on April 20, 1977, relating to combustors currently using coal; and

"(F) equipment used for the unloading, transfer, storage, reclaiming from storage, and preparation of coal, including washing, crushing, drying, and weighing at the point of use for use for installations described in this paragraph and at facilities where coal is used as a feedstock for manufacture of chemicals or other products except coke.

For purposes of this paragraph, costs of buildings which house such equipment, costs of preparing plans and designs for equipment and facilities except as described in subparagraphs (A) through (F), and costs of preparing sites for facilities, such as demolition and grading, shall not be allowable costs under this section.

"(3) INVESTMENT.—The term 'investment' means the costs paid or incurred by a person in installing alternative energy property including the costs of engineering and designing, purchasing or manufacturing for own use, transporting, assembling, and installing such equipment.

"(e) DATE PAYMENT DEEMED MADE.—The payment provided by this section shall be deemed made on whichever of the following dates is the later:

"(1) the date prescribed by law (determined without extensions) for filing the return of taxes imposed by chapter 45 for the taxable year, or

"(2) the date on which such return of tax is actually filed for the taxable year.".

(b) CONFORMING AMENDMENTS.—

(1) Section 46(d)(3) (relating to the definition of qualified progress expenditures) is amended by striking out "In the case" in subparagraphs (A) and (B) and inserting in lieu thereof "Except as provided in subparagraph (C), in the case" and by adding a new subparagraph (C) to read as follows:

"(C) If an amount described in subparagraph (A) or (B) is treated, by reason of section 6431(a), as being a payment of any tax imposed by chapter 45, only 50 percent of such amount shall be a qualified progress expenditure.".

(2) Subsection (a) of section 1016 (relating to adjustments to basis) is amended by inserting a semicolon in lieu of the period at the end of paragraph (23)

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and by adding a new paragraph (24) to read as follows:

"(24) to the extent provided in section 6431 (f) in the case of property to which an election under subsection (b) of section 6431 (relating to oil and gas conservation rebates) applies.".

(c) CLERICAL AMENDMENT.—The table of sections for subchapter B of chapter 65 is amended by adding at the end thereof the following new item:

"Sec. 6431. Industrial oil and gas conservation rebate."

(d) EFFECTIVE DATE.—The amendments made by this section apply for calendar years ending after December 31, 1977.

**SEC. 1503. UTILITY OIL AND GAS CONSERVATION REBATE.**

(a) GENERAL RULE.—Subchapter B of chapter 65 (relating to rules and special application in the case of abatements, credits and refunds) is amended by adding at the end thereof the following section:

**"SEC. 6432. UTILITY OIL AND GAS CONSERVATION REBATE.**

"(a) IN GENERAL.—There shall be credited against the tax imposed pursuant to sections 4991 (a) and 4992 (a) expenditures by an electric utility for qualified replacement investments made after April 20, 1977.

"(b) ELECTION OF REBATE.—This section shall apply if an election is made at the time the electric utility first credits against the tax expenditures for qualified replacement investments under regulations prescribed by the Secretary.

"(c) DEFINITIONS.—For purposes of this section—

"(1) ELECTRIC UTILITY.—The term 'electric utility' has the meaning provided in section 4991(c)(4).

"(2) QUALIFIED REPLACEMENT INVESTMENTS.—The term 'qualified replacement investment' means the costs paid or incurred by an electric utility for engineering, designing, purchasing, transporting, assembling and installing electrical generating property with a capacity for using coal or other fuel to replace electrical generation property with a capacity for using petroleum or natural gas (other than for startup, testing and flame stabilization). In prescribing the regulations under this paragraph, the Secretary shall consult with the Administrator of the Federal Energy Administration.

"(3) COAL OR OTHER FUEL.—The term 'coal or other fuel' has the meaning provided by section 102(5) of the Energy Supply and Environmental Coordination Act of 1974 as amended by the National Energy Act.".

## PART F—ENERGY DEVELOPMENT TAX INCENTIVES

SEC. 1601. GEOTHERMAL TAX INCENTIVE.

(a) Section 263 (c) (relating to deduction for intangible drilling and development costs in the case of oil and gas wells) is amended—

(1) by adding at the end thereof the following new sentence: "Such regulations shall also grant the option to deduct as expenses intangible drilling and development costs in the case of wells drilled for geothermal steam and geothermal resources, as defined in section 2 (c) of the Geothermal Steam Act of 1970 (30 U.S.C. 1001), to the same extent and in the same manner as such expenses are deductible in the case of oil and gas wells.", and

(2) by amending the caption of such section to read as follows:

"(c) INTANGIBLE DRILLING AND DEVELOPMENT COSTS IN THE CASE OF OIL AND GAS WELLS AND GEOTHERMAL WELLS.—".

(b) The amendments made by subsection (a) shall apply with respect to wells commenced after April 20, 1977.

**SEC. 1602. GAIN FROM DISPOSITION OF INTEREST IN GEOTHERMAL WELLS.**

(a) GENERAL RULE.—Section 1254 (relating to gain from disposition of interest in oil or gas property) is amended—

(1) by striking out the caption and inserting in lieu thereof

**"SEC. 1254. GAIN FROM DISPOSITION OF INTEREST IN OIL, GAS, OR GEOTHERMAL PROPERTY.";**

(2) by striking out the caption "GENERAL RULE.—" in subsection (a) and inserting in lieu thereof "GENERAL RULE FOR OIL OR GAS PROPERTY.—";

(3) by redesignating subsection (b) as subsection (c); and

(4) by adding the following new subsection at the end of subsection (a):

"(b) GENERAL RULE FOR GEOTHERMAL WELLS.—

"(1) ORDINARY INCOME.—If a geothermal well is disposed of after April 20, 1977, the lower of—

"(A) the aggregate amount of expenditures after December 31, 1976, which are allocable to such well and which have been deducted as intan-

gible drilling and development costs under section 263(c) by the taxpayer or any other person and which (but for being so deducted) would be reflected in the adjusted basis of such property, adjusted as provided in paragraph (4), or

"(B) the excess of—

"(i) the amount realized (in the case of a sale, exchange of involuntary conversion), or the fair market value of the interest (in the case of any other disposition), over

"(ii) the adjusted basis of such interest, shall be treated as gain which is ordinary income. Such gain shall be recognized notwithstanding any other provision of this subtitle.

"(2) DISPOSITION OF PORTION OF WELL.—For purposes of paragraph (1)—

"(A) In the case of the disposition of a portion of a geothermal well (other than an undivided interest), the entire amount of the aggregate expenditures described in paragraph (1)(A) with respect to such well shall be treated as allocable to such portion to the extent of the amount of the gain to which paragraph (1) applies.

"(B) In the case of the disposition of an undivided interest in a geothermal well (or a por-

tion thereof), a proportionate part of the expenditures described in paragraph (1) (A) with respect to such well shall be treated as allocable to such undivided interest to the extent of the amount of the gain to which paragraph (1) applies.

This paragraph shall not apply to any expenditures to the extent the taxpayer establishes to the satisfaction of the Secretary that such expenditures do not relate to the portion (or interest therein) disposed of.

"(3) GEOTHERMAL WELL.—The term 'geothermal well' means any well (within the meaning of section 263 (c)) with respect to which any expenditures described in paragraph (1) (A) are properly chargeable.

"(4) SPECIAL RULE FOR PARAGRAPH (1)(A).—In applying paragraph (1) (A), the amount deducted for intangible drilling and development costs and allocable to the interest disposed of shall be reduced by the amount (if any) by which the deduction, had such costs paid or incurred (after April 20, 1977) been capitalized and ratably amortized over the 120-month period beginning with the month in which production from such well begins, would have been increased had such costs been charged to capital account rather than deducted under section 263 (c).".

(b) TECHNICAL AMENDMENTS.—

(1) Section 751 (c) (relating to definition of unrealized receivables) is amended by striking out "and an oil or gas property (described in section 1254)" and inserting in lieu thereof "and an oil, gas, or geothermal property (described in section 1254)", and by striking out "or 1254 (a)" and inserting in lieu thereof "or 1254 (a) or (b)".

(2) Section (c) (3) of section 205 of the Tax Reform Act of 1976 is amended by striking out "section 163 (d) (3) (A) (iii)" and inserting in lieu thereof "section 163 (d) (3) (B) (iii)".

(c) CLERICAL AMENDMENT.—The table of sections for part IV of subchapter P of chapter 1 is amended by striking out the item relating to section 1254 and inserting in lieu thereof the following new item:

"Sec. 1254. Gain from disposition of interest in oil, gas, or geothermal property.".

(d) EFFECTIVE DATE.—The amendments made by subsections (a) and (c) shall apply with respect to taxable years ending after April 20, 1977. The amendment made by subsection (b) shall apply with respect to taxable years ending after December 31, 1975.

**SEC. 1603. MINIMUM TAX TREATMENT OF INTANGIBLE DRILLING EXPENSES RELATING TO OIL AND GAS WELLS.**

(a) Section 57 (a) (11) (relating to items of tax preference) is amended to read as follows:

"(11) INTANGIBLE DRILLING COSTS RELATING TO OIL AND GAS WELLS.—With respect to all interest of the taxpayer in oil and gas wells, the excess of—

"(A) the excess of the intangible drilling and development costs described in section 263 (c) paid or incurred in connection with oil and gas wells (other than costs incurred in drilling a nonproductive well) allowable under this chapter for the taxable year over the amount which would have been allowable for the taxable year if such costs had been capitalized and straight line recovery of intangibles (as defined in subsection (d)) had been used with respect to such costs, over

"(B) the aggregate amount of net income received or accrued by the taxpayer during such taxable year attributable to such interests. For purposes of this subparagraph, the term 'net income' means

the excess of the aggregate amount of gross income from oil and gas properties over the sum of—

"(i) the amount of any deductions (other than the amount of any excess intangible drilling and development costs, as determined under subparagraph (A), allowable for such taxable year) allocable to such properties, and

"(ii) the amount of taxes imposed under this section (determined without regard to this part) allocable to such properties.".

(b) The amendment made by subsection (a) shall apply to taxable years beginning after December 31, 1976.

**SEC. 1604. MINIMUM TAX TREATMENT OF INTANGIBLE DRILLING EXPENSES RELATING TO GEOTHERMAL WELLS.**

(a) Section 57 (a) (relating to items of tax preference) is amended by striking out the matter after paragraph (11) and inserting thereof the following:

"(12) INTANGIBLE DRILLING COSTS RELATING TO GEOTHERMAL WELLS.—With respect to all interest of the taxpayer in geothermal wells, the excess of—

"(A) the excess of the intangible drilling and development costs described in section 263 (c) paid or incurred in connection with geothermal wells (other than costs incurred in drilling a nonproduc-

tive well) allowable under this chapter for the taxable year which exceeds the amount which would have been allowable for the taxable year if such costs had been capitalized and ratably amortized over the 120-month period beginning with the month in which production from such well begins, over

"(B) the aggregate amount of net income received or accrued by the taxpayer during such taxable year attributable to such interests. For purposes of this subparagraph, the term "net income" means the excess of the aggregate amount of income from geothermal properties over the sum of—

"(i) the amount of any deductions (other than the amount of any excess intangible drilling and development costs, as determined under subparagraph (A), allowable for such taxable year) allocable to such properties, and

"(ii) the amount of taxes imposed under this section (determined without regard to this part) allocable to such properties.

Paragraphs (1), (3), (11), and (12) shall not apply to a corporation.".

(b) The amendment made by subsection (a) shall apply to expenses paid or incurred after April 20, 1977.

THE GENERAL COUNSEL OF THE TREASURY
WASHINGTON, D.C. 20220

JUN 8 - 1977

Dear Mr. Chairman:

Reference is made to your request for the views of this Department on H.R. 6831, the "National Energy Act."

H.R. 6831 is the Administration's plan to establish a comprehensive energy policy. Sections 2 through 4, encompass the findings and goals with respect to the legislation. We are in full accord with the bill's finding that: (1) the nation faces an energy shortage, (2) unless measures are taken to reduce demand, dependence on the world market will grow, increasing vulnerability to interruptions of supply, (3) demand can be reduced through utility rate reform and conversion to coal and other fuels, and (4) the United States must develop inexhaustible energy sources for the long-term.

In response to these findings, the bill would establish the goals of reductions in demand, imports and consumption of oil, insulation of 90 percent of American homes and all new buildings, increase in coal production and use of solar energy in more than two and one-half million homes. We support the goals of the program as proposed in H.R. 6831 and we believe that the provisions of the bill are designed to achieve these goals.

In view of the above, the Department strongly supports this bill and urges favorable consideration of it by your Committee.

The Office of Management and Budget has advised that there is no objection from the standpoint of the Administration's program to the submission of this report to your Committee.

Sincerely yours,

Henry C. Stockell, Jr.
Acting General Counsel

The Honorable
Harley O. Staggers, Chairman
Committee on Interstate
and Foreign Commerce
House of Representatives
Washington, D. C. 20515

Mr. DINGELL. The Chair is particularly glad to recognize two of my friends and colleagues from other committees. Chairman Ashley, of the Ad Hoc Energy Committee, we are pleased you are with us, and Chairman Reuss, of the Banking, Finance and Urban Affairs Committee, with whom I have had the privilege of working on many matters over the years in a number of different committees. We are honored you are with us, and we welcome you and receive you for your participation in our proceedings today.

Gentlemen, do either of you have a comment or statement you would like to make at this time?

Mr. REUSS. Mr. Chairman, I am very happy to participate in this summit meeting. You and I have worked on conservation matters for years, and now we are engaged jointly in what may be the most important of all. It is a pleasure to be here. Thank you.

Mr. DINGELL. It is a privilege to have you here.

The Chair recognizes my friend and colleague from Ohio, Mr. Brown, the senior Republican member of the committee. Mr. Brown?

Mr. BROWN. Thank you very much, Mr. Chairman. As we begin our hearings today, I want to indicate the interest of the Minority in cooperating fully with the chairman and other members of the subcommittee and the administration in the development of a rational, workable national energy policy.

While I pledge my continued cooperation, it is my responsibility to be vigilant in protecting the rights of the Minority in the difficult hearings ahead, as the pressure of time begins to impinge, because the Congress has taken so long to accept the responsibilities of addressing the energy crisis when it was drawn to congressional attention by the previous two Presidents.

This is not the first time that this subcommittee has faced this most difficult issue, and therefore I am under no illusion that the task will be easy or the debate on this program will always be harmonious. I look forward to working for a solution to our energy problem, perhaps the most difficult problem facing the United States today, however, in spite of those drawbacks.

President Carter's proposal has many good aspects, and in several areas, especially with respect to conservation, it does not differ markedly from the similar programs put forward by President Ford. Conservation alone is a reaction, not a positive energy program. Encouragement in production from traditional sources of energy, such as oil and natural gas on which our current economy is based and the development of new sources are just as important as conservation.

Unfortunately, the Carter program is incomplete in that it ignores the need for development of new oil and gas supplies. I anticipate, unless President Carter modifies the program to suggest increased incentives for production, the Minority will have amendments to try to correct this flaw. The program is also flawed in its approach to nuclear power matters and its general lack of commitment to new energy technologies.

With respect to the specific proposals before us today, the public utility energy conservation program, several important policy issues must be addressed, such as should we require utilities to become

financiers for the purchase and installation of energy conservation devices, thus bypassing the traditional lending institutions.

Secondly, is it reasonable to ask utilities to develop expertise in an area not directly related to its historic business undertakings.

Third, what sort of impact will this program have on the traditional energy conservation industries.

Mr. Chairman, I am sure that we can reach satisfactory resolutions of these issues.

Let me state again I look forward to working with the chairman of this subcommittee, the full committee, and the other congressional committees who are represented by at least two chairmen here today.

Thank you, Mr. Chairman.

Mr. DINGELL. The Chair thanks the gentleman.

The Chair requests our panel, starting on their left and my right, to identify themselves across, and then we will recognize you each in that order.

**STATEMENTS OF ROGER F. CARROLL, JR., ASSISTANT COMMISSIONER, OFFICE OF STANDARDS AND QUALITY CONTROL, FEDERAL SUPPLY SERVICE, GENERAL SERVICES ADMINISTRATION; ROBERT F. HEMPHILL, JR., ASSOCIATE ASSISTANT ADMINISTRATOR, OFFICE OF ENERGY CONSERVATION AND ENVIRONMENT, FEDERAL ENERGY ADMINISTRATION; DR. JACK E. SNELL, MANAGER, ENERGY CONSERVATION PROGRAMS, NATIONAL BUREAU OF STANDARDS, DEPARTMENT OF COMMERCE; DR. GORDON T. C. TAYLOR, ACTING CHIEF, DIVISION OF ECONOMIC STUDIES, OFFICE OF POLICY ANALYSIS, FEDERAL POWER COMMISSION; AND MAXINE SAVITZ, PH.D., DIRECTOR, DIVISION OF BUILDINGS AND COMMUNITY SYSTEMS, ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION**

Mr. CARROLL. Mr. Chairman, my name is Roger Carroll. I am the Assistant Commissioner for the Office of Standards and Quality Control.

Mr. DINGELL. Mr. Carroll, we are pleased you are with us.

Mr. HEMPHILL. Mr. Chairman, my name is Robert Hemphill, Director of the Office of Conservation Policy in the Federal Energy Administration.

Mr. DINGELL. We thank you for being here, Mr. Hemphill.

Mr. SNELL. Mr. Chairman, my name is Jack Snell. I am the Manager of Energy Conservation Programs at the National Bureau of Standards.

Mr. DINGELL. Mr. Snell, we are pleased you are here.

Dr. TAYLOR. Mr. Chairman, my name is Gordon T. C. Taylor, Acting Chief of the Division of Economic Studies, Office of Policy Analysis, at the Federal Power Commission.

Mr. DINGELL. We thank you for being here, sir.

Ms. SAVITZ. I am Maxine Savitz, Director of Division of Buildings and Community Systems in the Office of the Asssistant Administrator for Conservation at the Energy Research and Development Administration.

Mr. DINGELL. Ms. Savitz, we are pleased you are here.

I believe we would probably be well served in the interest of time to insert the full statements of each of you in the record and then to recognize you for your comments. I hope that does you no discourtesy, but we proceed under most constrained limits of time. The Chair should make a couple of administrative announcements here that in all save rare instances the Chair will impose a limitation on witnesses of 5 minutes for their presentation but allow unlimited insertions in the record.

The Chair also will advise that we will be submitting questions and requesting information of those who testify under a one-week time limit so that we might proceed rapidly to the printing of the record.

The Chair advises also that members will be recognized for 5 minutes, and it is with regret that the Chair will impose a stern 5-minute limit on members of the committee.

Mr. BROWN. Mr. Chairman, may I also ask one other codicil to the list of requirements that you have laid out for witnesses during these hearings, which will go on for 15 days, and that is when you provide materials to the Chair that they also be provided to the Minority so that we can avoid the time wasted of having duplicates made and gotten to us? Could we work out an arrangement like that?

Mr. DINGELL. If the gentleman from Ohio will see to it that his staff will be in touch with the majority staff, we will see that is done.

With that we are delighted you are all here with us, and the Chair will recognize Mr. Carroll first.

## STATEMENT OF ROGER F. CARROLL, JR.

Mr. CARROLL. Mr. Chairman, and members of the committee, on behalf of the Administrator of General Services Administration, I am very pleased to be with you today to discuss our technical programs in support of establishing the highest level of Federal requirements for thermal insulating material.

The Federal Supply Service has the rsponsibility for the development and management of Federal specifications and standards for the Federal Government.

As part of this responsibility, we maintain three Federal specifications for blanket and loose-fill thermal insulation designed for application in walls and ceilings of residential and other frame-type structures. The three specifications are as follows:

——HH-I-515C-Insulation thermal (loose fill for pneumatic or poured application) cellulosic or wood fiber, dated April 13, 1976;

——HH-I-521E-Insulation blankets, thermal (mineral fiber, for ambient temperatures), dated July 24, 1972;

——HH-I-1030A-Insulation, thermal (mineral fiber, for pneumatic or poured application), dated February 23, 1973.

Federal Specifications HH-I-515C and HH-I-1030A are intended for use in housing and other framed building applications. They are adaptable to wood joist, rafters, and stud construction. The materials are furnished in a loose fill form and can be pneumatically blown or poured into place.

Federal Specification HH-I-521E is also intended for use in housing and other framed building applications. This material is furnished in blanket form with or without vapor barriers. The material is supplied in various roll lengths.

The three Federal specifications are presently under revision in order to specify or reference the latest technical data for physical properties and testing methods.

These documents are essentially performance oriented, requiring manufacturers to comply with thermal conductance criteria and physical property requirements of the specifications.

The Federal specifications make maximum use of available voluntary industry standards; namely, the American Society for Testing and Materials. On our revisions to these specifications, we are working closely with the Energy Research and Development Administration, industry associations, individual manufacturers, and the technical committees of ASTM responsible for this technical area.

At the present time, the Federal specifications require the highest degree of thermal performance available in the marketplace for these types of materials. However, recent testing by ERDA of standard commercial materials, covered by the aforementioned specifications, have disclosed that all the physical property requirements cited are not being consistently and uniformly met by the industry. Our current efforts, again in conjunction with ERDA and the industry, are aimed at refining the physical property requirements in order that state-of-the-art processes can be used, including the use of reclaimed material, without degrading the thermal performance or impairing the desired safeguards against the effects of water absorption, flammability, and corrosion characteristics of the materials used in manufacturing.

We are optimistic that the problems related to these physical characteristics will be resolved in the very near future.

This concludes my prepared statement. I would be pleased to answer any questions you might have.

Mr. DINGELL. Mr. Carroll, with regard to the last point raised, where you referred to the problems of safeguards with regard to inflammability and the materials meeting the qualities they are supposed to have, would you please submit to us a statement of what additional authority GSA needs in assuring that this matter be properly addressed.

Mr. CARROLL. Mr. Chairman, we need no additional authority to change our specifications. We must work with the manufacturers.

Mr. DINGELL. I am talking about authorities to level at the manufacturers in connection with the matters discussed at the end of your statement. If you need additional authority, we would like to know.

Mr. CARROLL. I know of no additional authority. I think what we are seeing here is the lack of enforcement and the enforcement would be required by the agency ordering the materials and not by GSA.

Mr. DINGELL. Very good.

The Chair recognizes now Mr. Hemphill.

STATEMENT OF ROBERT F. HEMPHILL, JR.

Mr. HEMPHILL. Thank you very much. I would like to briefly outline for the members of this panel the four sets of measures which the President has proposed to deal with energy conservation in residential buildings, specifically in existing residential buildings. Those four proposals are, first, a tax credit; second, some measures defined to make the financial market more open to loans for energy conservation; third, additional money for the low-income weatherization program; and fourth, the utility program, which is the specific subject of this morning's testimony.

First of all, the President has proposed a tax credit of 25 percent of the first $800 and 15 percent of the next $400 for any one of a series of investments made to taxpayer's principal residence between April 20, 1977, and the end of 1984. The credit would be available for insulation, storm windows, furnace modifications, caulking and weatherstripping, and clock thermostats, and must be installed on those homes which were in existence on April 20. That list could be added to by the Secretary of the Treasury.

Second, with regard to making financing more available in the financial markets, the bill which the President has submitted proposes to amend the charter of the Federal National Mortgage Corporation and the Federal Home Loan Mortgage Corporation to give them authority to purchase certain home energy conservation loans unsecured by property on the secondary market in the same manner as they currently purchase mortgage loans. The bill would also modify Federal title 1 loan programs so the utilities would become eligible as lenders.

Third, with regard to the existing low-income weatherization program, which is currently law as part of the Energy Conservation and Production Act of 1976, the present program would be increased from the authorized level of $200 million over 3 years to $585 million over 4 years, with further suggestion that it be extended if it proves to be successful.

Finally, with regard to the utility programs which are the subject of today's hearings, what is proposed in the bill is the following: Working through the mechanism of the State public utilities commissions, except for nonregulated utilities, utilities would, in fact, be required to offer information on cost and savings of the list of conservation measures to all residential customers in their service areas by the first of January 1980. They would be required to offer to arrange to inspect homes and install and finance packages of measures prescribed by FEA to all the customers by the same date.

The utilities would also be required to offer to finance these measures through adding onto the utility bill, using either utility capital or other capital available through other lenders for financing.

Finally, the utility must provide a list of contractors and lenders to people in their service area so the utility would not necessarily monopolize the market for either the home improvement work or the lending.

This program would only apply to utilities selling more than 750 millionkilowatt hours of electricity a year or more than 10 billion cubic feet of gas per year.

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Mr. Chairman, that concludes the summary of my statement, and I will submit the full statement for the record.

[Mr. Hemphill's prepared statement follows:]

STATEMENT OF ROBERT F. HEMPHILL, ASSISTANT ASSOCIATE ADMINISTRATOR, CONSERVATION POLICY, FEDERAL ENERGY ADMINISTRATION

Mr. Chairman and members of the Subcommittee, it is a pleasure to be here to describe in more detail our proposals to encourage energy conservation in residences. I will describe the full scope of our programs, but concentrate on those involving utility companies.

There are 74 million American households, which account for 23 percent of the Nation's energy use, or the equivalent of 8.3 million barrels of oil per day. Of the 74 million units, 49 million are single family, 22 million are multi-family units of all types, and 3 million are mobile homes. Two important facts about energy use in these homes are first that three-quarters of all energy is used for heating, cooling, and water heating, and second that three-quarters is used in single family homes.

The savings potential through conservation investments in residences standing today exceeds the equivalent of 500,000 barrels of oil per day. These savings can be achieved with investments in conservation measures. Further savings could be expected from greater attention by individuals and families to how energy is used. I will describe later the specific measures we propose to promote, but I emphasize the importance of conservation awareness. Temperature settings, equipment maintenance, and actions as simple as opening and closing windows at appropriate times each substantially affect energy use.

The overall goal of our proposals is to bring 90 percent of all residences up to minimum Federal standards by 1985. We believe this can be achieved by providing first, financial incentives to owners and occupants for part or all of their costs of achieving those standards; second, information about the costs and likely savings of a package of conservation measures; and third, financing for all or part of the cost of the investments, over a reasonable term.

The subsidies we propose are threefold. 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 measure 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 measures are spelled out in the proposed legislation, and may be augmented by the Secretary of the Treasury.

In multi-family buildings, we recognize that renters will have only limited incentive to spend money on conservation. Owners of residential buildings of three units or more will be eligible for the business conservation tax credit, which includes commercial and industrial users as well.

Our final subsidy proposal is to augment the Weatherization Program for low-income Americans authorized by the Energy Conservation and Production Act. You will remember that this program covers the full cost of certain insulation materials. Grantees under the Comprehensive Employment and Training Act will be encouraged to provide the labor to install these materials.

With respect to financing, we have proposed legislation that has the potential of making more loan funds available for financing conservation measures. Legal barriers will be eliminated to make it possible for the Federal National Mortgage Corporation and the Federal Home Loan Mortgage Corporation to purchase energy conservation home improvement loans from primary lenders, as they now purchase home mortgages. In addition, the National Housing Act will be amended to allow utilities to qualify as lenders under the Title I Home Improvement Program.

Our program for utilities is designed to make them a convenient source of information about energy conservation and about contracting and financing for their residential customers. Each gas or electric utility will be required to offer their customers a conservation program which meets several Federal requirements. These include provisions that the utility offer by January 1, 1980, (a) to inspect the residence of each customer and provide energy conservation costs and savings information, (b) to arrange to install certain specified conservation measures, and (c) to arrange financing for these investments through additions to utility bills, if desired by the customer. Utilities would be required to provide lists of qualified contractors to their customers, as well as alternative lenders.

The administrative provisions of our proposal are as follows. 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. If a regulatory commission did not submit an adequate plan, the FEA would itself direct utilities to undertake conservation programs. Non-regulated utilities, such as municipal utilities or co-operatives would submit plans for conservation programs directly to FEA for approval. Utilities with sales below a certain level would be exempted from this requirement of the Act.

Certain exemptions would be allowed. Any utility which had inadequate resources to finance conservation, or which was unable 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 program would be just as effective as one which did.

We have chosen utilities to be a focal point for providing information, contracting assistance, and financing. At present, a homeowner faces a bewildering array of information sources, of separate contractors, and of lenders, who must each be contacted in trying to put together a complete conservation package. Of course, many homeowners will want to install measures themselves, since costs are lower. And the utility is not to monopolize home conservation financing. But the utility will be a central source of information about conservation services.

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 describe which of these may be offered to buildings 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.

In addition, our regulations may cover standards for manufacture and installation products. As we undertake to refit American homes on the scale required, there are dangers of fraud in the production, sale, and installation of products. We have proposed two efforts to limit this problem. First, we will develop standards for both the manufacture and installation of materials having a significant potential for fraudulent application. We will, of course, rely on ERDA and NBS for technical support in the development of these standards. Second, State regulatory agencies will be required to carry out a program for preventing unfair or deceptive activities in connection with utility home conservation programs. As other agencies will testify here today, there are not standards, Federal or otherwise, for certain important conservation materials.

We have examined the capacity of the various industries which produce the materials to be installed in homes, and have found that insulation has required particular attention. We have concluded that if a program to insulate homes is spread over the nine-year period we are proposing, there will be adequate incentives for manufactures of all types of insulation to build new facilities to meet increased demand. This conclusion is based on an assessment of the needs for insulation in residences and on information from manufacturers about their ability to construct new facilities.

We have proposed that utilities offer programs to owners and occupants of one and two family residences. Renters would be included in this coverage, and would be eligible for financing and for tax credits. Renters in larger buildings will also be eligible for either the tax credit or for the low-income weatherization program.

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 information and subsidies with the expectation that public response will more than meet our goals. If it becomes apparent 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.

Mr. DINGELL. The committee thanks you for your helpful statement. As the Chair indicated, your full statement will appear in the record.

STATEMENT OF JACK E. SNELL, PH.D.

Mr. SNELL. Thank you, Mr. Chairman. The National Bureau of Standards 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. For example, the National Bureau of Standards, in a 4-bedroom frame townhouse has obtained data showing energy savings from the installation of storm windows of 25 percent and of attic, ceiling, floor and wall insulation of 33 percent. Provision can and should be made within the scope of the proposed program to encourage the use of other available measures, and to stimulate innovation of even more efficient technology for the longer run.

Perhaps the most important aspect in reviewing these proposals is the application of this technology. This requires, and our testimony reviews, the existence of suitable materials and product standards, the existence of measures to assure that marketed products meet these standards, proper installation and quality assurance measures for retrofit materials and products, and, fourth, known or predictable life cycle performance of these measures in use.

The National Bureau of Standards has developed for the Federal Energy Administration and will shortly be submitting for public review and comment criteria for retrofit materials and products based on available standards and experience (NBSIR 75-795).

This document has been made available to members of the committee, and I suggest that you may wish to include it in 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 material standards and practices.

Mr. DINGELL. Mr. Snell, without objection, the document referred to will be inserted in the record at the appropriate place.

Mr. SNELL. Thank you, sir.

Mr. DINGELL. As will your full statement.

Mr. SNELL. Further, with respect to assuring marketed materials meet these standards, the Department of Commerce's National Voluntary Laboratory Accreditation Program will assist industry in meeting its responsibilities. This program will result in the establishment of criteria and procedures for accreditation of testing laboratories within 15 months, and we expect that most testing laboratories in this field could be accredited by the Department of Commerce within 2 years. We are presently exploring possible opportunities for acceleration of this program in helping industry respond responsibly in this critical period of greatly increased demand for their products.

Further, NBS is working with ERDA and others in industry in meeting the needs for installation quality assurance and the continued effectiveness and durability of these measures in their life.

One final comment: In our view the decisions of householders are essential to the effectiveness of this program. They have varied

requirements for data on the need for savings from and alternative options for retrofit. Simplistic prescriptive solutions may not be convincing to them. We are working with HUD, FEA, GSA, ERDA, industry and others in contributing to available literature in meeting these needs.

Sir, that concludes my summary statement.

[Mr. Snell's prepared statement and the document referred to follow:]

U.S. DEPARTMENT OF COMMERCE
WASHINGTON, D.C. 20234

STATEMENT OF JACK E. SNELL
MANAGER, ENERGY CONSERVATION PROGRAMS
INSTITUTE FOR APPLIED TECHNOLOGY, NATIONAL BUREAU OF STANDARDS
BEFORE THE HOUSE ENERGY AND POWER SUBCOMMITTEE
INTERSTATE AND FOREIGN COMMERCE COMMITTEE
ON TITLE I, PART A, SUBPART 1, UTILITY PROGRAM
OF THE NATIONAL ENERGY ACT
MAY 9, 1977

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 and 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.

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 with heat pumps may be desirable.

Technically from a householder's 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, achievment 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 wraper 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.

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 that I believe 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. 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 reinsulation 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 decisionmaking 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 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.

UPDATED DRAFT COPY FOR PUBLIC REVIEW

NBSIR 75-795

# Recommended Criteria for Retrofit Materials and Products Eligible for Tax Credit

Edited by
Walter J. Rossiter, Jr.
Robert G. Mathey

Institute for Applied Technology
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Washington, D.C. 20234

November 1975

Final
(Updated April 1977)

Prepared for
**Federal Energy Administration**
**12th & Pennsylvania Avenue, N.W.**
**Washington, D.C. 20461**

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**UPDATED DRAFT COPY FOR PUBLIC REVIEW**

NBSIR 75-795

# RECOMMENDED CRITERIA FOR RETROFIT MATERIALS AND PRODUCTS ELIGIBLE FOR TAX CREDIT

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**U.S. DEPARTMENT OF COMMERCE, Juanita M. Kreps, *Secretary***
**Dr. Betsy Ancker-Johnson, *Assistant Secretary for Science and Technology***
**NATIONAL BUREAU OF STANDARDS, Ernest Ambler, *Acting Director***

FOREWORD TO UPDATED REPORT 75-795

This draft report is an updated version of the earlier issued report NBSIR 75-795. It is submitted to public industry review to solicit comments and suggestions regarding criteria for materials and products applicable for retrofitting residences to conserve energy. This report together with available information, research results and the response from the industry review will be used as the basis to expand its scope. The revised, expanded report will provide criteria for materials and products which may be promulgated by the Federal Energy Administration as Standards for Weatherization Materials to be used in their weatherization program (PL 94-385, Title IV, Part A, Section 413).

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The editors also express their appreciation to those industrial representatives who provided many useful comments and submitted pertinent product standards and specifications.

## SI CONVERSION UNITS

In view of the present-accepted practice in this country in this technological area, common U.S. units of measurement have been used throughout this paper. In recognition of the position of the U.S.A. as a signatory to the General Conference on Weights and Measures, which gave official status to the metric SI system of units in 1960, we assist readers interested in making use of the coherent system of SI units by giving conversion factors applicable to U.S. units used in this paper.

Length

1 in = 0.0254 meter* (m)
1 ft = 0.3048 meter* (m)

Area

1 $in^2$ = 0.000645 square meter ($m^2$)
1 $ft^2$ = 0.0929 square meter ($m^2$)

Volume

1 $in^3$ = 0.0000164 cubic meter ($m^3$)
1 $ft^3$ = 0.0283 cubic meter ($m^3$)

Mass

1 lb = 0.453 kilogram (kg)

Mass/Volume (Density)

1 $lb/ft^3$ = 16.02 $kilogram/meter^3$ ($kg/m^3$)

Temperature

degree celsius (°C) = 5/9 (°F - 32)

Pressure

1 psi = 6895 pascal (Pa)

Mass/Time (Flow)

1 perm (23°C) = $5.745 \times 10^{-11}$ $kilogram/pascal\ second\ meter^2$ ($kg/Pa \cdot s \cdot m$)

Volume/Time (Flow)

1 cfm = 0.000472 $meter^3/second$ ($m^3/s$)

Velocity

1 mph = 0.447 meter/second (m/s)

Quantity of Heat

1 Btu = 1055.87 joule (J)

Thermal Resistance

1 °F h $ft^2/Btu$ = 0.176 square meter degree celsius/watt ($m^2 \cdot °C/W$)

* exactly.

ABSTRACT

The Federal Energy Administration requested the National Bureau of Standards to develop criteria for retrofitting for possible use by the Internal Revenue Service in implementing the Presidential initiative authorizing tax credit to homeowners. Criteria are recommended for materials and products considered eligible for proposed tax credit for retrofitting one and two family residences to conserve energy. The materials considered include insulation and vapor barriers, storm windows and doors, caulking and weatherstripping, and clock thermostats. A list of these retrofit materials was compiled by generic type and recommendations made on their installation.

In addition to recommended criteria for materials and products eligible for tax credit, desired levels of performance for the retrofit materials are presented as a guide to homeowners to achieve maximum benefits in energy conservation through retrofitting.

# 1. INTRODUCTION

## 1.1 BACKGROUND

In the past homes were usually built to minimize first cost. Energy costs were low and little attention was paid to effective use of energy in homes. Many existing dwellings are inadequately insulated in the ceilings, walls and floors, are without storm windows (double glazing) and doors, and are in need of caulking and weatherstripping around windows and doors. It is estimated that more than 40 million single family residences are inadequate in one or more of these ways and should be considered for retrofitting [1]*. Effective retrofitting of residences could save nearly 20 percent of the energy used for residential heating and cooling in the United States [2]. The term retrofitting, as used here, is the process whereby materials and products are added to existing homes to reduce permanently heating and cooling energy consumption.

The savings in both dollars and energy from effective retrofitting have been discussed in the literature [1-9]. Examples of savings cited from the literature are given in Appendix A. The reports cited show in general that a sound economic basis for retrofitting exists.

## 1.2 TAX CREDIT FOR RETROFITTING

As an incentive for homeowners to retrofit their homes to conserve energy, the President of the United States proposed legislation to Congress that would allow a tax credit on retrofitting. The original proposal called for a credit of 15% of the purchase and installation cost, with a maximum credit of $150.00. To be prepared for the passage of such legislation, the Federal Energy Administration (FEA) requested the National Bureau of Standards (NBS) to recommend the criteria to be used by the Internal Revenue Service (IRS) for considering materials and products eligible for tax credit. Although Congress deleted retrofit tax credit from earlier legislation, it is still possible that this provision may be included in a future federal energy bill.

## 1.3 OBJECTIVES

The objectives of this report are to recommend criteria for retrofit materials and products which may be eligible for proposed tax credit to homeowners; to compile a list of retrofit materials and products by generic type and to indicate areas where they can be used; and to suggest levels of performance for retrofit materials to achieve maximum benefits in energy conservation.

* Figures in brackets indicate references listed in Section 6.

## 1.4 SCOPE OF THE PROJECT

An interdisciplinary team from the National Bureau of Standards, Center for Building Technology, was assembled to conduct the program. The team members included materials specialists, thermal engineers, architects, and fire, safety and building code experts. They identified materials and products which might be suitable for retrofitting. As requested by FEA, the categories of materials and products were limited to insulation, vapor barriers, storm windows and storm doors, caulks and sealants, weatherstripping and clock thermostats. These items are discussed in this report. Other commercially available materials and products which may be suitable for retrofitting are not included in the recommended criteria for tax credit given in Section 2. A list of such products is given in Appendix B. If necessary, criteria for tax credit eligibility could be established in the future for other materials and products that are effective in conserving energy in residences. This report can be updated to include additional items.

A number of industrial trade and manufacturer's associations, as well as individual manufacturers, were asked to participate in the program by NBS. On March 14, 1975, a meeting was held at NBS, Gaithersburg, to explain the purpose of the program to industry representatives. The representatives were requested to aid NBS in compiling the retrofit criteria by submitting relevant literature, standards and specifications. The information they submitted was considered in developing the recommended criteria and in preparing the list of additional materials and products which may be suitable for retrofitting (Appendix B).

## 1.5 ORGANIZATION OF THIS REPORT

Section 1 gives background information and the objectives and scope of the project.

Section 2 presents the recommended criteria for determining the eligibility of retrofit materials and products for tax credit.

Section 3 gives desired levels of performance for retrofit materials and products. Although not necessary for tax credit, nor likely to be able to be made a requirement, these levels of performance would assist in assuring maximum benefit from retrofitting.

Section 4 outlines precautions which must be taken to assure proper installation of the retrofit items.

Section 5 shows the relationship between the retrofitting process and model building codes, and the constraints which the codes impose upon retrofitting.

## 2. RECOMMENDED CRITERIA FOR MATERIALS AND PRODUCTS TO BE ELIGIBLE FOR PROPOSED TAX CREDIT

The materials and products considered eligible for proposed tax credit are insulation, storm windows and doors, caulks and sealants, weatherstripping, vapor barriers and clock thermostats, when used for retrofitting residential housing to save energy. This section gives recommended criteria by which the eligibility of these materials and products can be determined.

These recommended criteria are based on factors such as thermal performance, fire safety, health safety, structural integrity, durability, quality, conformance to building codes, use and ease of installation. FOR ALL ITEMS WHICH MEET THE CRITERIA, TAX CREDIT SHOULD ONLY BE ALLOWABLE IF THE MATERIALS, PRODUCTS AND INSTALLATION TECHNIQUES DO NOT VIOLATE APPLICABLE EXISTING LOCAL BUILDING RELATED CODES.

Existing materials specifications and standards were reviewed for their suitability as a basis for the criteria. For some items, conformance to existing specifications or standards is recommended as the criterion for tax credit eligibility. For others, for which there are no available specifications or standards, but which produce important energy savings when retrofitting to existing housing, the recommended criterion is that materials be purchased and properly installed. These items are recommended eligible for proposed tax credit, since they have been proven effective for conserving energy in heating and cooling residences [3, 5, 6 and 8].

The intent of the proposed tax credit is to conserve energy through the encouragement of retrofitting. Early action should not be hindered by requiring that new standards or specifications be written for retrofit items in cases where no applicable ones exist. Also, the problem of enforcing conformance to the criteria in evaluating the validity of claims for tax credits was kept in mind. Complicated technical criteria could make enforcement difficult, if not practically impossible.

All the materials and products considered eligible for proposed tax credit and recommended criteria for determining their eligibility are summarized in table 1. All the specifications and standards cited in this report are listed in Appendix D.

### 2.1 INSULATION

2.1.1 Definition. Thermal insulation is a material or assembly of materials used primarily to provide resistance to heat flow.

Table 1. Summary of Recommended Criteria

| Material or Product | Recommended Criteria for Tax Credit Eligibility[1] |
|---|---|
| **Insulation-Mineral Fiber** | |
| Blanket/Batt | Conformance to F.S.[2] HH-I-521E and ASTM C665-70 |
| Board | Conformance to F.S. HH-I-526C and ASTM C612-70 or C726-72 |
| Duct Material | Conformance to F.S. HH-I-558B |
| Loose-fill | Conformance to F.S. HH-I-1030A and ASTM C764-73 |
| **Insulation-Mineral Cellular** | |
| Aggregate Board | Conformance to F.S. HH-I-529B |
| Cellular Glass | Conformance to F.S. HH-I-551E and ASTM C552-73 |
| Perlite | Conformance to F.S. HH-I-574A and ASTM C549-73 |
| Vermiculite | Conformance to F.S. HH-I-585B and ASTM C516-67 |
| **Insulation-Organic Fiber** | |
| Cellulose - Type I | Conformance to F.S. HH-I-515C and ASTM C739-73 (Loose-fill) |
| Cellulose - Type II | Conformance to ASTM C739-73 (Loose-fill) and fire safety requirements[3] |
| Vegetable | Conformance to F.S. HH-I-528B and fire safety requirements |
| Board and Block | Conformance to F.S. LLL-I-535A and ASTM C208-72 and fire safety requirements |
| **Insulation-Organic Cellular** | |
| Polystyrene Board | Conformance to F.S. HH-I-524B and ASTM C578-69 and fire safety requirements |
| Urethane Board | Conformance to F.S. HH-I-530A and ASTM C591-69 and fire safety requirements |
| Flexible Unicellular | Conformance to F.S. HH-I-573B and ASTM C534-70 and fire safety requirements |
| **Insulation-Air Spaces** | |
| Reflective | Conformance to F.S. HH-I-1252A |

Table 1. Summary of Recommended Criteria (cont.)

| Material or Product | Recommended Criteria for Tax Credit Eligibility[1/] |
|---|---|
| Storm Windows | |
| Aluminum Frame | Equivalent to ANSI A134.3-1972 |
| Wood Frame | Conformance to Section 3 of NWMA Industry Standard I.S.2-73 |
| Rigid Vinyl Frame | Conformance to NBS Product Standard PS26-70 and performance guarantee |
| Frameless Plastic Glazing | Required Minimum Thickness, 6 mil (0.006 in) |
| Storm Doors | |
| Aluminum | Equivalent to ANSI A134.4-1972 |
| Wood | |
| Pine | Conformance to Section 3 of NWMA I.S.5-73 |
| Fir, Hemlock, Spruce | Conformance to Section 3 of FHDA/5-75 |
| Hardwood veneered | Conformance to Section E of NWMA I.S.1-73 |
| Rigid Vinyl | Conformance to NBS Product Standard PS26-70 and performance guarantee |
| Caulks and Sealants | Commercial Availability |
| Weatherstripping | Commercial Availability |
| Vapor Barriers | Conformance to ASTM C755-73 |
| Clock Thermostats | Commercial Availability |

1/ For all items, tax credit should be allowed only if the items are installed as stated in Section 2 and installation does not violate any existing applicable building-related code. In cases where federal specifications or ASTM standards are revised, the recommended criteria for tax credit eligibility should include the latest revision of the federal specification or ASTM standard.

2/ F.S. - federal specification.

3/ For fire safety requirements, see Section 2.1.3.1.

2.1.2 Materials. The materials listed below are those considered acceptable for use in residential housing to provide increased thermal resistance through retrofitting.

2.1.2.1 Types. Insulation is available as the following types:

- Mineral fibrous materials such as glass, rock or slag wool.
- Mineral cellular materials such as perlite and vermiculite.
- Organic fibrous materials such as cotton, wood, paper, animal hair or synthetic fibers.
- Organic cellular materials such as polystyrene or polyurethane.
- Air spaces with either nonreflective or metallic or metallized organic reflective surfaces.

2.1.2.2 Physical Forms. Insulation is available in the following physical forms:

- Loose-fill. Loose-fill insulation consists of fibers, granules or nodules which are usually poured or blown into walls, attics or other enclosed spaces.
- Flexible and Semirigid. These are materials with varying degrees of compressibility and flexibility, generally blanket, batt or felt insulation. They are available in sheets or rolls of many types and varieties. Coverings and fastenings may be fastened to one or both sides to serve as reinforcing, vapor barriers, reflective surfaces or surface finishes. Thickness and shape of insulation may be of any dimension conveniently handled, although standard sizes are generally used.
- Rigid. These materials are available in rectangular dimensions called block, board or sheet, and preformed during manufacture to standard lengths, widths and thicknesses.

2.1.3 Criterion. Materials used for thermal insulation should meet minimum requirements for heat flow resistance, fire safety and quality. Federal specifications and ASTM designations are available which set the requirements for heat flow resistance and quality of the insulations, but which are, in some cases, incomplete in regards to fire safety. For fire safety, addition of thermal insulation should be accomplished in such a manner so as not to decrease the overall fire safety of the residence. This involves considerations of (a) installation, (b) burning characteristics, and (c) flame resistance permanency.

Materials conforming to the federal specifications and ASTM designations listed in table 2 and properly installed as designated in Section 2.1.4 are considered to meet the minimum requirements for heat flow resistance, fire safety and quality. As such, they should be eligible. Each insulation should be labeled as meeting the applicable specification.

Materials conforming to the federal specifications and ASTM designations listed in table 3 are considered to meet only the requirements for heat flow resistance and quality, since these specifications do not contain adequate fire safety requirements. As such, the materials listed in table 3 should be eligible only if they are certified as conforming to the fire safety requirements listed in Section 2.1.3.1, in addition to conforming to the other requirements of the federal specifications, and are properly installed as designated in Section 2.1.4. Each insulation should be labeled as conforming to both the fire safety requirement and the federal specification.

2.1.3.1 Fire Safety Requirements for Thermal Insulation Materials Listed in Table 3

- Surface Burning Characteristics. The flame spread classification index for all insulation materials shall not exceed the following values:

| | |
|---|---|
| plastic foam | 25* |
| loose-fill insulation | 50 |
| all other insulation material (blanket, board, sheet, etc.) | 150 |

The ASTM E84-76a flame spread test method shall be the basis for evaluating the surface burning characteristics of the residential insulation material. Where fibrous blankets with facings are to be used, the surface burning characteristics of the complete faced insulation blanket shall be measured.

- Flame Resistance Permanency. Chemical retardant insulations shall retain their flame resistance throughout their service lifetime. The procedures and equipment specified in ASTM C739-73, Section 10.4, "Flame Resistance Permanency" shall be used in judging the effect of aging on the permanence of any flame retardants used during manufacture.

* No single test is sufficient to provide a full estimate of performance of a product in a fire. Plastic foams are difficult to evalate in ASTM E84-76a. The requirement of flame spread classification of 25 maximum for these foams will provide as much safety assurance as is possible with current test methods. Such a classification (or any other numerical classification) shall not be construed as the equivalent of "noncombustible." Many insulation materials, including those consisting of cellulose, plastic foam and fibrous glass (containing organic binder) are combustible materials which will burn and release heat, especially when exposed to continuous large fire sources.

Table 2. Thermal Insulating Materials Which Are Eligible

| Type of Insulation | Federal Specification[1] Number | Federal Specification[1] Title | ASTM[1] Designation |
|---|---|---|---|
| Mineral Fiber | HH-I-521E | Insulation Blankets, Thermal (Mineral Fiber, for Ambient Temperatures) | C665-70 |
| | HH-I-526C | Insulation Board, Thermal (Mineral Fiber) | C612-70<br>C726-72 |
| | HH-I-558B | Insulation, Blocks, Boards, Blankets, Felts, Sleeving (Pipe and Tube Covering), and Pipe Fitting Covering, Thermal (Mineral Fiber Industrial Type) | -- |
| | HH-I-1030A | Insulation, Thermal (Mineral Fiber for Pneumatic or Poured Application) | C764-73 |
| Mineral Cellular | HH-I-529B | Insulation Board, Thermal (Mineral Aggregate) | -- |
| | HH-I-551E | Insulation, Block and Board, Thermal (Cellular Glass) | C552-73 |
| | HH-I-574A | Insulation, Thermal (Perlite) | C549-73 |
| | HH-I-585B | Insulation, Thermal (Vermiculite) | C516-67 |
| Organic Fiber | HH-I-515C Type I | Insulation Thermal (Loose-fill for Pneumatic or Poured Application) Cellulose or Wood Fiber | C739-73 Type I |
| Air Spaces | HH-I-1252A | Insulation, Thermal, Reflective (Aluminum Foil) | -- |

1/ In cases where federal specifications or ASTM standards are revised, the recommended criteria for tax credit eligibility should include the latest revision of the federal specification or ASTM standard.

Table 3. Thermal Insulating Materials Which May Be Eligible

These materials must be certified as conforming to the fire safety requirements in Section 2.1.3.1, since the specifications listed in this table do not contain adequate fire safety requirements

| Type of Insulation | Federal Specification[1/] | | ASTM[1/] Designation |
|---|---|---|---|
| | Number | Title | |
| Organic Fiber | -- | -- | C739-73 Loose-fill cellulose Type II |
| | HH-I-528B | Insulation Batts and Blankets, Thermal (Vegetable Fiber) | -- |
| | LLL-I-535A | Insulation Board, Thermal and Insulation Block, Thermal | C208-72 |
| Organic Cellular | HH-I-524B | Insulation Board, Thermal (Polystyrene) | C578-69 |
| | HH-I-530A | Insulation Board, Thermal (Urethane) | C591-69 |
| | HH-I-573B | Insulation, Thermal (Flexible Unicellular Sheet and Pipe Covering) | C534-70 |

1/ In cases where federal specifications or ASTM standards are revised, the recommended criteria for tax credit eligibility should include the latest revision of the federal specification or ASTM standard.

2.1.4 Areas of Application. Materials used for thermal insulation may be applied in residential housing to the following areas: walls, roofs, ceilings, floors, pipes, ducts, vessels and equipment exposed to the external environment.

Exposed plastic foam (untreated or fire-retardant treated), kraft-asphaltic vapor barriers on mineral and organic fiber insulations, and nonfire-retardant treated cellulosic loose-fill insulation shall not be permitted in habitable areas. These materials should be protected by a layer of gypsum board of 1/2 inch thickness or greater, or an equivalent fire barrier.

Installed insulation and vapor barrier shall not make contact with recessed light fixtures, motors, fans, blowers, heaters, flues, and chimneys. Thermal insulation should not be installed within 24 inches of the top or within 3 inches of the side of a recessed electrical fixture enclosure, wiring compartment or ballast unless labeled for the purpose. To retain loose-fill insulation from making contact with other energy-dissipating objects, a minimum of 2 inches of air space should be provided and assured by the use of blocking.

2.1.5 Commentary. Although a degree of material combustibility is allowed, the intent is to allow insulating materials which are not more combustible (or flammable) than existing construction and insulation materials, and to preclude any increased fire hazard due to the retention of heat from energy-dissipating objects.

In areas where occupants are likely to be engaged in normal activities, the insulation should perform its intended function without the increased risk of ignition, rapid flame spread, and heat and smoke generation. Insulation in concealed spaces may be a particular fire problem due to its susceptibility to smoldering and its inaccessibility for firefighting.

The urethane plastic foam industry recommends that urethane foam used in all interior and/or ceiling construction should be covered with at least 1/2 inch of cement plaster or fire-rated gypsum wallboard or an equivalent barrier providing a finish fire rating of 15 minutes or more [10]. This recommendation has been incorporated in building codes and Federal regulations for various types of buildings.

Although the primary fire safety properties of insulation relate to ignitability and rate of heat release, at the present time standard test methods for these properties do not exist. ASTM E84-76a is the current standard used to judge the fire performance.



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No general test method exists for evaluating the flame resistance permanency of all chemical retardant insulations. ASTM C739-73, Section 10.4, was specifically developed for cellulosic insulations. This test method is an accelerated aging procedure designed to determine the permanency of the chemicals used as fire retardants. Aging is performed by cycling at high relative humidities and temperature. The intent is to simulate conditions in which flame retardants may be leached from the insulation.

2.2 STORM WINDOWS

2.2.1 Definition. A storm window is an extra window, normally installed to the exterior of the primary or ordinary window to increase resistance to heat flow and to decrease air infiltration. Less commonly, storm windows are installed on the interior of the primary window.

2.2.2 Materials. Storm windows may be constructed of aluminum, wood or rigid vinyl [poly(vinyl chloride)] frames, with glass or plastic glazing. Flexible and rigid plastic sheeting may also be used.

2.2.3 Criterion. Storm window for retrofitting should conform to the standards of special provisions listed below, and be installed as stated in Section 2.2.4.

2.2.3.1 Aluminum Combination and Frame Storm Windows. Aluminum combination storm windows should be equal to those conforming to the American National Standard Institute (ANSI) A134.3-1972 "Specifications for Aluminum Combination Vertically-Sliding or Horizontally-Operating Storm Windows for External Applications." Aluminum frame storm windows should conform to Sections C1.2, C1.3, C1.4 and C1.6 of ANSI A134.3-1972.

2.2.3.2 Wood Frame Storm Windows. Wood frame storm windows should conform to Section 3 of the National Woodwork Manufacturers Association (NWMA) Industry Standard I.S.2-73.

2.2.3.3 Rigid Vinyl Frame Storm Windows. Rigid vinyl frame storm windows should be constructed with vinyl profile extrusions which conform to NBS Voluntary Product Standard PS 26-70, "Rigid Poly(Vinyl Chloride) (PVC) Profile Extrusions." These windows should be equal in quality to aluminum and wood frame storm windows. The manufacturer should assure their quality and guarantee that they will perform as well as aluminum and wood frame storm windows.

2.2.3.4 Frameless Plastic Glazing. Plastic glazing used as frameless storm windows should consist of either flexible or rigid sheets, a minimum of 6 mil thick.

2.2.4 Areas of Application. Storm windows used for retrofitting may be installed on residential housing to any existing primary windows. Installation should not violate any applicable existing local building related code. A minimum of 1/2 inch of air space should be provided between the primary and storm windows.

2.2.5 Commentary. Some storm windows are installed in a fixed position which may create a ventilation problem. Also, fixed position storm windows may hinder or prevent egress in case of emergency. Local building codes should be consulted to see if this type of retrofitting is permitted.

2.2.5.1 Aluminum Combination and Frame Storm Windows. The intent of the criterion is to assure the quality of storm windows which are used for energy conservation. It is not the intent to impose expensive testing upon the storm window manufacturer to show conformance to the standard. Thus, it is only required that storm windows be manufactured to meet the provisions of ANSI A134.3-1972. They should be labeled as being manufactured to those provisions. It is not required that they be certified by independent laboratory testing as meeting the standard.

2.2.5.2 Wood Frame Storm Windows. NWMA Standard I.S.2-73 was not developed for storm windows, but rather for primary windows. Section 3 of the standard is used as the criterion in retrofitting to assure the quality of the materials and the quality of the construction of the windows. They should be labeled as being manufactured to the provisions of Section 3 of NWMA Standard I.S.2-73.

2.2.5.3 Rigid Vinyl Frame Storm Windows. NBS Voluntary Product Standard PS 26-70 is concerned with the quality of vinyl profile extrusions, and not completed windows. Since there are no standards to assure the quality of these windows, the manufacturer should guarantee that they perform as well as aluminum and wood frame storm windows described in Sections 2.2.3.1 and 2.2.3.2.

2.2.5.4 Frameless Plastic Glazing. Flexible and rigid plastic sheeting can be effective in reducing heat flow and are acceptable for use as storm windows. Flexible sheeting offers an economical method for retrofitting but has a short life, usually lasting one season. In the installation of these types of windows, consideration should be given to the fact that interior installation is easier and provides greater protection to the plastic. Condensation on the interior of the primary window may appear and may be difficult to remove. Outside installation is more difficult (e.g. 2 story houses) and damage to the plastic is more likely from the elements. In the case of outside installation condensation which occurs on the plastic glazing can in general be removed from the inside by opening the windows.

2.3 STORM DOORS

2.3.1 Definition. A storm door is an extra door, installed to the exterior of the primary or ordinary door, to provide greater resistance to heat flow and to reduce air infiltration.

2.3.2 Materials. Storm doors may be constructed of aluminum, wood or rigid vinyl frames with glazing, or of solid wood.

2.3.3 Criterion. Storm doors installed for retrofitting should conform to the standards listed below, and be installed as stated in Section 2.3.4.

2.3.3.1 Aluminum Frame Storm Doors. Aluminum frame storm doors should be equal to those conforming to ANSI Standard A134.4-1972 entitled "Specifications for Aluminum Storm Doors."

2.3.3.2 Wood or Wood Frame Storm Doors.

- Pine storm doors should conform to the requirements for exterior doors listed in Section 3 of NWMA I.S.5-73 entitled "Ponderosa Pine Doors."
- Fir, hemlock and spruce storm doors should conform to the requirements for exterior doors listed in Section 3 of the Fir and Hemlock Door Association Industry Standard FHDA/5-75 entitled "Industry Standard for Douglas Fir, Western Hemlock, and Sitka Spruce Doors and Blinds."
- Hardwood veneered flush doors should conform to the general requirements for exterior doors listed in Section 3 of NWMA I.S.1-75 entitled "Hardwood Flush Doors."

2.3.3.3 Rigid Vinyl Frame Storm Doors. Rigid vinyl frame storm doors should be constructed with vinyl profile extrusions which conform to NBS Voluntary Product Standard PS 26-70, "Rigid Poly(Vinyl Chloride) (PVC) Profile Extrusions." These doors should be equal in quality to aluminum and wood frame storm doors. The manufacturer should assure their quality and guarantee that they will perform as well as aluminum and wood frame storm doors described in Sections 2.3.3.1 and 2.3.3.2.

2.3.4 Areas of Application. Storm doors used for retrofitting may be installed on residential housing to any existing exterior door. Installation should not violate any applicable existing local building related code.

2.3.5 Commentary.

2.3.5.1 Aluminum Frame Storm Doors. The intent of the criterion is to assure the quality of the storm doors necessary for satisfactory performance and that energy savings will be realized through their use. It is not the intent to impose expensive testing upon the storm door manufacturers to show conformance to the standard. Thus, it is only required that aluminum storm doors be manufactured to meet the provisions of ANSI A134.4-72. They should be labeled as being manufactured to those provisions. It is not required that they be certified by independent laboratory testing as meeting the standard.

2.3.5.2 Wood Frame Storm Doors. The standards NWMA I.S.5-73 "Ponderosa Pine Doors," FHDA/5-75 "Industry Standard for Douglas Fir, Western Hemlock, and Sitka Spruce Doors and Blinds" and NWMA I.S.1-73 "Hardwood Flush Doors" were not developed for storm doors, but rather for primary wood doors. Section 3 of each standard is used for criteria in retrofitting because there are no existing standards or specifications that have been developed specifically for wood storm doors.

Conformance to the requirements given in Section 3 of each standard assures the quality of the materials and construction of the storm doors. They should be labeled as being manufactured to the provisions of Section 3 of the applicable standard.

If woods other than those listed in Section 2.3.3.2 are used to construct storm doors, the quality of these doors shall be equal to the quality of the doors listed in Section 2.3.3.2.

2.3.5.3 Vinyl Frame Storm Doors. NBS Voluntary Product Standard PS 26-70 is concerned with the quality of vinyl profile extrusions, and not completed doors. Since there are no standards to assure the quality of these doors, the manufacturer should guarantee that they perform as well as aluminum and wood frame storm doors described in Sections 2.3.3.1 and 2.3.3.2.

2.4 CAULKS AND SEALANTS

2.4.1 Definition. Caulks and sealants are nonrigid materials placed in joints of buildings to prevent the passage of heat, air, moisture and dust. The terms caulk and sealant are often used interchangeably. On the other hand, many formulators and contractors refer to the lower performance materials as caulks, and to the better performance materials as sealants.

2.4.2 Materials. Materials used as caulks and sealants are grouped in three classifications according to their performance. The materials in each class are listed below. Information relevant to properties, performance and use of the materials is given in Appendix C.

2.4.2.1 Basic Performance.

- Oil and Resin Base Caulks
- Polybutene Compound

2.4.2.2 Intermediate Performance.

- Latex Caulks
- Acrylic (Solvent Type) Caulks
- Butyl Rubber Sealant (or Caulk)
- Chlorosulfonated Polyethylene

2.4.2.3 High Performance.

- Polysulfide
- Polyurethane
- Silicone

2.4.2.4 Putty and Glazing Compounds. There are two types of compounds generally used for sealing relatively small glass panes. The two types are putty and glazing compounds. For larger glass windows (e.g., picture windows) sealants from the intermediate and high performance classes are used.

2.4.3 Criterion. All of the materials listed in Section 2.4.2 and marketed as caulks and sealants are eligible without conformance to any specification or special provision. It is sufficient that the material be commercially available, and marketed as a caulk or sealant.

2.4.4 Areas of Application. Caulks and sealants used for retrofitting should be installed in joints of residential housing such as those associated with the following:

- Window frames
- Door frames
- Window glazing

- Wall to slab joints
- Siding joints
- Skylights
- Ducts and vents
- Air conditioners to window joints
- Attic floor/chimney/siding gaps
- Fuel-oil pipe and other similar designed breaks in the exterior surface
- Window frame/storm window joint.

2.4.5 Commentary. Federal or other specifications do not exist for all caulks and sealants which are commercially available to the homeowner. Many of the caulks and sealants for which no specifications exist perform adequately to conserve energy. Moreover, even a low quality caulk or sealant will save energy by reducing air infiltration if properly applied. On this basis, no criterion, other than commercial availability and labeling as a caulk or sealant is required for these materials to be eligible.

For the prudent homeowner who wants to assure himself of buying and installing caulks and sealants which meet requirements for quality, there are specifications (listed in table 4) for some products. These materials are usually marked on the container or cartridge as conforming to the applicable specification.

In general, the level of performance of the sealant is related to the cost of the product. A more expensive product will in general last longer. Thus, a high initial investment may more than pay for itself by eliminating additional expense at a later date because of re-installation costs.

2.5 WEATHERSTRIPPING

2.5.1 Definition. Weatherstripping consists of narrow strips of material placed over or in moveable joints of windows and doors to reduce the passage of air and moisture.

2.5.2 Materials. Various types of weatherstripping are available for retrofitting. In general most can be applied to both windows and doors. However, others are made specifically for doors. Examples of weatherstripping include the following:

2.5.2.1 Weatherstripping for Both Windows and Doors

spring bronze strips

felt strips

adhesive backed foam strips

Table 4. Specifications for Caulks and Sealants

| Performance Classification | Caulk or Sealant | Federal Specification | ASTM Designation |
|---|---|---|---|
| Basic | Oil and Resin Base | TT-C-00598C | C570-72 |
| Intermediate | Acrylic (Solvent Type) | TT-S-00230C | -- |
| | Butyl Rubber | TT-S-001657 | -- |
| | Chlorosulfonated Polyethylene | TT-S-00230C | -- |
| | Latex Sealing Compounds | -- | C834-76 |
| High | Polysulfide | | |
| | single component | TT-S-00230C | -- |
| | multi-component | TT-S-00227E | -- |
| | Polyurethane | TT-S-00230C<br>TT-S-00227E | -- |
| | Silicone | TT-S-001543A | -- |
| | | TT-S-00230C | -- |
| -- | Putty | TT-P-00791B | -- |
| | Glazing Compound | TT-G-410E | -- |

adhesive backed sponge rubber strips
adhesive backed vinyl foam strips

hollow vinyl cord

sponge rubber gasket

metal wrapped vinyl strips

metal wrapped felt strips

2.5.2.2 Weatherstripping for Doors

door bottom strips

door bottom sweeps

door shoes

vinyl bulb threshold

interlocking threshold

2.5.3 Criterion. Any commercially available material which is marketed as weatherstripping is eligible. It is not required that the weatherstripping conform to any specification or special provision.

2.5.4 Areas of Application. Materials used as weatherstripping may be applied to all windows and exterior doors in residential housing.

2.5.5 Commentary. This report is concerned with weatherstripping normally sold in building supply houses, hardware stores and home improvement centers. Weatherstripping is one of the easiest retrofit materials or products to install. The only requirement for tax credit eligibility is that the material be commercially available and be labeled as weatherstripping.

There is a range of quality among the various weatherstrippings that the homeowner may purchase. In general, the foam plastics are inferior to the metal strips or vinyl cord [11]. Even an inferior quality product will save energy by reducing air infiltration at windows and doors. Such materials are, therefore, eligible. The homeowner should be aware that inferior quality weatherstripping may not perform as well as better quality products and may have to be replaced more frequently. Better quality products are more durable and tend to retain their ability to reduce air infiltration for a longer period of time.

2.6 VAPOR BARRIERS

2.6.1 Definition. A vapor barrier is a material which provides a high resistance to the transmission (flow) of water vapor through building and insulating materials due to water vapor pressure difference. The principal purpose of water vapor barriers is to preclude or reduce appreciably the possibility of condensation of water vapor within insulation and other building materials.

2.6.2 Materials. The materials listed below, when installed as recommended, provide water vapor barriers. Vapor barrier materials should be water resistant, puncture resistant, abrasion resistant, tear resistant, fire resistant, noncorrosive, rot and mildew resistant, and of sufficient tensile strength, in addition to a high resistance to water vapor transmission.

2.6.2.1 Membrane barriers are flexible and nonload bearing, and are supplied in a roll form or as an integral part of thermal insulation. These include metal foils, coated felts and papers, laminated foil and treated papers, and plastic films and sheets. Accessory items, such as tape and adhesives, may be required for sealing joints.

2.6.2.2 Mastic, coating and paint barriers are field applied semi-liquid compositions having high resistance to water vapor transmissions after curing, the ingredients of these barriers include bitumens (asphalts), resins or polymers, pigments, fillers, and volatile solvent or water. Paints which have been used as vapor barriers include alkyds including aluminum pigmented alkyds, polyurethanes, epoxies and rubber based paints. Paints used as vapor barriers should have a water vapor permeance not greater than 1 perm (see Section 3.6). It would be desirous to have the water vapor permeability of paints stated on the containers.

2.6.2.3 Structural barriers may be formed from rigid or semi-rigid materials of low permeability which form a part of a structure. They include reinforced plastics, aluminum, stainless steel and insulating materials which are relatively impervious to water vapor flow due to their physical structure and composition. They require careful sealing of joints and seams. These materials are generally not used as vapor barriers in residential housing.

2.6.3 Criterion. The materials used for water vapor barriers should conform to provisions cited in ASTM C755-73, "Standard Recommended Practice for Selection of Vapor Barriers for Thermal Insulation," and be installed in areas listed in Section 2.6.4.

2.6.4 Areas of Application. Materials used for water vapor barriers may be applied in residential housing to the following areas: (1) warm (winter) side of opaque walls, (2) warm (winter) side of flat roofs and ceilings under ventilated attic spaces, and (3) over ground or soil in crawl spaces. Membrane vapor barriers, when installed in habitable or occupiable areas, should be covered to prevent damage or an increased risk of fire. Vapor barriers should not be applied over existing insulation in cases where the existing insulation is covered with new insulation.

2.6.5 Commentary. Increased insulation in the walls, roofs or ceilings and floors to reduce heat flow during winter heating and/or summer cooling of residences requires attention to the increased possibility of excessive accumulation of condensed water vapor (moisture) in these elements. This may be prevented by one or more of the following measures:

- providing a vapor barrier to limit vapor entrance
- ventilating the residence to reduce vapor pressure
- making the cold side of walls, roofs or ceilings, and floors more permeable to the egress of water vapor.

The deleterious effects of moisture condensation in building and insulating materials include:

- deterioration of materials by chemical, physical and biological changes and by freeze-thaw breakdown of materials.
- water in liquid form, accumulated in thermal insulating materials, reduces their resistance to heat flow and their effectiveness as insulation.
- significant dimensional changes occur in many building materials with changes in moisture content.

2.7 CLOCK THERMOSTATS

2.7.1 Definition. A clock thermostat is a temperature control device for interior spaces incorporating two temperature control points and a clock for switching from one control point to the other. Only one control point regulates the interior space temperature at one time.

2.7.2 Products. Clock thermostats and clock thermostat systems may be classified as follows:

2.7.2.1 A clock and two individual thermostats. In this system, two thermostats are connected through a time clock to the heating system. The clock automatically switches from the normal temperature controlled by one thermostat to the setback (lower) temperature controlled by the other. The duration of the setback is determined by the clock. This system has the advantage that more than one setback period may be chosen in a 24 hour period. Also, different types of clocks may be used to control switching. For example, 24 hour and 7 day clocks are commercially available. By using a 7 day clock, the setback time can be programmed for a whole week. The system may be used with central air conditioning.

2.7.2.2 Fully automatic clock thermostat. This is a thermostat which combines the two temperature controls and the clock in one unit. After the setback period is fixed, the thermostat automatically switches between the normal and setback temperatures once every 24 hours. This unit may also be used with central air conditioning systems.

2.7.2.3 Semi-automatic clock thermostat. This is a thermostat which combines the two temperature controls and a wind-up timer in one unit. With this unit, the setback is manually activated by setting the timer. The duration of setback is also fixed manually each time the setback is activated. The thermostat automatically switches from setback to normal temperature. This device may be activated more than once every 24 hours.

2.7.3 Criterion. Any commercially available product marketed as a clock thermostat or clock thermostat system as listed in Section 2.7.2 is eligible when used for retrofitting residential housing. It is not required that the clock thermostat or related system conform to any specification or special provision.

2.7.4 Areas of Application. Clock thermostats and related systems may be applied in residential housing as replacements of or additions to existing thermostats which control interior space temperatures.

2.7.5 Commentary. There are no specifications or standards presently available for clock thermostats. Because there is a substantial energy savings to be gained through their use [5, 6] clock thermostats are recommended without conformance to specifications or standards.

## 3. DESIRED LEVELS OF PERFORMANCE FOR MATERIALS AND PRODUCTS USED FOR RETROFITTING

Section 2 of this report gives recommended criteria for assessing the eligibility of materials and products for tax credit. While these criteria cover materials and products which are effective in conserving energy, they do not in general directly address the question of the performance of the retrofit materials and products. This section presents desired levels of performance for the retrofit items recommended for tax credit eligibility in Section 2. The purpose is to provide the homeowner with guidelines to assist him in gaining maximum benefit from energy conservation.

It would be desirable to have performance criteria for assessment of the tax credit eligibility of retrofit materials and products. However, performance criteria are in general not available for the immediate need and their development would take a long time. The time required to develop performance criteria would signficantly delay the implementation of the tax credit program since many needed performance tests are not available. For the purpose of determining tax credit eligibility performance criteria may be difficult to apply because of required testing and certification.

### 3.1 INSULATION

3.1.1 Performance Need

Heat Flow. Materials used for thermal insulation should not allow more than the prescribed rates of heat flow into or from the building.

3.1.1.1 Level of Performance

Heat Flow Resistance. The addition of thermal insulation for retrofitting purposes should increase the total thermal resistance, $R_t$, to the values listed below.

° Walls, Roofs, Ceilings and Floors. For the various geographical locations as designated by heating degree-days, the minimum total thermal resistance, $R_t$, resulting from retrofitting thermal insulation to opaque portions of walls, roofs, ceilings and floors should lie within the ranges of values given in table 5.

* Slab-On-Ground Floors. For the geographical locations as designated by heating degree-days, the retrofitting of insulation at the edges of slab floors to reduce slab edge heat loss should give resultant minimum thermal resistances, R-values, and total depths of insulation at the slab edges as listed in table 6.

* Thermal Resistance of Ducts, Plenums, Pipes and Other Equipment. Air ducts and other surfaces installed in nonheated spaces (e.g., attics, unheated garages, crawl spaces, etc.) should be thermally insulated to provide a metal surface to outside surface thermal resistance of not less than $R = \Delta T/20$, where $\Delta T$ is the maximum temperature difference (°F) between the duct (or other enclosure) and the surrounding air, or shall be insulated to a value of $R = 4$ whichever is greater.

Evaluation.

The thermal resistance of building and insulating materials may be obtained or calculated from values given in table 3 of Chapter 20 of the ASHRAE Handbook of Fundamentals [13]. Where calculation is necessary, the thermal resistance is the thickness of a material divided by its thermal conductivity in consistent units. The thermal resistances of air spaces may be obtained from table 2 of Chapter 20 of the ASHRAE Handbook of Fundamentals [13] for various orientations and effective emissivities of the air space.

The thermal resistance of surfaces exposed to still (inside) and moving (outside) air and various positions and directions of heat flow must be used in calculations for total thermal resistance. R-values are given in table 1 of Chapter 20 of the ASHRAE Handbook of Fundamentals [13].

Table 5. Minimum Total Thermal Resistance of Walls, Roofs, Ceilings and Floors, $R_t$ [1]

| Heating Degree-Days [2] | 0 - 4500 | 4501 - 8000 | 8001 or more |
|---|---|---|---|
| Flat roof deck | 7 - 20 | 11 - 25 | 12 - 25 |
| Ceilings | 12 - 20 | 18 - 25 | 22 - 30 |
| Masonry wall construction | 9 - 11 | 10 - 12 | 11 - 17 |
| Frame wall construction | 12 - 14 | 14 - 17 | 14 - 20 |
| Floors [3] | 5 - 8 | 7 - 11 | 11 - 14 |

1/ Values of total thermal resistance are given in units $°F \cdot h \cdot ft^2 \cdot Btu^{-1}$. To obtain thermal transmittance, $U = 1/R_t$.

2/ Values of degree-days for many geographical locations are given in Chapter 43 of the ASHRAE Systems Handbook [12].

3/ Total resistance values for floors over basements, unheated garages or crawl spaces with no positive heat supply.

Table 6. Minimum Total Thermal Resistance of Insulation at Edges of Slab-On-Ground Floors

| Heating Degree-Days | R [1] | Depth of Insulation [2] |
|---|---|---|
| 2500 - 4500 | 2.5 - 4.0 | 18 |
| 4501 - 8000 | 3.8 - 5.0 | 24 |
| 8001 or more | 5.0 - 7.0 | 24 |

1/ Values of total thermal resistance are given in units $°F \cdot h \cdot ft^2 \cdot Btu^{-1}$.

2/ Inches.

The total thermal resistance to heat flow through a flat wall, roof, ceiling or floor is equal numerically to the sum of the individual resistances in series of the components comprising the opaque portions of the walls, roofs, ceilings or floors, and the resistances of the air films on the inside and outside surfaces of the wall, roof, ceiling or floor. Table 4 of Chapter 20 of the ASHRAE Handbook of Fundamentals [13] gives examples for computation of total thermal resistance, $R_t$.

Commentary.

Proper retrofitting requires the installation of adequate amounts of insulation to reach prescribed levels of heat flow resistance. The prudent homeowner who retrofits should upgrade his home to these levels. The homeowner should realize that heating and cooling costs vary with energy prices. The amount of insulation that is economically justified based on energy costs increases with fuel prices [3].

## 3.2 STORM WINDOWS

### 3.2.1 Performance Need

Heat Flow. Storm windows should not allow more than the prescribed rate of heat flow into or from the building.

### 3.2.1.1 Level of Performance

Heat Flow Resistance. Addition of a storm window to a primary window should give a resultant total thermal resistance of the primary window-storm window assembly which is at least 80% greater than the thermal resistance of the primary window alone.

Evaluation.

The thermal resistance of storm windows may be obtained from values given in table 8 of Chapter 20 of the ASHRAE Handbook of Fundamentals [13]. This table gives coefficients of thermal transmittance for windows. The thermal resistance is the reciprocal of the thermal transmittance.

Commentary.

Addition of storm windows is a major means of reducing heating energy consumption of residential housing and in some instances conserves cooling energy. Approximately one-half of the heat loss through single-glazed primary windows can be saved by the addition of storm windows.

3.2.2 Performance Need

Air and Water Infiltration. Storm windows should not allow more than the prescribed levels of air infiltration and water penetration into the building.

3.2.2.1 Level of Performance

Air Infiltration. Allowable air infiltration should be at least 1.0 cfm but not be more than 4.0 cfm per linear foot of net sash crack perimeter at a static air pressure of 1.56 psf. (This is the equivalent of a 25 mph wind blowing against the window.)

Evaluation.

The test is conducted in accordance with ASTM E283-73 with the sash closed and latched.

Commentary.

Air infiltration provides natural ventilation. Natural ventilation for habitable rooms is required under some building codes (see Section 5, paragraph 6).

Also, some air infiltration is necessary to prevent excessive moisture condensation on the storm window.

3.2.2.2 Level of Performance

Water Penetration. Adequate drainage should be provided to prevent water from running over the interior edge of the sloped sill of the primary window.

Evaluation.

The water drainage test is conducted in accordance with ASTM E331-70 except that the pressure drop shall be zero and test duration shall be three minutes.



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Commentary. ASTM E331-70 was specifically developed for primary window units. This test was adapted for aluminum storm windows by ANSI A134.3-1972. The test conditions listed above are those given in ANSI Standard. These test conditions for water penetration are now cited for all storm windows.

3.2.3 Performance Need — Safety. The installed storm windows should not endanger the safety of the occupants of the dwellings.

3.2.3.1 Level of Performance — Egress. The installed storm windows should not appreciably obstruct or restrict the existing capacity and access required for occupant egress via windows.

Evaluation. Evaluation is accomplished by inspection of the installed unit.

Commentary. It is normally expected that one (or more) bedroom and living room windows can serve as emergency means of exit and will be easily openable and of suitable size (5 sq ft).

3.3 STORM DOORS

3.3.1 Performance Need — Heat Flow. Storm doors should not allow more than the prescribed rate of heat flow into or from the building.

3.3.1.1 Level of Performance — Heat Flow Resistance. Addition of a storm door to a primary door should give a resultant total thermal resistance of the primary door - storm door assembly which is at least 30% greater than the thermal resistance of the primary door alone.

Evaluation. The thermal resistances of storm doors are obtained from values given in table 9 of Chapter 20 of the ASHRAE Handbook of Fundamentals [13]. This table gives coefficients of thermal transmission through doors. The thermal resistance is the reciprocal of the thermal transmission.

Commentary. Addition of storm doors is a means of reducing heating and cooling energy consumption of residential housing by increasing the thermal resistance of primary doors. The increase in thermal resistance is dependent upon the design and composition of the door. For example, as the percentage of glass in a wood storm door increases, the thermal resistance decreases.

3.3.2 Performance Need

Air and Water Infiltration. Storm doors should not allow more than the prescribed levels of air infiltration and water penetration into the building.

3.3.2.1 Level of Performance

Air Infiltration. Allowable air infiltration should not exceed 5.0 cfm per square foot of rough opening at a static air pressure of 1.56 psf. (This is the equivalent of a 25 mph wind blowing against the door.)

Evaluation. The door should be closed and locked and the test should be conducted according to ASTM E283-73.

Commentary. Usually a low level of air infiltration does not cause a problem with moisture condensation because a door is opened and closed. If a storm door is installed on a primary door that is infrequently used, condensation may occur.

3.3.2.2 Level of Performance

Water Penetration. Adequate drainage should be provided to prevent water from running over the interior edge of the sloped threshold.

Evaluation. The door should be closed and locked and the test should be conducted according to ASTM E331-70.

Commentary. This test was developed for primary doors, but has been applied to storm doors.

3.3.3 Performance Need. Safety. An installed storm door should not endanger the safety of the occupants of the dwelling.

3.3.3.1 Level of Performance. Egress. An installed storm door should not appreciably reduce or restrict the existing capacity and access required for occupant egress.

Evaluation. Evaluation is accomplished by inspection of the installed unit.

Commentary. Doors are the normal means of exit from a residence. Storm doors which cannot be opened should not be installed, even on infrequently used doors.

3.3.3.2 Level of Performance. Safety Glazing. Safety glazing should be installed in all storm doors which contain glazing.

Evaluation. Glazing materials should conform to ANSI Z97.1-1975 entitled, "Performance Specification and Methods of Test for Transparent Safety Glazing Materials Used in Buildings."

Commentary. Many existing local codes require that safety glazing be used in storm doors. Safety glazing greatly reduces the risk of bodily injury due to accidental impact with the glass.

3.4 CAULKS AND SEALANTS

3.4.1 Performance Need. Air, Water and Dust Infiltration. Joint caulks and sealants should prevent the passage of air, water and dust through the joints of a building, throughout their service lifetime.

3.4.1.1 Level of Performance. Adhesion and Cohesion of Elastomeric Sealants. A sealant should maintain adhesion and cohesion throughout its expected service lifetime.

Evaluation.

A cyclic movement test involving extension and compression of the sealant within a joint evaluates the adhesive and cohesive properties. The test, conducted on cured sealants, involves 7 days water immersion, followed by 7 days of continuous compression beyond the nominal width at 158°F, followed by 10 additional cycles of compression-extension at 158°F and -15°F respectively.

The test method is described in the following federal specifications:

TT-S-00227E - Section 4.3.9

TT-S-00230C - Section 4.3.9

TT-S-001543A - Section 4.3.9.

A slightly modified test method is given in TT-S-001657 Section 4.3.10.

Commentary.

The most critical properties of a sealant are its adhesive (bond) strength and its cohesive strength (ability to hold itself together). These two properties must be maintained during the service life of the sealant.

The cyclic movement test is the most significant laboratory evaluation for predicting the durability of a caulk or a sealant in a joint. The test has good correlation with service in buildings provided there is correct joint design and application technique. The amount of acceptable bond (adhesion) and cohesion loss during testing varies according to the type of caulk or sealant.

3.4.1.2 Level of Performance

Shrinkage. A sealant should not shrink excessively. In most cases, the allowable shrinkage should not be more than 25% by volume. For oil base and latex caulks, the allowable shrinkage is specified in current ASTM standards listed in table 4 at 20% and 30% maximum by volume, respectively.

Evaluation. A sealant layer, 1/8 inch thick and 2 5/8 inches in diameter, is applied to a glass plate and allowed to remain at room temperature for 14 days, after which time the height and diameter are measured to compute volume loss.

Commentary. Excessive shrinkage obtained by laboratory testing indicates a high probability of early sealant failure in a joint. The shrinkage causes stresses on the sealant bonding area, hastening adhesion loss to the substrate.

3.5 WEATHERSTRIPPING

3.5.1 Performance Need — Air Infiltration. Weatherstripping should limit the amount of air infiltration around windows and doors.

3.5.1.1 Level of Performance — The installation of weatherstripping should appreciably reduce drafts or air flow through the joints of windows and doors.

Evaluation. Performance of weatherstripping should be demonstrated by its performance under service conditions.

Commentary. There are no test methods for demonstrating the efficiency of weatherstripping used for retrofitting. The amount of reduction of air flow will depend upon the tightness of the door or window being weatherstripped. Certain weatherstripping may not be suitable for all doors and windows because of the gap size of the joint.

3.6 VAPOR BARRIERS

3.6.1 Performance Need — Materials used for water vapor barriers should appreciably reduce the flow of water vapor into building and insulating materials.

3.6.1.1 Level of Performance — Permeance. Vapor barrier materials installed for retrofitting purposes should have a permeance not greater than 1 perm.

Evaluation. Permeance values for typical vapor barrier materials are given in table 1 of Chapter 18 of the ASHRAE Handbook of Fundamentals [13]. (A perm unit is grain$\cdot h^{-1} \cdot ft^{-2} \cdot in^{-1}$ of mercury vapor pressure difference.)

Commentary. Exact values for permeance should be obtained from the manufacturer of the material under consideration or secured as a result of laboratory tests. The permeance of vapor barrier materials should be determined by the dessicant method (Procedure A) described in ASTM E96-66(72), "Standard Method of Test for Water Vapor Transmission of Materials in Sheet Form," or by the dessicant method described in ASTM C355-64(73), "Standard Method of Test for Water Vapor Transmission of Thick Materials."

## 3.7 CLOCK THERMOSTATS

### 3.7.1 Performance Need

The clock thermostat should offer the user ease and reliability of temperature setback.

#### 3.7.1.1 Level of Performance

The clock thermostat should be fully automatic.

Evaluation. The manufacturer should state on the clock thermostat and its packaging that the clock thermostat is fully automatic.

Commentary. Substantial energy savings can be achieved through temperature setback at night. Temperature setback of a thermostat can be accomplished manually. There is no technical reason for requiring automatic control. However, there is the human reason that people often fail to use manual setback. For example, they may forget at night or may not want to rise in a cool house in the morning. Automatic control of the setback eliminates the human element and assures regular night setback with its resulting energy savings. Although some fully automatic clock thermostats may only function on one cycle (setback) a day, they may be nevertheless set back manually at other times whenever the need arises.

## 4. INSTALLATION PRECAUTIONS

This report is not intended to be a manual for installing retrofit materials and products. Among such manuals which already exist are: The U.S. Department of Housing and Urban Development report "In the Bank. . .Or Up the Chimney?" [4] and the NAHB Research Foundation's "Insulation Manual - Homes/Apartments" [9] which discusses all aspects of insulation including proper installation. The NBS report "Retrofitting Existing Housing for Energy Conservation: An Economic Analysis" [3] gives the levels of retrofitting which are cost effective for the homeowner. In addition, many manufacturers and trade associations have available pamphlets describing the correct installation of their products.

The preceding sections presented recommended criteria for tax credit and desired levels of performance to assure the quality of the materials and products used for retrofitting. Proper retrofitting requires more than quality materials and products. Proper installation of retrofit materials and products is a necessity. A superior material will be less effective in saving energy if improperly installed.

This section points out certain precautions that must be taken in the installation of retrofit materials and products. Following these precautions will assist the homeowner in correctly installing the material.

### 4.1 INSULATION

- When a vapor barrier is attached to the insulation, and the insulation is being applied to an uninsulated wall or ceiling, the vapor barrier must be applied towards the warm (winter) side of the wall or ceiling.
- When adding insulation on top of existing ceiling insulation, do not use a vapor barrier over the existing insulation.
- For air conditioning applications, duct insulation should contain a vapor barrier on the outside (warm-side) surface to prevent condensation on the duct and in the insulation.
- When insulating attics, do not cover air vents in soffits and gables. Insulated attics should be vented. In general, the net ventilation area for attics should be at least 1/300 of the ceiling area. Net ventilation area refers to the total of all openings free from obstructions.

- When insulating floors over unheated crawl spaces where earth is damp and uncovered, provision must be made for a high rate of ventilation. Less ventilation is required if the earth is covered with a vapor barrier or concrete slab. Crawl spaces should have a net ventilation area of at least 1/1500 of the ground area when the ground surface is covered with a vapor barrier. Crawl spaces should be cross-ventilated, and the openings should be screened and protected against the penetration of rain and snow.
- Retrofitting walls with loose-fill insulation may cause significant moisture to accumulate in the siding and sheathing, particularly in cold climates [14]. Water vapor permeation through the exterior wall may cause blistering and peeling of exterior paints. Application of a vapor barrier paint on the inside wall surface may alleviate this problem.
- Loose-fill insulation added to ceilings and walls should be of the proper fill density. Blown or poured-in-place loose-fill insulation should not contain excess voids or air spaces. The fill density of cellulose insulation should be 2-3 $lb/ft^3$ for ceilings and 3-4 $lb/ft^3$ for walls; for glass fiber insulation 0.7 and 2 $lb/ft^3$ for ceilings and walls, respectively. These values can be used to calculate needed amounts of these insulations.
- For fire safety, installed insulation should not contact recessed light fixtures, motors, fans, blowers, heaters, flues and chimneys. Thermal insulation should not be installed within 24 inches of the top or within 3 inches of the side of a recessed electrical fixture enclosure, wiring compartment or ballast unless labeled for the purpose. To retain loose-fill insulation from making contact with other energy dissipating objects, a minimum of 2 inches of air space should be provided and assured by use of blocking.

4.2 STORM WINDOWS

- Storm windows must be fastened in place straight, plumb, level and without distortion to assure satisfactory contact to the primary window frame.
- Storm windows should be sealed in place according to the manufacturer's instructions.
- Weep holes in the storm window frame should not be closed.

4.3 STORM DOORS

- Storm doors must be fastened in place straight, plumb, level, without distortion to assure satisfactory contact to the primary door frame.
- Storm doors should be installed in place according to the manufacturer's instructions.

## 4.4 CAULKS AND SEALANTS

- Follow manufacturer's directions as indicated on label of the cartridge or can or in a brochure. Pay particular attention to precautions given for safety in handling the material.
- Remove from the joint to be caulked all dust, dirt, particles, oil, grease, loose caulking and loose paint before placing the new compound into the joint.
- Manufacturers often recommend a primer or surface conditioner for certain surfaces. This is done to produce a strong bond of the sealant to the surface. Use only the recommended primer.
- Whenever possible, do not caulk joints at temperatures below 40°F because condensed moisture formed on the building at this temperature may cause poor adhesion of the sealant.
- Do not apply sealant on wet or damp surfaces.
- If the joint is 1/4 inch wide or more, use a back up or filler material, if possible. The filler may be any foam or sponge type nonstaining material which is squeezed into the joint leaving at least 1/4 inch space for the sealant.
- Tool the sealant with a spatula or smooth wooden stick to force the sealant against the sides of the joint.
- The placing of paper masking tape on each side of the joint before the caulking operation will leave a neat looking joint. Peel the tape off as soon as each section of work is finished.
- Do not add any liquid or powder to a sealant to change its handling property unless specific instructions are given by the manufacturer.
- Do not heat the sealant unless there are printed instructions to do so.

## 4.5 WEATHERSTRIPPING

- Follow manufacturer's directions as printed on the package or in a brochure.
- Assure that the surface is level and smooth by removing old weatherstripping, dirt particles, loose paint, etc.
- Apply adhesive backed weatherstripping to clean and dry surfaces only.
- Apply weatherstripping in one continuous strip along each joint of the door or window.

4.6 VAPOR BARRIERS

- Apply vapor barriers on the warm (winter) side of ceilings and walls.
- Do not puncture, rip or tear vapor barriers.
- Punctured, ripped or torn vapor barriers should be repaired. Repairs can be made by covering the damaged area with a piece of vapor barrier material secured with kraft paper tape or covering the damaged area directly with a low permeability tape such as aluminum duct tape or PVC tape.

4.7 CLOCK THERMOSTATS

- Follow the manufacturer's instructions for installation.
- Do not wire the clock into the temperature limit control circuit of the furnace. Whenever the limit control is activated, the clock will stop and loose time. An inaccurate clock may discourage the homeowner from using the clock thermostat.

## 5. RETROFITTING AND MODEL BUILDING CODES

To determine the relationship between retrofitting residential homes to conserve energy and the model building codes, the Standard Building Code, Basic Building Code, the One- and Two-Family Dwelling Code and the Uniform Building Code were examined. Conversations were held with the Technical Director of each model code generating organization. The study produced the following information:

1. None of the model codes, per se, are retroactive unless substantial repairs or alterations are performed on existing buildings; this is especially the case with existing single family dwellings and therefore building permits are generally not required for retrofitting.

2. In their adoption of model codes by reference, local jurisdictions at times change certain aspects of the requirements of the model code to conform to specific local conditions, and therefore may require building permits for retrofitting.

3. Local jurisdictions may have contractor licensing laws which require the issuance of building permits for all work performed on single family dwellings.

4. Since the model codes in general do not require the issuance of building permits, inspections of the installation of insulation, weatherstripping and/or storm windows and doors in existing single family dwellings accordingly are not required. Again, local regulations may require permits and inspections.

5. All three of the model codes have requirements which prohibit certain types of foam plastic insulations unless certain encapsulation conditions are satisfied. This poses a problem wherein the installer can be in violation of a law although no permit or inspection is required.

6. The question of the installation of storm windows oven openings necessary for required natural ventilation or emergency exits in existing single family dwellings will not arise in the case of model codes, per se, but may be a problem in specific local jurisdictions.

While model building codes and building officials, as noted above, do not presently enforce energy conservation provisions retroactively, they now have in most instances adopted energy conservation provisions which apply to new buildings. These provisions are basically adaptations of the American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE) Standard 90-75. A further development of this Standard into an American National Standard is now underway. In addition a new energy conservation code based on the ASHRAE Standard is now being processed by the National Conference of States on Building Codes and Standards (NCSBCS), Inc. for acceptance and use by state and local jurisdictions.

As no present standards for energy conservation in existing buildings are available, ASHRAE is now undertaking development of the following energy conservation standards for existing buildings.

ASHRAE 100.1P Low Rise Residential (up to 3 stories)
ASHRAE 100.2P High Rise Residential
ASHRAE 100.3P Commercial Buildings
ASHRAE 100.4P Industrial Buildings
ASHRAE 100.5P Institutional Buildings
ASHRAE 100.6P Public Assembly

Under the standards development process each of the proposed standards is developed and drafted by ASHRAE subcommittees, sent on for review and comment before final approval as a standard. Once a standard is approved, model code groups may adopt the standard by reference and code regulatory authorities may either adopt the model codes or the standards directly. So while presently there exists no nationally approved standards for energy conservation in existing buildings we can look forward to their coming development.

## 6. REFERENCES


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4. "In the Bank. . .Or Up the Chimney? A Dollar and Cents Guide to Energy-Saving Home Improvements," U.S. Department of Housing and Urban Development, April 1975, Available from the Superintendent of Documents.

5. Pilati, David A., "The Energy Conservation Potential of Winter Thermostat Reductions and Night Setback," Oak Ridge National Laboratory, Report ORNL-NSF-EP-80, 27 pages, February 1975.

6. Nelson, Lorne W., "Reducing Fuel Consumption with Night Setback," ASHRAE Journal, August 1973, pp 41-49.

7. Direct Testimony of R. L. Paul in hearings given before the Michigan Public Service Commission, Case No. U-4701, February 3, 1975.

8. "Retrofitting Homes for Energy Conservation, A Business Guide," NAHB Research Foundation, Inc., Rockville, MD, March 1975.

9. "Insulation Manual - Homes/Apartments," NAHB Research Foundation, Inc., Rockville, MD, September 1971.

10. "Fire Safety Guidelines for Use of Rigid Urethane Foam Insulation in Building Construction," Urethane Safety Group Bulletin, Published by Urethane Safety Group, The Society of the Plastics Industry, Inc., 250 Park Avenue, New York, N.Y. 10017, May 1974.

11. Reference 4, p 34.

12. ASHRAE Guide and Data Book - Systems and Equipment, American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., New York, N.Y., 1967.

13. ASHRAE Handbook of Fundamentals, American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., New York, N.Y., 1972.

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## APPENDIX A. SELECTED CITATIONS FROM THE LITERATURE ON RETROFITTING

This appendix is a limited survey of the literature. It is included in this report to show that a sound basis for retrofitting exists. The reports cited demonstrate that retrofitting existing housing not only conserves energy, but is also economically desirable for the homeowner.

The National Mineral Wool Insulation Association (NMWIA) conducted a study to determine the extent to which the requirements for improved thermal performance of living units could alleviate the shortage of energy for heating and cooling in the decade 1973-1982 [1]. The study considered two techniques for retrofitting existing housing. These were the upgrading of existing ceiling insulation, and the installation of storm windows and storm doors. It was estimated that there were 42.6 million single family units built before 1973 to consider for retrofitting. For the computations an "average" home* was defined. If the ceiling insulation of these "average" homes was upgraded with a R-11 insulation, the potential energy savings per week in the U.S. would be 562 trillion Btu. For the year 1982, this would amount to a savings of 1,124 million dollars. The 1972 estimated cost of the ceiling insulation retrofit was $144 per dwelling. The recovery of this investment would take 5.45 years.

Retrofitting storm doors and storm windows alone was considered for 21.3 million single family residences by the National Mineral Wool Insulation Association. In this case, the total energy savings would be 818 trillion Btu per year, and the dollar savings, 1,635 million per year. The 1972 cost of installing storm doors and windows was $240 per dwelling. The NMWIA reported that the recovery of the investment would require 3.1 years.

According to NMWIA the total energy savings achieved by the retrofitting of ceiling insulation to the 42.6 million units and of storm doors and windows to 21.3 million units would be 1380 trillion Btu per year.

The National Bureau of Standards (NBS) has recently published a report which considered the economic aspects of retrofitting existing housing for energy conservation [3]. The study identified economically optimal combinations of selected energy conservation techniques for reducing heating, ventilating and air conditioning (HVAC) costs. The study maximized potential dollar savings achieved with certain retrofitting techniques by comparing total savings versus total costs. Climatic, architectural and economic variables were used in the analysis. The retrofitting techniques considered were:

1) attic insulation

2) wall insulation

* floor area, 1200 $ft^2$; doors, 40 $ft^2$; windows 160 $ft^2$; location, in degree day range of 4700-5000; assumed level of ceiling insulation, U = 0.10 Btu/h $ft^2$ °F.

3) floor insulation over an unheated space

4) duct insulation in unheated space

5) storm windows

6) storm doors

7) weatherstripping.

The optimal combination of each of these techniques varies with fuel costs and climatic conditions. The optimal level of retrofitting increases as the cost of fuel increases and the climatic conditions become more severe. Levels of retrofitting are greater for homes that are both heated and air conditioned than for homes with heating only. Some general results of the NBS study follow.

The NBS report showed that even in areas of low fuel costs and mild climates, it is economically desirable to add insulation to attics where none previously existed. Moreover, in areas of high fuel costs and severe climates, it is economically desirable to add more than the currently recommended six inches of attic insulation. For example, about 10 to 12 inches is optimal for oil heated homes and about 12 inches for electrically heated and cooled residences in certain climates. The figures vary slightly depending on the type of insulation.

It is also cost effective to blow insulation into existing walls and to wrap exposed heating and cooling ducts in most climatic conditions regardless of the cost of fuel. Insulating over unheated spaces becomes cost effective in mild climates where fuel costs are high. It is cost effective in all other climates regardless of the price of fuel.

The economic desirability of retrofitting with storm windows depends upon window size as well as fuel costs and climatic conditions, according to NBS. In general, it is economically advantageous to add storm windows in most climates. The exceptions are mild climates where fuel costs are low. Even here, the addition of storm windows over large windows (minimum size 4 x 5 ft) becomes cost effective. On the other hand, the addition of storm doors is only cost effective in areas of high fuel costs and severe climates, assuming that a screen door must be replaced.

Weatherstripping of doors and windows to reduce air infiltration was shown in the NBS report to be cost effective in all cases. The effect of sealing and caulking around doors and windows was not examined.

The U.S. Department of Housing and Urban Development (HUD) has also recently prepared a report on the economics of retrofitting existing homes to reduce energy consumption [4]. This report is intended to help the homeowner calculate how much money he can expect to save by spending money to retrofit. The report states that if each homeowner spent $400 to retrofit his home, he would, in most cases, recover that money in less than 5 years.

The retrofit techniques discussed in the HUD report include those in the NBS report. In addition, the HUD report takes into account other energy saving techniques such as caulking, servicing of furnaces and air conditioners and thermostat setback.

Lowering the thermostat setting to reduce interior house temperature and thus heating fuel consumption is called setback. A lower thermostat setting during the sleeping hours than during the daytime is called night setback. The Oak Ridge National Laboratory has recently examined the potential energy savings that may be achieved through thermostat setback [5]. It was concluded that, if temperatures of homes were reduced from a typical 72°F to 68°F during the day and further reduced to 55°F during the night, the total U.S. energy budget for residential heating could be reduced by 14%. The reduction in energy consumption is dependent upon the climate. The percentage of energy savings is greater in mild climates than in severe climates. The absolute energy savings are greater in the more severe climates. For a home maintained at 68°F and located in an area of 4000 degree days, a night setback to 55°F could produce an energy savings of 22%. Savings from night setback for homes located in other areas can be estimated from the method given in the report.

The energy savings gained from night setback had been previously reported [6]. This paper showed that a night setback of 5°F produced an energy savings of 5 to 12% depending upon the location. For a setback of 10°F, the percentage savings was 9 to 16%. As in the Oak Ridge report, the more severe climates give a smaller percentage, but a greater absolute savings.

Another example of energy saved by retrofitting is given by the Consumers Power Company of Jackson, Michigan [7]. They estimate that there are in their service area 665,000 gas heated residences which have inadequate ceiling insulation. If all these customers were to install 6 inches or the equivalent of R-19 of ceiling insulation, natural gas consumption would be reduced by an estimated 14,725,000 Mcf per year. That is enough gas to heat 125,850 homes in their area, for one year.

The NAHB Research Foundation recently prepared a business guide for retrofitting homes [8]. The basic retrofitting techniques considered in the guide were insulation, storm windows and doors, sealants, weatherstripping, clock thermostats, heating and air conditioning tune-ups, and lower hot water heater temperatures. Additional techniques such as exhaust fans, awnings and replacement heating systems were listed as optional, depending on the homeowner's preference to install them.



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## APPENDIX B. ADDITIONAL MATERIALS AND PRODUCTS SUGGESTED FOR RETROFITTING

While compiling the criteria for insulation, storm windows and doors, sealants, weatherstripping, vapor barriers and clock thermostats, additional materials and products were suggested to NBS as means for reducing the energy consumption of residential housing. As such, it was suggested that they should be eligible for proposed tax credit when used for retrofitting. Manufacturers and trade associations were the primary source of these suggestions. Other suggestions resulted from conversations between NBS personnel and outside researchers who were familiar with the energy conservation problems.

A list of the suggested additional retrofit items is included in this appendix along with a brief comment as to why each item was suggested. NBS has not examined these items in regards to eligibility for proposed tax credit and criteria for tax credit eligibility have not been recommended. If the additional items are effective in conserving energy in residences, criteria will be needed for considering their eligibility for tax credit. The criteria should be based on the factors given in Section 2 including fire and health safety. The appendix has been included in this report to present the retrofit items that have been suggested.

1. Window Shades. Drawn window shades may prevent or reduce solar radiation shining into the house. In the summer this lowers the temperature of the residence and less energy is consumed in cooling the residence.

2. Window Draperies. As with window shades, drawn window draperies may prevent or reduce the passage of solar radiation through windows so that less energy is consumed in cooling the residence. In the winter drawn draperies may reduce drafts and may lower heat loses through windows.

3. Insulated Siding. Insulated siding has a higher thermal resistance than normal siding. When added to the exterior walls of the house, it increases the total thermal resistance of the walls to a greater extent than normal siding.

4. Urea Formaldehyde Foam Insulation. This organic cellular material is an effective insulation. As foamed-in-place insulation, this material initially contains relatively large amounts of water. Care must be exercised to permit the water to permeate outward and escape from the building.

5. Replacement Windows. A replacement window, as defined for retrofitting, is a thermal insulating, double glazed window. It is used to replace an existing primary window in lieu of adding a storm window. The thermal resistance may be equal to or greater than that of a primary window-storm window assembly. Some types of primary windows may not readily accept storm windows. In these cases, replacement windows may be the only means of reducing heat flow through the windows. These replacement windows must also be capable of limiting air infiltration.

6. Replacement Doors. A replacement door, as defined for retrofitting, is a thermal insulation door. It is used to replace an existing primary door in lieu of adding a storm door. The thermal resistance should be equal to or greater than that of the primary door-storm door assembly. These replacement doors must also be capable of limiting air infiltration.

7. Replacement Fuel Burners. Some fuel burners in residential homes are not properly sized to the home. These burners operate inefficiently, needlessly consuming excess fuel. Replacement of these burners with more efficient burners would result in less fuel consumption in heating the residence.

8. Regular Maintenance of Fuel Burners and Air Conditioners. Regular maintenance will increase the operating efficiency and result in less fuel consumption in heating and cooling residences.

9. Replacement Filters for Furnaces and Air Conditioners. Dirty or clogged filters on furnaces and air conditioners reduce the operating efficiency. Replacement of such filters with clean filters would result in less fuel consumption in heating or cooling the residence.

10. Clogged Furnace Filter Alarms. A clogged furnace filter alarm is a device which measures the pressure drop across the furnace filter. When the filter is clogged, the pressure drop is great. The alarm signals that the filter needs to be replaced.

11. Load Matching on Hydronic Systems. A system whereby the temperature of a heating boiler is maintained in relation to the outdoor temperature. The water in the boiler is not heated as hot on warm days as on cold days, thus reducing energy consumption.

12. Gas Pilot Pressure Regulator. This is a device for regulating the gas pressure at the pilot of a gas burner, and thereby reducing consumption of gas by the pilot.

13. Heat Reflective Glass and Reflective Coatings or Films on Glass for Windows. The reflective glass or coating on the glass rejects the radiation of the sun which normally penetrates into the home. The interior remains cooler. Less energy is consumed in air conditioning the residence.

14. Automatic Gas Igniters. Continuously burning gas pilot lights on furnaces are replaced with automatic gas igniters, conserving the gas that the pilot light consumes as it continuously burns.

15. Automatic Furnace Flue Dampers. This device allows the furnace flue to be automatically shut when the furnace is not operating, reducing heat loss and air infiltration through the flue.

16. Awnings. Awnings lowered in place shade the windows of a residence, reducing or preventing the penetration of sun rays into the interior.

17. Solar Screens. This device placed on the exterior of windows allows the penetration of sun rays into the interior during winter time and prevents their penetration during summer time.

APPENDIX C. CAULKS AND SEALANTS AVAILABLE FOR RETROFITTING

A. Basic Performance

1. Oil and Resin Base Caulks - General purpose caulking compounds formulated to seal exterior or interior nonmoving or very slightly moving joints between various building materials; form a skin which can be painted to prolong performance; may function for several years if applied properly; available in cartridges for use in caulking guns, in flexible tubes and sometimes in cans for putty knife application.

2. Polybutene Compound - Available in preformed shapes such as rope, cord or tape; excellent for temporary seals around window air conditioners and storm windows, for example; performance is extended when used in areas where it is protected from the elements.

B. Intermediate Performance

1. Latex Caulk - General purpose sealant designed for exterior or interior joints; responds to small joint movements; flexes with the joint to provide a resilient seal; extrudes smoothly from a gun, can be painted almost immediately after application; available in standard cartridges and in cans.

2. Acrylic (solvent type) Caulk - For general purpose caulking in joints with moderate movement; excellent adhesion to most building materials without the use of a primer; estimated service life up to 20 years; strong odor restricts use to exterior joints; available in cartridges and cans and in numerous colors.

3. Butyl Rubber Sealant (or Caulk) - An all-purpose sealant with greater service life and performance than the oil base caulks and about equal in overall quality to the latex acrylic types; forms a skin which can be painted; responds to joint movements up to about 10 percent of the original width; adheres to all building surfaces and retains a high degree of flexibility; available in cartridges and cans in numerous colors.

4. Chlorosulfonated Polyethylene - An all-purpose sealant with a relatively slow cure to a rubbery compound; provides good durability, flexibility and adhesion as well as easy application; responds to somewhat larger joint movements than the butyl or latex caulks; for use on exterior joints only; available in cartridges and cans in standard colors.

C. High Performance

1. Polysulfide - A sealant which cures to a rubbery compound with exceptional flexibility, recovery and adhesion to most building surfaces. The sealant has the ability to respond to joint movements up to plus and minus 25 percent of the installed width. When

properly installed, the service life can be 20 years or more. It is available as a one-component material which is packaged in standard cartridges for caulking guns; also available in a multi-component type which is mixed on the job just before application; also available in a pourable type for deck joints. The cured sealant has practically no shrinkage. Primers are used when recommended by the producer. Several colors are available. Joint design and preparation are of great importance for durability.

2. Polyurethane - The characteristics and performance properties of this class of sealant are essentially the same as those of the polysulfides when properly installed in accordance with the producer's instructions. The sealant is particularly known for high abrasion resistance and tear strength and is often used for joints in plazas and decks with heavy foot traffic. It is available in single and multi-component types, the latter in both nonsag and pourable grades.

3. Silicone - A class of single component sealants known for its versatility as a joint filler with exceptional performance under very high and low temperatures. It has exceptionally strong adhesion to glass as well as to other building materials. Ease of extrusion from the caulking gun is unaffected by cold temperature. It forms a skin in less than a hour and cures in a few days to an elastic compound. It is available in cartridges and cans in several colors including clear. One variety is used for joints with exceptionally large movements.

D. Compounds for Sealing Glass Panes

1. Putty - This name is usually applied to a soft dough-like, knife-applied compound formulated by blending oils and pigments. It is used for face glazing (application around the edges of a pane of glass, and for the bedding application to the inner side of the sash). After the putty is set, painting extends its performance life. It is available for wood or metal sash. Putties harden and crack with age and need replacement periodically.

2. Glazing Compound - Different from putty in that the formulation is modified to enable the compound to remain plastic over a long period. It performs well as an effective seal between the glass and the framing. Several types are available for specific purposes. A general purpose glazing compound will bed and face glaze glass to both wood and metal frames. It is available in standard cartridges and cans.

APPENDIX D. SPECIFICATIONS AND STANDARDS CITED IN THIS REPORT

1. Federal Specifications

Specification Sales (3FRSBS)
Building 197
Washington Naval Yard
General Services Administration
Washington, DC 20407

HH-I-515C - Insulation Thermal (Loose-Fill for Pneumatic or Poured Application): Cellulose or Wood Fiber (4-13-76)

HH-I-521E - Insulation Blankets, Thermal (Mineral Fiber, for Ambient Temperatures) (7-24-72)

HH-I-524B - Insulation Board, Thermal (Polystyrene) (11-6-72)

HH-I-526C - Insulation Board, Thermal (Mineral Fiber) (10-17-68)

HH-I-528B - Insulation Batts and Blankets, Thermal (Vegetable Fiber) (5-26-66)

HH-I-529B - Insulation Board, Thermal (Mineral Aggregate) (2-12-71)

HH-I-530A - Insulation Board, Thermal (Urethane) (11-22-71)

HH-I-551E - Insulation Block and Boards, Thermal (Cellular Glass) (3-11-74)

HH-I-558B - Insulation, Blocks, Boards, Blankets, Felts, Sleeving (Pipe and Tube Covering), and Pipe Fitting Covering, Thermal (Mineral Fiber Industrial Type) (1-9-73)

HH-I-573B - Insulation, Thermal (Flexible Unicellular Sheet and Pipe Covering) (2-20-68)

HH-I-574A - Insulation, Thermal (Perlite) (5-31-66)

HH-I-585C - Insulation, Thermal (Vermiculite) (10-17-74)

HH-I-1030A - Insulation, Thermal (Mineral Fiber, for Pneumatic or Poured Application) (2-23-73)

HH-I-1252A - Insulation, Thermal, Reflective (Aluminum Foil) (3-4-71)

LLL-I-535A - Insulation Board, Thermal and Insulation Block, Thermal (1-19-70)

TT-C-00598C - Caulking Compound, Oil and Resin Base Type (for Building Construction) (6-23-70)

TT-G-410E - Glazing Compound, Sash (Metal) for Back Bedding and Face Glazing (Not for Channel or Stop Glazing) (4-21-69)

TT-P-00791B - Putty: Linseed-Oil Type, (For Wood - Sash - Glazing) (10-16-69)

TT-S-00227E - Sealing Compound: Elastomeric Type, Multi-Component (For Caulking, Sealing, and Glazing in Buildings and Other Structures) (11-4-69)

TT-S-00230C - Sealing Compound: Elastomeric Type, Single Component (For Caulking, Sealing, and Glazing in Buildings and Other Structures) (2-2-70)

TT-S-001543A - Sealing Compound: Silicone Rubber Base (For Caulking, Sealing, and Glazing in Buildings and Other Structures) (6-9-71)

TT-S-001657 - Sealing Compound -- Single Component, Butyl Rubber Based, Solvent Release Type (For Buildings and Other Types of Construction) (10-8-70)

2. NBS Voluntary Product Standards

National Bureau of Standards
Washington, DC 20234

NBS Voluntary Product Standard PS 26-70 Rigid Poly(Vinyl Chloride) (PVC) Profile Extrusions (4-1-70)

3. ASTM

American Society for Testing and Materials
1916 Race Street
Philadelphia, Pennsylvania 19103

C208-72 - Insulating Board (Cellulosic Fiber), Structural and Decorative

C355-64(73) - Water Vapor Transmission of Thick Materials

C516-67 - Vermiculite Loose-Fill Insulation

C534-70 - Preformed Flexible Elastomeric Cellular Thermal Insulation in Sheet and Tubular Form

C549-73 - Perlite Loose-Fill Insulation

C552-73 - Cellular Glass Block and Pipe Thermal Insulation

C570-72 - Oil and Resin-Base Caulking Compound for Building Construction

C578-69 - Preformed, Block-Type Cellular Polystyrene Thermal Insulation

C591-69 - Rigid Preformed Cellular Urethane Thermal Insulation

C612-70 - Mineral Fiber Block and Board Thermal Insulation

C665-70 - Mineral Fiber Blanket Thermal Insulation for Wood Frame and Light Construction Buildings

C726-72 - Mineral Fiber Roof Insulation Board

C739-73 - Cellulosic Fiber (Wood-Base) Loose-Fill Thermal Insulation

C755-73 - Selection of Vapor Barriers for Thermal Insulations

C764-73 - Mineral Fiber Loose-Fill Thermal Insulation

C834-76 - Latex Sealing Compounds

E84-76a - Surface Burning Characteristics of Building Materials

E96-66(72) - Water Vapor Transmission of Materials in Sheet Form

E283-73 - Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors

E331-70 - Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference

4. ANSI

American National Standards Institute
1430 Broadway
New York, New York 10018

ANSI A134.3-1972 - Aluminum Combination Vertically-Sliding or Horizontally-Operating Storm Windows for External Application

ANSI A134.4-1972 - Aluminum Storm Doors

ANSI Z97.1-1975 - Safety Performance Specifications and Methods of Test for Safety Glazing Materials Used in Buildings

5. NWMA

National Woodwork Manufacturers Association
400 West Madison Street
Chicago, Illinois 60606

NWMA Industry Standard I.S.1-73 - Wood Flush Doors

NWMA Industry Standard I.S.2-73 - Wood Windows

NWMA Industry Standard I.S.5-73 - Ponderosa Pine Doors

6. FHDA

Fir & Hemlock Door Association
Yeon Building
Portland, Oregon 97240

Industry Standard FHDA/5-75 - Douglas Fir, Western Hemlock, and Sitka Spruce Doors and Blinds

7. ASHRAE

The American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
345 East 47th Street
New York, New York 10017

ASHRAE Standard 90-75 - Energy Conservation in New Building Design

Mr. DINGELL. Mr. Snell, the committee thanks you, and, as indicated earlier, the Chair will see to it that the full text of your statement and the papers that you discussed with us are inserted in the record at the appropriate point.

Dr. Taylor?

## STATEMENT OF GORDON T. C. TAYLOR, PH.D.

Dr. TAYLOR. Mr. Chairman, and members of the committee, Chairman Richard Dunham asked me to prepare the analysis requested by the committee and to testify in his behalf. My testimony may not represent the views of the full Commission, which has not had the opportunity—with the short deadline—to review these issues.

I strongly support the objective of the utility program. The objective of the utility program is to facilitate installing insulation and other weatherization measures in our homes to enhance their energy efficiency. Such measures are cost-effective because they will save over a period of years more than they cost.

My testimony focuses on four main issues. First, the utility program depends for its effectiveness on incentives and subsidies which primarily are created by provisions in other parts of the act. Second, the utility program probably would not cause financial difficulties for the utilities. Third, the utility program should be strengthened so that after some future deadline, no one would be allowed to waste energy continuously. Fourth, the utility program should be modified in order to avoid creating undesirable conflicts of interest, unnecessary impacts on small business, and unfair effects on competition.

First, the utility program would facilitate installing residential conservation measures, but it is voluntary and depends on incentives and subsidies. The increasing cost of fuels and energy does provide some incentive to insulate, but because of various practices, controls and ratemaking practices, the cost of energy to residential customers is below its cost to the Nation. As noted by the President in *The National Energy Plan* (p. 49):

> "Both oil and natural gas are now priced domestically below their marginal replacement costs, and as a result they are overused."

The proposed National Energy Act would take some steps toward making the cost of energy to consumers reflect the cost of energy to the Nation. Without these price incentives, however, it will not be economic to customers to insulate and take related conservation measures to the level or degree that is economic to the Nation.

The act also provides for tax credits to most persons and direct grants to the poor and elderly. It would allow Federal mortgage institutions to help finance the weatherization of homes. These measures clearly will be helpful but cannot substitute for the rationalization of our pricing of energy. I am not recommending that all energy prices equal the cost of imported fuels. With proper rate design, customers can be made to face the price of this high cost fuel for only the last small amount of their consumption, that is, their marginal consumption, but can still enjoy lower prices for most of their consumption. To reemphasize, the utility programs will be ineffective if not supported with increased price incentives.

Second, the utility program probably would not cause financial difficulty for the utilities unless people do not pay their bills. The dollar amount of each loan would be small, and the number of loans outstanding at any one time could be limited if capital shortages occur. Loans also could be made by banks, savings and loan associations, or other financial institutions. Moreover, loans could be purchased by Federal mortage institutions. Even if a large number of customers asked simultaneously for loans, the total amount involved for a utility still would be less, for example, than the cost of a new unit in a nuclear plant. The payback period, however, would start almost immediately and span only 3 to 5 years compared to a nuclear unit that may pay nothing for several years until completed, and then its repayment is stretched out for approximately 30 years. Clearly, the risk in home improvement loans is less than for nuclear plants and the outlays much more controllable. Finally, the act allows a utility with financial problems to postpone its program.

Third, installing insulation would be voluntary under the utility program. Even with incentives, subsidies, and direct grants, some homes may remain uninsulated. No one should be allowed to waste energy continuously. Therefore, insulation should become mandatory after a period of years.

The first deadline established should be for existing homes put up for sale. Just as we now must obtain in some States a certificate of meeting safety standards for a used car before it can be sold, we should be required to obtain a certificate of energy efficiency before being allowed to sell a home. A second deadline should be established making the insulation of all existing residences mandatory. The measures in the act should be given an adequate time period to be fully effective. When installing insulation becomes mandatory, it should not be on financial terms more favorable than during the voluntary period, or such provisions would invite delay. Energy conservation is too important to rely permanently on voluntary methods, particularly when insulation is essentially passive, and does not require adjustments in lifestyles or patterns.

Fourth, the utility program would require utilities to offer a turnkey weatherization service. Thus, on the request of a customer, the utility would inspect the house, recommend insulation and other measures, install measures agreed on, finance the cost of materials and labor, and obtain repayment through utility bills. Unfortunately, the utility would have an unfair competitive advantage over independent businesses who install insulation, storm windows, etc. Regardless of intent, the utility could drive them out of business. The utility also would have an unfair advantage in the competition for financing home improvement loans. In addition, the utility program could create conflicts of interest since all of the functions from quasi-official recommendations for weatherization improvements through installing materials and financing the job would rest within one entity.

The utility program could be modified, however, to avoid these undesirable side effects while maintaining the effectiveness of the program. Utilities could inspect homes, make recommendations, advise on the costs of alternatives, provide information on contrac-

tors, assist in loan applications, and reinspect after the work is completed before an energy efficiency certificate is granted and before serving as collector of loan payments through utility bills. Installing and financing should be left to independent contractors and existing financial institutions. Utilities should not be allowed to sell, install, or finance insulation and other conservation measures either directly or indirectly through subsidiaries. Utilities would have an unfair advantage in this market. In any case, the natural monopoly argument for utilities does not extend to the home improvement market. The competitive market can serve us better.

The functions of the utilities under this modified program still would be important, and perhaps they should be given an additional incentive to perform them.

In summary, residential energy conservation is important and should be supported by strong incentives, mandatory deadlines, utility leadership, and competitive markets.

Mr. DINGELL. Thank you very much, Mr. Taylor.

Ms. Savitz?

## STATEMENT OF MAXINE SAVITZ

Ms. SAVITZ. Mr. Chairman, and members of the committee, it is a pleasure to be here from ERDA to support the President's plan for energy conservation for existing residential buildings. A comprehensive program has been offered with respect to the buildings sector. The residential sector consumes about 20 percent of the Nation's energy. For 1974, space heating and cooling in the residential units accounted for 60 percent of the energy used, water heating about 15 percent, lighting and appliances the rest.

I will spend some time summarizing activities that ERDA has ongoing related to the insulation and space heating area. In the insulation area we are looking at various classification of insulation material, identifying them, classifying them according to thermal characteristics, toxicity, flame travel and moisture requirement. One study has recently been completed, a survey of the properties of commercially available cellulosic thermal insulation materials, and has provided us base level property data. We have looked at 19 different commercially available samples that were purchased off the shelf. We looked at the composition and quantity of fire-retardant, moisture resistance to fungal growth and corrosiveness. In the study the quality of cellulosic varied from good to those with certain bad qualities. The results of the study show the need for better understanding of the parameters which control the performance of cellulosic insulation and need for improvement, something Mr. Carroll mentioned that we are working with GSA in doing. We are currently doing similar testing with other insulation materials and reviewing proposals for the development of new improved cost-effective insulation materials for walls and ceilings of residential buildings and commercial establishments.

In addition to efficient materials, there must be good diagnostic techniques to see where insulation is needed, i.e., where the heat losses are. The use of infrared thermography is one technique.

We are doing aerial surveying of rooftops in 29 different towns and cities in Minnesota with an infrared device attached to the fuselage of an aircraft to determine the heat losses. There is an outreach program at the same time, the consumer comes in and has the information read to him and the differences between his house and neighboring buildings are discussed. So far, this has received support from the local communities. A user manual is being developed as part of the project which can be used by other communities and areas.

In the area of heating and cooling equipment we have several programs underway to develop and demonstrate technologies to improve the efficiency of space heating equipment.

Brookhaven National Laboratory is presently evaluating advanced technology oil-fired space-heating equipment that can be used for oil refit application.

We are also looking at some advanced heat pump projects to see where we can increase the efficiency and also make use of thermally-activated systems.

Generally, we want very much to support the President's program. We think that the measures are identified with the energy savings and it is a very important factor in the economy.

[Ms. Savitz's prepared statement follows:]

STATEMENT OF MAXINE SAVITZ, DIRECTOR, DIVISION OF BUILDINGS AND COMMUNITY SYSTEMS, ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

Mr. Chairman and members of the subcommittee: thank you for this opportunity to present the views of the Energy Research and Development Administration on title I, part A, subpart 1 of the President's proposed energy legislation relating to energy conservation for existing residential buildings.

The President in his national energy plan delivered to the Congress on April 20, 1977 indicated that the cornerstone of the administration policy is to reduce demand through conservation and improved energy efficiency. He believes that conservation is the quickest, cheapest, most practical source of energy and is proposing the implementation of an effective conservation program for all sectors of energy use so as to reduce the rate of demand growth to less than two percent, thereby helping to achieve both the nation's short and medium term energy goals.

Currently there are approximately 74 million residential units in the United States. Almost 20% of U.S. energy is used for the heating and cooling of residential and commercial buildings. The energy inefficiency of American buildings is a direct result of the cheap energy era in which most of the existing structures were built. The potential savings from improving the energy efficiencies of the Nation's housing stock is enormous. Installation of ceiling, attic, wall, floor, waterheater insulation; storm windows; caulking and weatherstripping of doors and windows; installation of clock thermostats and simple furnance modifications such as replacement burners, devices for modifying flue openings and electrical and mechanical furnance ignition systems which replace gas pilot lights—all such residential energy conserving measures eligible under the proposed legislation could result in substantial energy savings.

The rationale and overall thrust of the President's residential energy conservation initiatives is to subsidize some energy conservation measures, provide a source of information for encouraging consumers and to provide a source of funding for energy conserving purchases.

A major element of the program for existing residential buildings is to require State public utility commissions to direct their regulated utilities to offer their residential customers a "turnkey" conservation service, financed by loans repaid through monthly bills. Utilities would also inform customers of other available conservation programs, and advise them how to obtain financing, materials, and labor to carry out conservation measures themselves. Other fuel suppliers will be encouraged to offer similar programs, with the help of the State energy offices.

We believe that the utilities can play a major role in the implementation of the President's program to meet our national energy goals. Since the utilities impact on all residential consumers, this program can have a major impact on market penetration of these energy conserving measures.

A number of utilities have already instituted programs with some features similar to this one, e.g., Pacific Gas and Electric, Northern States Power, Michigan Gas, Colorado Public Service Company, Southern California Gas, Niagara Mohawk and others. The President's program would accelerate the onset of these efforts and will make it available to most energy consumers.

ERDA has been working in a number of areas which impacts this programmatic area.

Because the insulation industry is composed of many competing segments, e.g., fiberglass, mineral wool, cellulose materials, and foams, the ERDA program addresses multiple approaches most appropriate to each segment to achieve large national energy savings. The real potential of available and prospective insulation refit actions for reducing energy losses cost effectively is assessed, and a close working relation has been established with industry to assist in development of programs consistent with national energy conservation goals.

Programs we have on-going include:

*Classification of Insulating Materials:* Identify and classify, according to thermal characteristics, toxicity, flame travel, and code requirements, all insulation materials now on the market; determine, to the extent possible, thermal and other characteristics of insulation materials under actual installed conditions; identify and evaluate current application techniques and rank potential innovations in such techniques according to their effectiveness.

*Improved and/or New Wall Cavity, Exterior, and Interior Insulation Installation Techniques:* Develop improved or new techniques for installing the various types of existing insulation materials so as to increase their thermal effectiveness.

Investigating the adequacy of the testing procedures for fibrous insulating materials. This is in support of development of insulating testing procedures.

Developing public data on the quality of commercial fibrous insulation data with respect to thermal performance.

ERDA performed a study on the properties of commercially available cellulosic thermal insulation materials to obtain base level data on the materials. The study indicated that the quality of cellulosic insulation is very variable with both good and bad qualities, e.g., the materials exhibited a wide range of corrosiveness against aluminum, copper and steel when tested in accordance with standard specifications. The results of the survey show the need for a better understanding of the parameters which control the performance of cellulosic insulation.

Actively participating with General Services Administration, Department of Defense, National Bureau of Standards, and The American Society of Testing and Materials on the Development of Improved Insulation Specifications.

The major thrust of the ERDA program in the area of space conditioning is toward refitting existing buildings with space conditioning improvements, devices, and systems that will markedly improve the energy efficiency with which heating and cooling service is provided. Substitution in existing and new buildings of HVAC systems which make optimal use of abundant domestic resources is being pursued.

Projects we have ongoing include:

space conditioning technical assessment to develop and rank opportunities for equipment refit existing and new oil fired residential and commercial systems which are cost effective and require a minimum use of energy.

testing existing and new oil fired equipment for residential and light commercial use to determine ways of improving efficiency.

We have been asked to discuss standards as they apply to home insulation. Insulation standards or specifications are issued by the American Society for Testing and Materials (ASTM), industrial associations and government agencies. The types of insulation considered and the available standards are:

1. Mineral Fibers

A. ASTM C 665-70, mineral fiber blanket thermal insulation for wood frame and light construction buildings.

B. ASTM C 764-73, mineral fiber loose fill thermal insulation.

C. Federal specification HHI-521 on unfaced and faced blanket insulation.

D. Federal specification HHI-1030 on loose mineral fiber insulation.

2.Cellulose

A. ASTM C 739-73, Cellulosic Fiber (wood base) loose fill thermal insulation.

B. National Cellulose Insulation Manufacturers Association N-101-73, standard specification for cellulosic fiber (wood base) loose fill thermal insulation.
C. Federal specification HHI-515c on cellulose.
3. Cellular Foam—no standards available. There is a sub group on ASTM developing a first draft.
4. Vermiculite—ASTM C 516-75, perlite loose fill insulation.
5. Perlite—ASTM-C, 549-73, perlite loose fill insulation.
There are a few Federal specifications on the manufacture of insulation, however, there are not Federal specifications on the installation of insulation.
We believe that the President's program on utility involvement in the commercialization of energy conserving equipment and insulation has great merit and urge passage of this legislation. Our estimate of the potential savings from the installation of conservation technologies in existing buildings is approximately 500,000 barrels of oil equivalent per day.
Mr. Chairman, I would be happy to answer any questions of the subcommittee.

Mr. DINGELL. Thank you for your very helpful statement.

Now we have Mr. Marshall. We are very pleased that you are with us. Will you identify yourself for the purposes of the record.

**STATEMENT OF MORTIMER M. MARSHALL, JR., DIRECTOR, CONSTRUCTION STANDARDS AND DESIGN, OFFICE OF THE DEPUTY ASSISTANT SECRETARY OF DEFENSE FOR INSTALLATIONS AND HOUSING, DEPARTMENT OF DEFENSE, ACCOMPANIED BY THOMAS R. CASBERG, STAFF ENGINEER FOR DESIGN AND COL. JAMES F. MILEY, ASSISTANT FOR ENERGY CONSERVATION, OFFICE OF THE SECRETARY**

Mr. MARSHALL. My name is Mortimer Marshall. I am Director of Construction Standards in the Office of the Assistant Secretary of Defense for Manpower, Reserve Affairs and Logistics.

Mr. DINGELL. The witness list indicates that you are accompanied by Mr. Thomas R. Casberg and Colonel James F. Miley; am I correct?

Mr. MARSHALL. That is correct.

Mr. DINGELL. We welcome them. Also, is Mr. Joseph Sherman here yet? Not yet.

Well, then, Mr. Marshall, you may consider yourself recognized for the presentation of your statement at this time.

Mr. MARSHALL. Thank you, Mr. Chairman.

I am pleased to appear before this group this morning to participate in the hearings. I have a very short statement. I would like to read it at this time. It addresses the Energy Conservation Investment Program of the Secretary of Defense.

The Department of Defense Energy Conservation Investment Program, ECIP for short, was first funded in fiscal year 1976 to reduce energy consumption through self-amortizing retrofit projects for existing facilities. This program has been favorably received by Congress. Funding levels for the program have been approximately $130 million for fiscal year 1976, $146 million for fiscal year 1977 and $20 million for fiscal year 1978. The total cost of the current program is about $722 million.

Projects within ECIP have been divided into eight major categories. These are:

Energy Control and Monitoring Systems
Heating and Air Conditioning Modifications
Insulation and Glazing

Lighting Conversions
Electrical Energy Conversions
Boiler Modifications
Steam System Modifications
Miscellaneous Building Alterations

With the exception of solar projects, the current ECIP program is restricted to a maximum payback period of six years. Solar projects must be cost effective but are not restricted by the six-year payback standard. Cost avoidance savings are estimated at approximately $1 billion by 1985.

Compliance with the recent Presidential guidance to reduce energy consumption by 20 percent by 1985 will necessitate an expansion of the present ECIP program.

The provisions of the ECIP have been applied to one and two-family housing in the same manner that they have been applied to all other Department of Defense facilities. The most cost effective projects have been scheduled first, and housing competes with other facilities for energy conservation projects on this basis.

DOD housing can be expected to meet or exceed legislated levels of energy conservation for Federal facilities.

My assistants and I are prepared to answer any questions you may have.

Mr. DINGELL. Mr. Marshall, the committee thanks you.

The Chair will now recognize members of the committee for the purpose of asking questions. The Chair does advise that prior to that time, the Chair would like to have each of you, on behalf of the Department which you represent, to indicate to us any impediments, administrative or legislative, which exist with regard to your carrying out the President's program as set out in H.R. 6831, sections 101 through 109, which are the parts under consideration by the committee this morning. Also, what changes will be necessary, either in your statutory authority or administrative practices or in the provisions of sections 101 through 109 in order to enable you to carry out your responsibilities under these sections. If you have any questions or need any assistance with regard to the response to the committee on these points, our staff will be ready to assist you.

[The following information was received for the record:]

RESPONSE OF FEDERAL ENERGY ADMINISTRATION

No additional authorities are required to implement sections 101-109, other than those contained in those sections. In particular, the general rulemaking authority contained in section 108 allows adequate flexibility to deal with unanticipated administrative impediments. The legislative authority contained in earlier energy conservation legislation, particularly the FEA Act of 1974, the Energy Policy and Conservation Act of 1975, and the Energy Conservation and Production Act of 1976, complement those authorities proposed in the National Energy Act.

Mr. DINGELL. The Chair now recognizes the gentleman from Ohio, Mr. Brown, for five minutes.

Mr. BROWN. Thank you, Mr. Chairman.

I would first like to ask for something of an elaboration from any of the panel members about the point raised by Mr. Taylor from the Federal Power Commission. That is, the impact of the program as it was devised by the Administration with reference to whether or not

this will encourage utilities to get into a business that ordinarily is performed by small business people who are related to the building and construction industry and pre-empt the kind of individual entrepreneurship that they have traditionally exercised in this business of home insulation.

Mr. HEMPHILL. In designing the policy in this bill, we recognized that as a legitimate and difficult problem. We attempted to deal with it by requiring the utilities to provide lists of contractors which were not necessarily their own captive contractors.

We additionally attempted to deal with that by requiring utilities to finance home improvements made by contractors not of their own selection necessarily and to finance home improvements made by home owners themselves.

So, in our judgment, you have a balance sufficient to preclude the utilities from completely dominating the home improvement market in their particular service area.

Mr. BROWN. How would you get on that list?

Mr. HEMPHILL. It is required that the list be drawn up through a competitive selection process, governed and drawn up by the State PUC, which in turn would be governed by rules of the Administrator.

Mr. BROWN. If that is not a monopoly list, at least it is an oligopoly list. In an area where somebody is left off, what rights does he have or how does he get on the list? It seems to me to be a pretty tough kind of governmental decision that says, "Little businessman A, you are okay, but little businessman B, sorry, but you just didn't make it, struggle as best you can."

Mr. HEMPHILL. There is certainly a potential for problems there.

Mr. BROWN. How do you protect against the potential for these problems?

Mr. HEMPHILL. I think it is likely you will have to have a set of rules and an appeals process if in fact you don't think that——

Mr. BROWN. Does that exist now within the program as it is drawn up or is the program not that well developed yet?

Mr. HEMPHILL. There is certainly sufficient flexibility and authority in the statute to require such a process.

Mr. BROWN. Do you think the Congress ought to require it or it ought to be required by some administration agency that we can place full confidence in, whoever that might be, if any?

Mr. HEMPHILL. I think you could probably do it either way, in truth.

Mr. BROWN. Thank you.

The questions that were listed in Mr. Snell's statement, ladies and gentlemen, are, I think, very good questions. The unfortunate problem is that we have to have the answers to those questions. I would like to get the answers from those of you on the panel. We don't have very much time to get them. I don't need to repeat the questions. I think they are on page 2. But you might just address one of them.

Is the technology in hand to do the job that we need to do or should the program that the President advanced to us provide for some further technological research and development in the area of insulation research? That is an opening.

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There are six questions there that we would like to get the answers to. I wonder if you could just address yourself briefly to some of those questions. Maybe I will start with the gentleman from FEA or GSA and then we can go from there to ask you to write your answers out.

Mr. CARROLL. Sir, I will start off. I don't think I can cover all the things you want answered right now.

I think the first fundamental thing we have to approach and resolve is the development of the best specifications, that is, to require a material that will give us the maximum amount of energy saving without jeopardizing the other things that you must bring in balance such as corrosion, moisture absorption, and fire retardancy type of materials.

The cellulosic material has a higher thermal value where the mineral fiber will give you a better result as far as corrosion, fire retardancy, and absorption. The tradeoff there is something we have to reckon with and decide.

I think that we must improve the type of method for testing on fire retardancy material.

Mr. BROWN. Given those differences, do you think that all insulation materials should have the same degree of encouragement or should they have some varying degree of encouragement depending on the quality of the material and their adverse qualities?

Mr. DINGELL. The Chair advises that the time of the gentleman from Ohio has expired, but the witness may respond to the question.

Mr. CARROLL. I believe that we can resolve that type of a problem, but GSA could not predetermine all insulation requirements for all places. It is going to vary with the type of construction of the house, et cetera.

I think we can fulfill our part of it by revising our specifications so that we are going to require the best material.

[The following information was received for the record:]

We believe this would depend upon the availability of material. In the event revision of Federal specifications identify material that will contribute to conservation of energy, moisture absorption, fire retardancy, or corrosion resistance to a greater degree and the supply is available, the specifications will be revised to require this material. Its use should be encouraged by whatever means the Committee would develop. Our calculations, which are probably conservative, indicate that it would take 87 million tons of insulation to insulate the 74 million homes in the the U.S.

Mr. BROWN. Did you answer my question, though?

Mr. CARROLL. Not fully, sir. Somebody else may want to pick up the balance.

Mr. DINGELL. The Chair advises that it would be better to have the panel members respond to Mr. Brown's questions in writing.

Mr. BROWN. Mr. Chairman, they are the six questions here and the final question about the cost, whether or not there ought to be varying incentives, depending on the quality of insulation materials.

Mr. DINGELL. The Chair is in accord. The record will remain open to that end. The Chair requests the witnesses to respond to the questions and calls their attention to page 11, lines 16 through 23, particularly with regard to the area where it mentions residential energy conservation.

The Chair recognizes now the gentleman from Indiana, Mr. Sharp.

Mr. SHARP. Thank you, Mr. Chairman.

The President is asking for authority to set standards, if necessary, for these materials and some of the testimony was relative to the materials used in insulation.

Mr. Carroll, you indicated that in the future some of these problems of the physical properties of the material could be resolved. Can you give us some more specific indication of how soon we could have a set of agreed-upon standards? I would like ERDA to respond to that as well.

Mr. CARROLL. At the present time our plan is that it will be completed not later than the end of calendar year 1977. I can see after reading the bill and the energy requirements that we will do our best to accelerate it. This requires coordination with industry and the other Federal agencies, many of which are here today.

Mr. SHARP. Ms. Savitz, do you have a different answer?

Ms. SAVITZ. We are working with GSA in their revision of the standards. The Canadians, it should be noted, have issued a provisional standard for cellulose which we are looking at. We will review their comments, those they are receiving from the industries. This will help to accelerate the process.

Mr. SHARP. So, clearly, by next year we ought to be able to have a very clear-cut set of standards on this that industry could work with, that is your impression?

Mr. CARROLL. That is right.

Mr. SHARP. Let me say before I turn to my next question, I wanted to thank Mr. Snell and Mr. Marshall for providing us the summaries and abstracts that the committee is asking for. We are trying to have a new procedure in this committee whereby we are asking witnesses to abstract their statements so we can identify quickly the critical issues and information. We appreciate your cooperation in that.

I would like to ask Ms. Savitz and Mr. Carroll whether or not there is any problem of availability of materials in terms of meeting the President's 1985 goal on insulation? Are you aware of any?

Mr. CARROLL. At the present time there is a reported, and I have to use the word guardedly, shortage of boric acid which is probably the best chemical ever used in this type of material.

Now there are other elements that can be used. We are testing other materials to assure ourselves that other elements will work. We have also contacted manufacturers to assure that all types of insulation will be included in the program.

Mr. SHARP. Is it your impression that this is a fundamental shortage that could not be overcome or is it that at the moment there is not enough of it?

Mr. CARROLL. I cannot answer the question today, but I will be glad to submit that to the committee.

Mr. DINGELL. Without objection, the record will remain open for the insertion of the information referred to. However, we are imposing a 7-day limit on these matters because of the interest of the committee in getting the record processed in good time and getting this matter on the floor.

[The following information was supplied for the record:]

There is presently a shortage of boric acid. However, adequate supplies should be available by 1981 to meet the demands. For information, boric acid is not used in the composition of the mineral fiber type insulation.

Ms. SAVITZ. From our understanding, knowing there will be this demand the suppliers will be able to get the material and start producing. It is something we are investigating with the industry.

Mr. SHARP. Mr. Marshall, just in passing, you have indicated that things that have already been done by the Defense Department in conserving energy and the goal for conservation by 1985.

Can you tell us about the Pentagon Building itself, what are its heating and cooling bills? I understand it may be poorly insulated.

Mr. MARSHALL. I can't answer that. That is under the auspices of the General Services Administration.

Mr. SHARP. I don't suppose the GSA has that information as to what the Pentagon Building uses itself in terms of energy.

Mr. CARROLL. I am sorry, I am not able to supply that information, but we will be glad to obtain that information for the committee.

[The following information was received for the record:]

The electric bill in the Pentagon last year was $4,111,410.45 for electricity and $1,654,543.00 for fuel. Fuel and utility costs continue to increase due to fuel adjustment charges, rate increases, transportation, and shipping costs, etc. Electric consumption in 1976 was 24.1 percent less and fuel 54 percent less than the amount consumed in 1973. A study of the roof has not been made of the Pentagon, but additional insulation in the roof of most Federal buildings that have been studied are not currently economically justifiable unless major roof repairs are necessary.

PENTAGON CONSUMPTION AND COST

| Consumption | Base Year FY 1973 | Base Year FY 1975 | Latest Year FY 1976 | FY 1975 - 73 % Reduction | FY 1976 - 73 % Reduction |
|---|---|---|---|---|---|
| Kilovatts | 178,080,000 | 131,760,000 | 135,100,000 | -26 | -24.1 |
| M lbs steam | 638,699 | 377,731 | 294,026 | -40.9 | -54 |

| Cost | | | | |
|---|---|---|---|---|
| Kilovatts | -- | -- | $4,111,410.45* | * Fuel and utility costs continue to increase due to fuel adjustment charges, rate increases, transportation and shipping costs, etc. |
| Steam | | | $1,654,543.00 | |

Mr. SHARP. Thank you very much.

If I have further time, the standards apparently could be established within the year, but the availability of testing facilities is another question. Did you indicate, Mr. Snell, that it would be two years before we would have the kind of facilities available where we could really test these materials and see to it that industry could meet them?

Mr. SNELL. Sir, I think there is probably adequate capacity in testing facilities now for dealing with the cited materials. What I was referring to was within 15 months we should be able to establish a program of accreditation of these laboratories to assure the effectiveness of what is marketed.

Mr. SHARP. Is there any other view on the panel?

Mr. CARROLL. If I may, I would like to supplement the remarks.

The laboratories in the Federal family are available and can perform now. The manufacturers can perform now. I think what we have to do is come to a resolution of the requirements.

The present requirement for fire retardancy is on an E-84 tunnel 24 feet long where the material is put on the roof of the tunnel. In my opinion, this is not a valid test for this material. In my opinion we have to change the requirements and when we do, we will have more laboratories working on the job both in industry and in the government.

Mr. DINGELL. The time of the gentleman has expired.

Mr. Stockman.

Mr. STOCKMAN. What concerns me is that I don't see anything in the bill about the disposition of the conservation gas that would result from the program. In other words, even though questions have been raised as to how effective it actually will be even with the tax incentive, let's assume you have a high rate of effectiveness and by 1985 you are saving 1 trillion cubic feet of gas over what otherwise might have been used. How is that gas going to be disposed of? The bill is silent on that.

What is the thinking of the FEA and the GSA on this? It is going to have a differential effect from utiity to utility, depending on the growth rate in the area and depending on the baseline supply conditions for that utility. The conservation gas will meet a shortage in some areas where the supply and demand situation is not very good.

In other areas where the utility supply is fairly good and you have a declining rate of economic activity, the measures involved in this bill will actually make gas available.

I am wondering if you could comment on that in terms of whether there should be something in the bill as part of the utility's plan for the disposition of that conservation gas or whether the FPC and others in the new energy department will be involved in allocation schemes and other measures to dispose of it.

Mr. HEMPHILL. There is no specific provision for the conservation gas or saved gas or finders-keepers provision in the bill because it was our judgment that since we are requiring essentially all users throughout the country to engage in conservation programs, there was no particular need for that.

Further, if you read some other sections of the bill and if they are enacted and implemented, you will find that there are stringent limits and programs to discourage the use of natural gases as boiler fuel both in utilities and for large industrial users. Our knowledge indicates that it will free up substantial amounts of gas which by and large will be dedicated to residential consumption.

Mr. STOCKMAN. So you think most of the conservation gas will be used for residential consumption?

Mr. HEMPHILL. You can't see it from reading sections 101 through 109, but if you read those along with the coal conservation sections, by 1985 you have very few major industrial boilers burning gas. So there are not many other places for it to go except small businesses and residential users.

Mr. STOCKMAN. That is assuming the provisions for existing sources will work. We will probably get to that later.

I am wondering if you have any estimate of the total volume of conservation gas you are expecting if the program works according to the outline?

Mr. HEMPHILL. We are expecting total savings of about .96 quads. That is a nearly 1 quadrillion Btu's per year. In terms of natural gas savings, let's see if I can find something on that. I am sorry, but I don't have the specific natural gas saving from this specific section of the bill with me, but I can provide that.

Mr. STOCKMAN. Would you mind submitting for the record the detailed assumptions that went into that, the assumption used by area, type of fuel and by degree of implementation of various conservation devices, both insulation, furnace retrofits, et cetera.

Mr. DINGELL. Without objection, the material referred to will be inserted at this place in the record.

[The following information was received for the record:]

The total savings for the residential retrofit program, exclusive of low-income weatherization, have been estimated at .96 quad million Btu per year. Of this savings, we estimate that .47 quads per year would be natural gas, the equivalent of about 470 billion cubic feet. This estimate assumes 90% of all homes are reached.

We have not developed detailed breakdowns of the savings to be achieved by region and type of measures. We believe the greatest savings potential to be in areas using large quantities of gas, specifically the Midwest, the Middle Atlantic States, and the Pacific Coast. Though we cannot be sure which of the measures we have included will produce the greatest savings for a nationwide program, furnace modifications, automatic thermostats, and ceiling insulation appear most promising.

Mr. STOCKMAN. Thank you, Mr. Chairman.

Mr. DINGELL. The Chair recognizes now the gentleman from California, Mr. Moorhead, for five minutes.

Mr. MOORHEAD. Thank you.

I was somewhat concerned with Mr. Taylor's comments about the mandatory requirements regarding home insulation programs. That brought back one of the questions that was used in Mr. Snell's statement.

Are the data, testimonial evidence, and informational materials available to communicate effectively to the Nation's 74 million householders and other building owners and occupants the information they must have in order to do their part in meeting the President's goals?

Dr. TAYLOR. I don't understand the question.

Mr. MOORHEAD. 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 to meet the President's goals?

In other words, are you going to be able to get the information out to the people that have to have it? Many of them wanting to weatherize more effectively will be putting insulation into their homes of one type or another. I imagine a lot of them are going to make mistakes in trying to do it in a hurry. If they do, are they going to be required to do this under a mandatory program? Many of them may even lose their homes if they have to spend hundreds of dollars in order to meet the Federal standards.

Dr. TAYLOR. I think if you put in mandatory standards that you would want to do it after a good number of years to allow the subsidy and direct grant programs to run their full course. We are not talking about putting in mandatory standards today.

Mr. MOORHEAD. That is something you are planning for in years down the line?

Dr. TAYLOR. I am arguing that you don't want people to keep on wasting gas and electricity continuously after we have been given an opportunity for the incentive programs to operate.

Mr. MOORHEAD. I think one problem that we have is that different parts of the country have different needs. You might have an open air establishment in the Hawaiian Islands that was very satisfactory and used no heat at all and if you start instituting mandatory requirements without considering local climatology and it is a Federal standard overall, you may have a requirement for things that will never be needed.

Dr. TAYLOR. I agree with you very much, but my understanding is that the FEA would make their standards very particular to the climatic zone in which they are putting in those standards.

Mr. BROWN. Do standards currently exist by climatic zone?

Mr. HEMPHILL. There are currently three sets of standards which the Federal Government references and they do differ by climatic zones. HUD, ASHRA 9075, and one other.

Mr. MOORHEAD. What kind of penalties are you anticipating for enforcement of these standards?

Dr. TAYLOR. I think those would have to be developed by the committee.

Mr. MOORHEAD. There is no recommendation?

Dr. TAYLOR. No, sir.

Mr. MOORHEAD. Are the utilities going to be able to undertake a financing program to make the program the size that you anticipate work? Are they going to be able to come up with the kinds of funds that are necessary for this type of thing?

Dr. TAYLOR. Our recommendation is that the utilities not do the financing, but the banks and savings and loans and other normal home improvement lending institutions undertake the financing.

Mr. MOORHEAD. Aren't they going to be required to inspect and offer to inspect? Isn't that going to be something of tremendous magnitude for them?

Dr. TAYLOR. We would propose that they do the inspection, but that would not impose the burden that financing would.

Mr. MOORHEAD. Where would the money for that come from?

Dr. TAYLOR. I would expect it would come from the ratepayers.

Mr. MOORHEAD. Increased rates that people would have to pay?

Dr. TAYLOR. Yes, but I don't expect it would be very much money in terms of the total cost of service of the electric utilities.

Mr. MOORHEAD. I would yield to the gentleman from Ohio.

Mr. BROWN. I would like to ask how many people FEA or anybody would anticipate would request this service of the average utilities, what percentage of the homeowners in the area?

Mr. HEMPHILL. The President's goal for this is 90 percent of the existing residential buildings.

Mr. BROWN. If that occurs, then what would be your estimate of the total cost of inspection that the utilities would have to bear that would then be transferred to the ratepayers of the country? Have you worked that out?

Mr. HEMPHILL. It is 40 million homes times whatever the inspection cost would be.

Mr. BROWN. That is what I am asking. Has anybody figured out what it would do to the ratepayers of the country in terms of additional cost to their utility bill to have the inspections made?

Mr. HEMPHILL. You would only pay for the inspection if you are receiving the inspection. It would be part of the overhead of the program.

Mr. BROWN. You said 90 percent of the people, it was hoped, would ask for this inspection. The question is: How much is that going to cost and do the utilities have to finance it back through the ratepayer? Do you have those figures worked out?

Mr. HEMPHILL. Yes, we estimate it would cost $20 to $25 per inspection.

Mr. BROWN. What is the total cost?

Mr. DINGELL. The time of the gentleman from Ohio has expired. The witness may respond either at this time or in writing.

Mr. Hemphill, is it your preference to respond in writing or do you wish to respond at this time?

Mr. HEMPHILL. It looks like about $1 billion. Given the fact that the total program we estimate will cost something in the order of $20 billion, it doesn't appear that the inspection cost is an overwhelming piece of it.

Mr. DINGELL. The time of the gentleman has expired.

Mr. BROWN. He had better check his figures. I don't think that is correct.

Mr. DINGELL. The Chair will certainly see to it that the record remains open for additional comments by the witness in order that he may check his figures.

[The following information was received for the record:]

Section 103(a) requires utilities to offer an inspection service to homeowners to determine the likely costs of adding those conservation measures needed to bring the home up to Federal standards for that location and type of house. This would not require the utility to estimate the likely energy savings for that individual house. Energy savings estimates are to be provided by the utility to the homeowner for typical homes within its jurisdiction.

Further discussions with utilities and contractors currently offering inspection services lead us to estimate that the cost of this type of inspection would be between $20 and $40. There are slightly more than 50 million one and two family homes to

which the utility must offer this inspection. If 40 million homes were to be inspected, the total cost could be between $800 million and $1.6 billion.

Who will bear this cost will be decided by the State regulatory commissions and the nonrequlated utilities. The firms we have contacted have told us that they typically do not charge a separate fee for the inspection, but incorporate it into the total cost of the conservation investment which the homeowner makes, thus charging each individual homeowner for the inspection cost. For accounting purposes, it may be simpler for the utilities to maintain a separate staff of inspectors and to be allowed to charge this cost against some portion of the rate base. Utility commissions may decide that it is necessary to maintain this separation of the inspection from the sale of insulating materials in order to limit fraud. We believe that these decisions are properly left to ratemaking bodies at the State and local level.

Mr. DINGELL The Chair recognizes the gentleman from New York, Mr. Ottinger, for five minutes.

Mr. OTTINGER. Thank you, Mr. Chairman.

The time is limited so I would appreciate limited answers.

Mr. Hemphill, you said that there are minimum property standards. Are those standards adequate, in your opinion?

Mr. HEMPHILL. Sir, there are three sets of minimum property standards of which only two I believe apply to existing or retrofit residences. Of those, the Farmers Home standards are tougher than the HUD minimum property standards. However, neither of those sets of standards includes all the measures we have laid out in this bill as being necessary or advisable to offer to homeowners.

So in one sense I question whether we would say that those minimum standards are not sufficient. In other words, as minimum standards, the Farmers Home one is not bad.

Mr. OTTINGER. Are you prepared to put forward standards that would be more adequate for our consideration?

Mr. HEMPHILL. The bill requires us to do that, yes, sir.

Mr. OTTINGER. Mr. Carroll, you talked about fire retardency standards for insulation. Are you going to set standards on the vapor barrier as well? A lot of the problems that you have with insulation sometimes has not been addressed and it is with the vapor barrier. I understand that there is an asphalt base in that which makes it particularly dangerous.

Mr. CARROLL. I believe you are referring to moisture absorption rather than vapor barrier. They can buy it either way now. I am not prepared to say at this time whether we should require it.

Mr. OTTINGER. I would ask you to address that question if you would and give us an answer in writing.

Mr. CARROLL I will be glad to.

[The following information was received for the record:]

Vapor barriers are not used with cellulose type insulation because the weight of the material would create a moisture trap.

Vapor barriers may be used with mineral fiber insulation—both blanket and loose fill. However, it should be left as an option. The use of vapor barriers depends upon the application; i.e., a vapor barrier should be used with insulation used in insulating attic floors but would serve no useful purpose in insulation used in walls.

Mr. OTTINGER. Mr. Taylor, I am very interested in your proposal because I think you are right that to make meaningful progress we are going to have to have some kind of mandatory requirements.

Particularly, it seems to me, for the apartment house owners this 10 percent investment tax credit is not going to be anywhere near adequate to assure that the rental properties of the country get

insulated. I wonder whether you had any particular statutory language in mind or whether you can work on that to help us to provide something that would accomplish a requirement that within a given period of time that the insulation be done?

Mr. TAYLOR. I would be happy to provide that, sir.

Mr. OTTINGER. Thank you very much, Mr. Chairman.

I yield back the balance of my time.

Mr. DINGELL. The Chair thanks the gentlemen.

The Chair recognizes our good friend and colleague, the Chairman of the Banking, Finance and Urban Affairs Committee, Congressman Henry Reuss. We are pleased to have you with us.

Mr. REUSS. To best use my five minutes, I am going to say right at the outset that I think you and the administration have brought up a good proposal.

I would say, however, with equal force that it is capable of being made an even better proposal. I sense five or six things that could stand improvement. Let me share my views with you and then I invite all of you, including particularly Mr. Hemphill, to come back at me.

Here, Mr. Brown, if I could have your attention, I think you made an excellent point with which I agree, that something has to be done about the approved list of contractors. It does smack of oligopoly. I think one thing that could be done was that somebody who did not have his name on the list could still do a job and have it approved if the local building inspector looked at that and said, "It is good, let it be." That would require an amendment and I think it would be a worthy one. There may be other ways of doing it, but I think you are on track there, Mr. Brown.

Secondly, one reads with interest what Mr. Hemphill says on page 9 of his paper about the fact that it is going to take about nine years for the insulation industry to rev itself up to this task. It will take nine years to do it. If some of these things like the tax credit work, you are going to have nine years of customers coming in all at once. Therefore, Congress must come to the rescue and see that inflation doesn't engulf this program.

The only way that can be done is by somebody putting on his thinking cap and making a study, one of these things we Americans hate, planning, but it has to be done, and see how long it is going to take the rock wool industry and the others to respond and then to phase and stagger this program.

I should think in terms of where you can get the most weatherization bang for a buck, start out with that kind of area. I would perhaps grind in where there is a lot of unemployment because a more labor-intensive area than weatherization I can't imagine. So there has to be an anti-inflation process ground into the bill.

Third, I am a little concerned at the other extreme that it may not work well enough, that tax credits are glorious but they do require that somebody come up with $1600 less $300 for the tax credit, $1300 bucks, and he is going to have to pay a high rate of interest for a nickel and dime loan for a couple of years.

I think we ought to at least consider a back-up program whereby the Federal Government with its magnificent no cost to the taxpay-

ers borrowing power makes available to the utility, if they are the chosen instrument, Federal credit at the Federal price, 6 or 7 percent, whatever it is, plus 2 percent for what the utility does. The utility is in the nickel and dime business anyway under your program.

I think this might well be an alternative to the tax credit, particularly if it turns out not to be efficacious enough.

Four, I see a little falling through the cracks in the program. The tax credit according to Mr. Hemphill's statement is for those who pay taxes. The "help the poor folks program" is for the very poor. What about somebody who just doesn't happen to pay a tax in that particular year adventitiously, are you going to leave him out? I think you have to convert the program in to give him a credit if he pays taxes and give him a check if he doesn't, but is in an income bracket higher than the poor who take direct advantage of the program.

The fifth worry I have has been ably etched by Mr. Reich's paper this morning. I am not going to be critical of bringing the utilities in. Anybody else who would be critical would have to say who else you would use. The utilities do have somewhat of a conflict here. They want to up the estimates so they can sell more rock wool. They want to up the interest charge so they can do better on that. Somehow or other we are going to have to crank into the legislation methods of protecting the consumer a little more efficaciously than those I see.

Six, since there are all of these modest bugs that need to be fixed up, I am a little concerned about the administration telling the world as it has that he or she who does these things after April 10, 1977, and that was the day we heard about all of this, gets the manna from heaven. I think that is a little dangerous. I think you are building up an estoppel against the Congress by the American people.

Down the road somebody is going to be saying to us you can't change this program however worthy your improvement because now we have told the American people. So I urge you to go back and tell the administration to get out to the American people at once, that on that April 20th date they should not rely because Congress may well in the exercise of its judgment be changing things.

Therefore, while I would not have people now stopping weatherization and insulating, neither would I want to set up an Oklahoma land rush starting April 20th.

Thank you for listening to me. Would you come back and tell me which of my six theses you consider ridiculous?

Mr. DINGELL. The Chair advises the gentleman that his time has expired.

Mr. REUSS. Perhaps you could give us your reaction in writing.

Mr. DINGELL. The Chair thinks the questions you asked are valuable enough that we ought to have responses here. The Chair will permit the witnesses to respond.

Mr. HEMPHILL. I think in no case do we think those theses are ridiculous.

Mr. REUSS. I think the witness has had adequate time to consider it. Mr. Chairman, I think since I am a guest, we should have those responses in writing.

Mr. DINGELL. The record will remain open for the purpose of response. I am sure our panel of witnesses will assist us in that particular.

[The following material was received for the record:]

Q. Something has to be done about the approved list of contractors. Perhaps somebody who did not have his name on the list could still do a job and have it approved if the local building inspector looked at it. Perhaps there are also other ways of doing it.

A. Utilities are required by section 103(a) (3) to provide their customers lists of businesses selling and installing conservation measures, which list is developed in a non-discriminatory manner. Also, under section 103(a) (2) (C) (D), the utility must make or arrange loans to customers who have measures installed by the utility or by one or more contractors obtained by the utility. Thus, the utility has two roles with respect to local contracting. They must offer a turnkey conservation service to their customers, which they may perform themselves or through one or more local contractors. Some utilities already offer this sort of service to their customers. The other role is to provide complete lists of contractors who can do the job. The utilities only responsibility with respect to this list is to develop and distribute it; they have no financial tie to the companies on that list. We intend to insure that the list will be open, competitive, and generally inclusive.

There is no provision in the bill for inspection of work by local code officials. The inspection mentioned is for utility verification of installation in connection with issuing a loan. Nothing would prevent local contractors from installing materials as they now do, completely separate from utilities.

Q. How long is it going to take the rock wool industry to respond to the national insulation program? How are we going to phase and stagger the program so that all nine years of insulation demand does not occur in the first year?

A. Of the industries we have considered, fiberglass and rockwool insulation appear to be the most capital intensive. There are eight manufacturers of these products, four of which are distributed nationally. These manufacturers have told us that capacity at existing plants can be built in twelve to twenty-four months. Some of these manufacturers have already announced plans to build new plants, both to meet increasing reinsulation needs as well as to produce the larger quantities being put in new homes. If manufacturers can be assured of a market of reasonable duration through some nationally directed program of incentives and information, they can feel confident of a rate of return substantial enough to justify building capacity specifically to meet the reinsulation market.

The production of other types of insulation and of other conservation measures is less capital intensive, and can be expanded more rapidly. The problem in those areas will be one of assuring quality of manufacture rather than adequate production.

Though utiities must begin to offer inspection and installation to homeowners by January 1, 1980, actual inspections and installations controlled by the utilities can and probably should be spread out over a longer period. We have proposed a voluntary program, with incentives rather than a mandatory one, to avoid forcing the program into the first few years.

Q. I think we ought to at least consider a back-up program whereby the Federal Government makes loans available to the utility, at 6 or 7 percent, plus a 2 percent charge for the utility. There may be many people who are still not able to pay the large interest rates charged on small loans.

A. We share the concern about interest rates and suitable financing conditions, though we believe that the tax credit is the most effective way to stimulate increased conservation investment by homeowners. Our proposal for loans, which will be reviewed in detail by the House Banking Committee, has three parts. First, we propose to make utiities qualified lenders under the HUD title I Home Improvement Loan insurance program, whose maximum allowable interest rate is 12 percent. Second, public utility commissions will prescribe guidelines for protecting consumers from exorbitant interest rates charged by utilities and will set minimum periods of repayment. It is interesting to note that for a given period of repayment, such as five years, the difference between a 9 percent interest rate and a 12 percent interest rate is small. For the $1,600 example posed by the Congressman, the monthly payment at 12 percent would be $36.99, while for 9 percent it would be $34.28. The tax credit we have proposed would be substantially greater than this difference.

Our third loan proposal is to eliminate legislative barriers to the development of a secondary market for energy conservation home improvement loans. FNMA and FHLMC would be allowed to purchase these loans, though we recognize that there

are further non-governmental administrative mechanisms to be established. These purchases would help assure that adequate competitive home improvement funds are available to keep interest rates down, without direct Federal involvement in allocating credit. We recognize the importance of monitoring each of these activities in concert with the tax credit and the utility information programs, to determine whether a significant portion of homeowners are not reached.

Q. I think you have to convert the tax credit into one of giving the individual a credit if he pays taxes and give him a check if he doesn't, but is in a bracket higher than the poor who are eligible for low-income weatherization.

A. We believe that the eligibility criteria for the low-income program cover virtually all families who would not be paying taxes in a given year. Under the regulations for FEA's Low-Income Weatherization Program, which are currently being revised based on public comment, a household is eligible for weatherization assistance if its income is less than OMB's poverty guidelines, or if it receives cash assistance from (1) Aid to families with dependent children; (2) Old-age benefits; or (3) State cash assistance programs. All persons living in one or two family buildings will also be eligible to install and finance home conservation measures through their utilities. We expect this program to be particularly useful to lower income households.

Q. Somehow or other we are going to have to put into the legislation methods of protection protecting the consumer a little more from the utilities, who have a motivation to sell more insulation and to raise interest rates.

A. The responsibility for protecting the customers from unreasonable price or interest charges by utilities lies most properly with the States. Section 102 requires utility commissions to develop procedures to adequately protect consumers in this regard. As part of our rulemaking for the guidelines for this program, we may include further suggestions for consumer protection by utility commissions. It is important to note that unless a commission allows utilities some return on their investments, there is no direct incentive to sell more insulation or other measures.

The development and dissemination of Federal minimum retrofit standards will help prevent utilities from overselling any measures. By prescribing regions, and building types for which certain measures are appropriate, we keep the utility from telling homeowners that more measures are needed.

Q. I urge you to tell the American people at once that they should not rely on the April 20 date (proposed for the tax credit) because Congress may well in the exercise of its judgment be changing things.

A. Though we recognize that the Congress must choose the eligibility dates for the residential insulation tax credit, we believe it is important to make clear to the public what date we recommend using. To leave the date ambiguous would deter many people from investing in conservation, and the market for insulation and other materials would come to a stop until Congress acts. The tax credit should be retroactive to that date when its consideration was brought to the public's attention.

Mr. DINGELL. The Chair observes that we will now recognize members of the staff for the purpose of asking questions.

Mrs. Harrison.

Mrs. HARRISON. Thank you, Mr. Chairman.

Mr. Hemphill, in section 109, an authorization of such sums as may be necessary may be appropriated. This committee has traditionally only reported bills with specific funding levels. Could you submit for the record an estimate for the next five years for the administrative expenses by FEA?

Mr. HEMPHILL. Yes, we will be happy to do that.

Mrs. HARRISON. In the definition section, a residential energy conservation measure is defined to include eight specific items which appear from the drafting to be all inclusive without provision for additional items. This perhaps might be easily corrected by saying that this list may be expanded.

Mr. HEMPHILL. I think if you wish to correct that, it would be an easy way to do so.

Mrs. HARRISON. Perhaps for the record, could you submit a statement on the time frame in the bill for the implementation of the residential conservation plans? The public utilities, as I understand it, have six months to submit proposed plans after FEA has promulgated rules. However, the Federal stand by authority could go into effect nine months after the promulgation of those rules which leaves only three months there for the approval of the State plan.

Granted there is a provision for extending those time frames, but I am wondering if this will actually function well without the waiver provision?

Mr. HEMPHILL. It was drafted so we could make a commitment to getting the thing up and moving as quickly as possible. If you have tracked the energy legislation over the past two years, you know it sometimes has been a problem meeting some of the dates in the statute. We think we have put in realistic estimates of how long it would take each of the parties. I think we put in some provisions to provide more time in such cases that are merited.

We can certainly elaborate that for you.

Mrs. HARRISON. Thank you.

[The following material was received for the record:]

Q. Please provide year by year budget authorizations for the first five years of this program.

A. We have tentatively estimated that about 30 Federal employees will be required to manage this program. Ten of these would be legal and technical support staff at the national level. Twenty would be employed in the development of regulations, review and approval of conservation plans, and monitoring and evaluation of conservation programs. Initially these twenty positions would be required in Washington. Once the programs are underway by utilities, these positions would transfer to our regional offices, as has happened with similar FEA programs.

In addition to these personal costs, about $4 million per year would be required for the following contractual requirements: development of standards and regulations for two programs; development of program materials, such as a booklet designed to support the national residential conservation program; training sessions for State commission staffs and non-regulated utilities; evaluation of the effectiveness of those conservation programs; and data collection on improvements to the condition of the stock of existing residential buildings.

Thus, we anticipate FEA administration costs totalling $5 million per year for each of the first five years.

Q. Please describe the time frame for submission and approval of plans with reference to FEA's pre-emption authority under section 105? Is there adequate time for the State commissions to develop plans and avoid preemption?

A. The schedule proposed in the bill is as follows: FEA will develop regulations for conservation plans within 120 days of the passage of the Act. Utility commissions and non-regulated utilities would have 180 days thereafter to develop plans, and FEA would have 90 more days to review those plans. If FEA then disapproves a plan, the utility commissions and non-regulated utilities are allowed at least 60 days to submit revised plans, with an additional 90 day approval period added for the FEA. Section 105 allows the FEA to exercise standby authority over the commissions 270 days after the program regulations are issued. In other words, if for some reason a State commission conservation plan is inadequate (or if a State clearly indicates it has no intention of submitting a plan), FEA has the authority to order regulated utilities directly to comply at the end of the initial review period. This is stringent in order to assure timely response by the utility commissions and non-regulated utilities. The legislation assures that these groups will have sufficient time to develop adequate plans.

It is important to point out that utilities and their commissions may apply for two types of exemptions, one temporary and one permanent, if they propose and implement alternative plans.

Q. (1) Is the technology in hand to do the job (of residential energy conservation)?

A. As the testimony of NBS and the responses of ERDA demonstrate, each of the measures included in the list contained in section 101 (11) is produced on the market today. Each is generally available for installation by either the homeowner or a contractor. Though we might expect eventually to develop more effective home conservation measures through a research program such as that conducted at ERDA, available technology offers a substantial conservation potential. We believe that it is important to select a list of measures at the outset and to focus utility activities around that list. To expand the required list over the next several years would unduly complicate Federal Administration and utility management of the residential conservation program. New conservation measures are more easily added to the list of measures available for the tax credit.

Q. (2) Are there suitable standards, practices, and know-how available to effectively and safely apply this technology?

A. As pointed out by both NBS and ERDA, each of the measures included in the section 101 list is properly produced by at least a few manufacturers, and producers for proper installation have been developed for each. Some of the questions we must address in developing a national program are: how to assure that all products installed because of the program are properly manufactured and properly installed. There are many examples of inadequate product standards. ERDA has shown that some cellulose products are corrosive and absorb moisture. Though adequate clock thermostats are available, no standards for their manufacture exist to prevent the introduction of shoddy products. One well-intentioned utility program in Minnesota encountered significant condensation problems from attic insulation because of inadequate ventilation. Some procedures to sample and test conservation materials are either new or non-existent in most industries.

Section 102 of the National Energy Act would give the FEA the authority to develop and require standards for each of these steps—as part of the utility programs. We will support the work of GSA, ERDA, and NBS in developing new or more complete standards for such materials as foam insulation and storm windows. We support NBS in their intention to accelerate the accreditation of laboratories for testing insulation products.

Q. (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?

A. Two government publications are available that explain the potential for home conservation to the public. Most comprehensive is HUD's "In the Bank or Up the Chimney." This manual describes the situations in which certain conservation measures apply as well as how to go about installing or contracting for them. NBS' "Making the Most of Your Energy Dollars" is particularly useful in determining the level of various conservation measures most appropriate for different climates and fuel prices. Engineering calculations of expected conservation savings continue to be refined. The booklets described above present usable summaries of available information.

To assist in meeting the national energy goals, it will become important that owners and occupants of buildings become aware of the incentives available to them, how to take advantage of them, and for which products they are available. Utilities will be the focus of such information activities under the National Energy Act. A consumer publication from the Federal Government may help assure widespread dissemination of accurate information.

Q. (4) Are there sufficient industrial capacity and professional and skilled work power available to meet the goals by 1985?

A. Of the industries we have considered, fiberglass and rockwool insulation appear to be the most capital intensive. There are eight manufacturers of these products, four of which are distributed nationally. These manufacturers have told us that capacity at existing plants can be built in twelve to twenty-four months. Some of these manufacturers have already announced plans to build new plants, both to meet increasing reinsulation needs as well as to produce the larger quantities being put in new homes. If manufacturers can be assured of a market of reasonable duration through some nationally directed program of incentives and information, they can feel confident of a rate of return substantial enough to justify building capacity specifically to meet the reinsulation market.

The production of other types of insulation and of other conservation measures is less capital intensive, and can be expanded more rapidly. The problem in those areas will be one of assuring quality of manufacture rather than adequate production.

We have spoken with contractors and utilities who are already inspecting and installing measures in homes. They have stated that training people to do this work is not difficult. Their estimates of training periods are one to three weeks, with an apprenticeship in on-the-job installation experience of no more than three months.

In the study conducted for the FEA of rate-base treatment of utility conservation expenses, it was estimated that the seven year program contemplated at that time would require a total of 70,000 persons-years per year. The program proposed by the National Energy Act is between two and three times this size, but is spread out over a somewhat longer period. Accurate estimation of the labor requirements is difficult, since detailed data is not collected on those businesses whose experience is most relevant to our interests. Also, it is difficult to predict to what extent increased demand for manufacture and installation of conservation materials can be handled through more effective use of the existing capital stock and labor force.

A detailed comparison of the skills needed for a home conservation program with the skills available in the labor force has not been attempted. The relevant skills are commonly available in the construction industry.

Q. (5) Is there willing leadership and cooperation within both industry and Government as well as effective organizational and industrial mechanisms in place to make these programs work?

A. There are several strengths in the current delivery system for conservation. Several government agencies have developed technical information and understandable publications needed to inform the public. The manufacturing industries have cooperated in designing a sensible program. Most States, and several utilities developed the ability to deliver information effectively to the public.

The weaknesses in the current system are addressed by the National Energy Act. Utilities will be given nearly a year to develop effective delivery programs which meet Federal criteria. The standards for materials will be improved to meet the needs of a rapidly expanding industry and of the government will work together to develop an adequate consumer protection system to eliminate deceptive practices. The business community which will seal materials and installation services is small. A substantial increase in the number of these people will be required. Training programs for these people will help assure that as many quality contractors as possible offer services to the public. FEA and ERDA are looking into this area and at how to work more effectively with such trade associations of Homebuilders and the National Remodelers Association.

Q. (6) Are there adequate mechanisms to stimulate and motivate building owners and occupants, industry and labor, and utilities to act in meeting these goals?

A. We do believe that the National Energy Act provides these mechanisms. Energy will not continue to be underpriced and adequate information and financing will be widely available. Though most forms of home energy conservation are cost-effective at current prices, mechanisms to encourage conservation activities and to make them easier to accomplish will accelerate the implementation of conservation measures.

Q. Congressman Brown: Should different conservation measures have different degrees of encouragement or incentive depending on their qualities or effectiveness?

A. We do not believe that different measures should have different incentives depending on their effectiveness. We believe that it is possible to develop and enforce adequate standards for safety, effectiveness and installation of each of various conservation measures. It will then be possible to make clear to the public the attributes of each measure, and the situations in which it is most effective. If there are certain applications for insulation that are dangerous, we shold work to warn people against these applications and to disseminate information about proper application. With respect to effectiveness, it has been difficult to choose which measures to include and which to exclude. There are dozens of conservation measures which could be required through the utility programs or subsidized with a tax credit. We have chosen the measures for each program on the basis of administrative simplicity and the potential for national savings. To offer variable subsidies depending on estimated effectiveness would be cumbersome and confusing.

Mrs. HARRISON. Dr. Taylor, in your testimony you recommend making insulation mandatory. Can you give us an estimate as to when you think that should be done, given the state of standards, technology and so forth?

Dr. TAYLOR. I can only speak for myself, not having discussed that with the Commission. But I would say something like 15 years.

Mrs. HARRISON. And you believe certification is an element not present in the bill which should be added; did I understand that correctly?

Dr. TAYLOR. Yes.

Mrs. HARRISON. What kind of an incentive would you recommend for public utilities? I believe you mentioned that as something not in the bill which you would like to see.

Dr. TAYLOR. One possibility would be an amount of money given to them for each home that in fact gets insulated, that is, they would be in a position of trying to convince homeowners that it would be in their best interest to do that, and they would in a sense "sell" the homeowner on installing the insulation.

However, under our proposal the utility would not earn money by installing the material itself or in financing the installation of those materials.

Mrs. HARRISON. Mr. Hemphill, I believe you stated that you estimated $20 billion as the cost of this program. Do you expect this $20 billion to be covered by the savings in energy consumption due to the installation of conservation measures?

It seems to me there is a possibility here of public utilities having to increase rates in order to pay for the cost of the program.

Mr. HEMPHILL. The way the bill is drafted, each homeowner would be charged specifically for those improvements made in his home. That would be a simple billing transaction. I think it is unlikely, unless there was a very substantial loss rate which the utilities had to roll into the rate base, that rate schedules or tariffs would go up specifically as a result of this program.

You may want to think some more about other proposals which may require rate base treatment.

Mrs. HARRISON. Which might be unfair also in many ways.

Mr. HEMPHILL. Certainly. Our proposal neither mandates nor prohibits such plans.

Mrs. HARRISON. Mr. Snell, you mentioned in your summary criteria for retrofit materials and products based on available standards and experience as well as the voluntary laboratory accreditation program. Do you see a need here for the program becoming mandatory? You can submit this for the record.

Mr. SNELL. No, I don't. For example, I think the insulation industry sought the voluntary laboratory accreditation program as a means of helping itself to more responsibly manage the increase in demand. I think this process ought to be given an opportunity to work.

Mr. DINGELL. If counsel would yield, the Chair would like to request that you submit to us a copy of that plan for the accreditation system?

Mr. SNELL. Yes, sir, I would be happy to do that. [See p. 348.]

Mr. DINGELL. Can you give us the specific authorities that exist therein for the policing of the suppliers and contractors, a.), with regard to materials and, b.), with regard to the services and the quality thereof?

Can you also advise us what your agency can do in the event that the services or materials supplied thereunder are not adequate as far as safety, efficiency and the quality of installation? Can you do that for the record?

Mr. SNELL. I will be pleased to do so.

Mr. DINGELL. The Chair recognizes Mr. Hunt.

Mr. HUNT. Thank you, Mr. Chairman.

Ms. Savitz, there are two lists or basically one list in the definitions section of this legislation. There are roughly six items noted or six categories noted that would qualify as residential conservation measures.

On the basis of the work done at ERDA, do you feel this list could be greatly expanded or not?

Ms. SAVITZ. I think for a start for seeing which measures are most cost effective and will also save the most energy, that this is a proper list that will lead toward savings of energy and also will pay out in the appropriate period of time.

I think the suggestion made in Mr. Hemphill's discussion with Mrs. Harrison about possibly having a statement about the measures not being limited so new items as they come along could be included is a good one. I think this list would be one's first choice of things to do.

Mr. HUNT. Do you think this list, unvarying from one part of the country to another, is justified on a cost-benefit basis.

Ms. SAVITZ. We have to look at that specifically with the different climates. I think this will come out in the recommendations that are developed by the administration.

Mr. DINGELL. Could you tell us please whether you and the administration are certain that that list ought not be expanded?

Ms. SAVITZ. No, that is not what I said. The answer Mr. Hemphill gave to Mrs. Harrison in stating that the measures might not be limited would be an appropriate thing to have in the legislation.

Mr. HUNT. Mr. Hemphill, on that basis do you feel you will be able to come up with a more complete and more final list at the end of 120 days or will you be adding ad seriatim up to 1985?

Mr. HEMPHILL. I think if this bill passes shortly and we come up with a list at the end of 120 days, I would be surprised to have additional items at that time.

However, last year there were some things that were in the list that would not be put on this year, so it would be wise to allow for ad seriatim amendments.

Mr. HUNT. Do you think this would confuse the list, to have items added year after year?

Mr. HEMPHILL. That is a difficult call. There are also some tradeoffs you would have to live with if you wished to add additional measures.

Mr. HUNT. Would you consider the replacement of a furnace an item that would qualify?

Mr. HEMPHILL. I think you have to consider carefully what your specific criteria are, explicitly or implicitly, that you put on the list. If you go by the definitions of payback criteria such as the one found in ECPA for the measures list, I think you would be hard pressed to put furnace replacement down as a measure that pays for itself in useful life and savings.

Mr. HUNT. We have heard testimony that in the utilization of pulse-fired combustion furnaces you can have half the amount of energy used in heating the home going from about 46 percent to

well above 95. It occurred to me if this was the case, it might well be justified.

Mr. HEMPHILL. It conceivably could be justified. I think it would depend on the climate. Further, I think you have to exercise some common sense judgment on how large an expenditure you wish to encourage people to make. I am not sure how much it cost to put in a pulse-fired combustion furnace, but I suspect it is a substantial amount.

Mr. HUNT. Mr. Hemphill, from the penalties section, 105(d), there is the opportunity of collecting a civil penalty up to but not more than $25,000 per day. Is it your understanding that this would come out of the normal expenses of a public utility and hence be a burden on the ratepayers or indeed would you suggest that this come out of the capital accounts?

Mr. HEMPHILL. I don't have a very good answer. I don't think that is specifically addressed in the statute. I would rather think about that and give you a more reasoned answer later if that is all right.

Mr. DINGELL. Without objection, that answer will appear in the record at the appropriate place.

[The following statement was received for the record:]

The proposed legislation does not specify whether stockholders or rate-payers would pay civil penalties imposed under section 105(d) of the bill. The determination of whether any such amounts could be passed through to rate-payers would be made by the appropriate State regulatory authority, as is currently done with other fines or penalties which might be imposed on regulated utilities. It would appear most appropriate to pass the fines on to the stockholders, since it would be a result of poor management.

Mr. HUNT. In the construction of this legislation, was consideration given to having the public utilities warrant the quality of the workmanship or indeed the materials that were being put in?

Mr. HEMPHILL. Yes. There is a real problem conceptually in trying to figure out how you deal with the problem of the utilities exercising an oligopolistic control of contractors one by one. On the other hand, there is concern with the quality of the work done. It is very difficult to balance it so that you end up with something sensible.

On the one hand you want to be sure no one is ripped off and the work is done accurately. That requires someone to warrant or inspect or certify. The most obvious someone is the public utility. If you let them do that, he exercises a strong control over all the local contractors which is a problem.

In this statute we have attempted to achieve a balance between those two essentially competing needs, but I am not certain that balance could not be improved.

Mr. HUNT. Another question: Are you aware of the testimony that was given last year when the subcommittee held hearings on residential conservation from the financing institutions that indeed they would require a surcharge, and I think the amount was in the neighborhood of $100 per loan in order to manage these small loans?

Mr. HEMPHILL. Yes, I do remember that. I think one of the reasons that we chose the utilities in addition to their broad coverage is the fact that they have in existence billing and process-

ing systems that makes it relatively simple to add an additional charge to a utility bill. Consequently, it is our belief that we would not incur the $100 surcharge.

Mr. HUNT. It is my understanding that the utilities offer an alternative to that and basically can direct the consumer out to an exterior type of financial institution to handle the loan; correct?

Mr. HEMPHILL. That is true.

Mr. HUNT. Would you anticipate a surcharge being charged by that institution for the management of that paper?

Mr. HEMPHILL. I think they would do that if the loans were made outside the confines of the title 1 program which HUD runs.

However, the proposal enlarged the title 1 program so the utilities could become eligible lenders, and I believe there is a 12 percent interest rate ceiling on the title 1 program currently. Consequently, I don't believe you could add $100 on top of a $500 loan and still come in at 12 percent.

Mr. HUNT. I understand that the loans were to be of more than a 3-year time period; is that what brings it to 12 percent limit on interest rate or not? Short-term consumer finance, as I understand it, can go as high as 18 percent.

Mr. HEMPHILL. I don't think that is true under the title 1 program.

Mr. HUNT. As far as time is concerned, is FEA confident that basically it can handle this first major piece of work within the 120-day period? There have been a number of slip dates in the past if the subcommittee's experience can be generalized upon.

Mr. HEMPHILL. I think it would be unfair to generalize on the basis of past experience, particularly since I believe the new management of FEA has proven quite diligent in meeting dates which it has said it would meet in terms of publication of regulations, submission of reports, and so forth.

Mr. HUNT. Do you have any estimate as to what the interior manpower requirement will be for FEA to manage the program?

Mr. HEMPHILL. I don't have it, but we can provide it for the record.

Mr. HUNT. I would appreciate it if you would.

[The following statement was received for the record:]

Our tentative estimates are that about 30 Federal employees will be required to manage this program. Ten of these would be legal and technical support staff at the national level. Twenty would be employed in the development of regulations, review and approval of conservation plans, and monitorng and evaluation of conservation program. Initially these twenty positions would be required in Washington. Once the programs are underway by utilities, these postions would transfer to our regional offices, as has happened with similar FEA programs.

Mr. DINGELL. The Chair advises that we will have more questions, both from the staff of the subcommittee and also from minority staff so there will be additional questions submitted in writing, which I hope that you will find time to respond to within the deadline that the committee has unfortunately had to set for itself.

The committee thanks you all for your appearances. We appreciate your assistance to the committee.

[The following material was received for the record:]

Response to Questions Addressed to Dr. Jack E. Snell, Manager Energy Conservation Programs, Institute for Applied Technology, National Bureau of Standards, during Hearings of House Energy and Power Subcommittee, Interstate and Foreign Commerce Committee, on Title I, Part A, Subpart 1, Utility Program, National Energy Act, May 9, 1977

Question: Please answer in writing the six questions raised in Dr. Snell's testimony (p. 46, line 902*).

Answer: As stated in my formal statement, my testimony addresses the first three of these questions. First, the technology is in hand to do the needed job. Secondly, suitable standards, practices, and know-how are not in hand to assure the effective and safe application of this technology. The General Services Administration (GSA) has responsibility for Federal standards. The National Bureau of Standards (NBS) provides technical bases for Federal and commercial standards. As noted in my formal statement, a number of efforts are currently underway within the Federal Government to review and improve retrofit materials standards and practices on a timely basis in meeting the objectives of the utility program. Third, some data, testimonial evidence, and general information, and educational materials are available for communicating to householders and other building owners and occupants the information they must have to do their part in this program. Here again, an intensified effort on the part of NBS and other agencies involved will be necessary to assure this program's success.

NBS defers to the Federal Energy Administration (FEA) concerning answers to questions 4 through 6.

Question: Congressman Brown inquired whether all insulation materials should have the same degree of encouragement depending on the quality of the material and their adverse qualities (p. 44, line 877*)?

Answer: The criteria for retrofit materials under development by NBS for FEA are seeking to establish required performance levels on all key attributes, i.e., thermal, fire, durability, etc., expected from any insulating material in a specified use. Application of all materials meeting such requirements should be encouraged in this program.

Question: (Mr. Dingell) If the counsel would yield, the Chair would like to request can you submit to us a copy of the plan for the accreditation system?

Answer: The plan for the National Voluntary Laboratory Accreditation Program (NVLAP) is detailed in the Federal Register notice, "Procedures for a National Voluntary Laboratory Accreditation Program," dated February 25, 1976 (attachment 1). The "Preliminary Finding of Need" for

*Location of question in hearing transcript

the application to accredit testing laboratories that test thermal insulation materials is detailed in the Federal Register notice dated March 10, 1977. It is projected that a laboratory accreditation program for thermal insulation will be in operation by December 31, 1977 (attachment 2).

Question: (Mr. Dingell) Can you specify the specific authorities that exist therein for the policing of the suppliers and contractors (a) with regard to the materials and (b) with regard to the services and the quality thereof?

Answer: There are not any specific authorities except at installation site when covered by a building code or mortgage insurance authority such as the Department of Housing and Urban Development (HUD) Minimum Property Standards. The goal of NVLAP is only to provide a system to examine the professional and technical competence of testing laboratories that serve regulatory and nonregulatory product evaluators and certifiers. As defined by NVLAP procedures, a testing laboratory tests, analyzes, or inspects products and/or evaluates product designs or specifications. Through accreditation, NVLAP will identify for product evaluators and certifiers and others (Federal, State and local regulators, purchasing agents, trade associations, certifiers, quality control specialists, etc.) those testing laboratories that meet professional and technical qualifications established under NVLAP procedures. Whereas NVLAP does not itself have authority to police the quality of thermal insulation for the marketplace, it will help to assist such authorities by better assuring the validity of product test data on which product evaluation and certification is based.

Question: Can you also advise us what your agency can do in the event that the services or materials supplied there under are not adequate as far as safety, efficiency, and the quality of the installation?

Answer: The NVLAP of the Department of Commerce (DoC) does not address this issue. This responsibility rests with regulatory mortgage or insurance authorities to which the NVLAP can be of assistance in final determination. The DoC can, if thermal insulation is inadequate because of a failure of a testing laboratory function, take two corrective actions under the NVLAP. If the failure is the result of an accredited testing laboratory not performing services in accordance with NVLAP criteria, that testing laboratory's accreditation may be revoked. If the accredited testing laboratory function complies with existing NVLAP criteria, but it is found that the criteria are not sufficiently stringent to reflect the requirements of the product specifications and test methods, NVLAP can impose more stringent criteria.

If the test method standards or the product specifications on which the accreditation program is based are found inadequate, other action by NVLAP is indicated. If the test method standard is determined to be

invalid in the sense that it fails to identify only those products that comply with the requirements of the product specification, that test method may be deleted from the accreditation program. If the product specification is found inadequate, it can also be deleted as a basis for accreditation upon finding by NVLAP that it is unimportant to commerce, consumer well-being, or the public health and safety. These actions by NVLAP regarding inadequate test method standards and product specifications are not directly remedial, but they can promote action by standards bodies to correct deficiencies in test method and product specification standards. Under its procedures, NVLAP is prohibited from developing or modifying such standards.

ATTACHMENT 1

U. S. DEPARTMENT OF COMMERCE

OFFICE OF THE SECRETARY

*Reprinted from Federal Register, Volume 41, Number 38 – Wednesday, February 25, 1976.*

*(Pages 8163 - 8168)*

**Title 15—Commerce and Foreign Trade**

**SUBTITLE A—OFFICE OF THE SECRETARY OF COMMERCE**

**PART 7—PROCEDURES FOR A NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM**

By publication of this notice the Department of Commerce hereby promulgates procedures for the operation of a national voluntary laboratory accreditation program. The procedures are set out in their entirety below.

The procedures appended to this notice have been carefully reviewed pursuant to the provisions of Executive Order No. 11821 dated November 27, 1974 (39 FR 41501 dated November 29, 1974) and Office of Management and Budget Circular No. A-107 dated January 28, 1975, and it has been determined that the promulgation of these procedures will have no major inflationary impact. Each laboratory accreditation program initiated under these procedures to accredit testing laboratories that serve a specific product will be carefully examined and evaluated before any final finding of need regarding such program is issued to ascertain whether such program would have a major inflationary impact under the criteria described in that Executive Order and Office of Management and Budget Circular.

The goal of this program is to provide in cooperation with the private sector a national voluntary system to examine upon request the professional and technical competence of private and public testing laboratories that serve regulatory and nonregulatory product and certification needs. The program is also intended to accredit those laboratories that meet the qualifications which will be established under these procedures.

On May 8, 1975, the Department of Commerce announced in the FEDERAL REGISTER (40 FR 20092-95) proposed procedures under which a national voluntary laboratory accreditation program would be carried out. The notice invited interested persons to participate in the proposed rulemaking by submitting written comments or suggestions to the Department. In addition, the notice advised that it would hold two informal hearings on the proposed procedures.

Following the publication of the mentioned May 8 notice, approximately 150 written statements were submitted to the Department and over 25 persons testified at the two informal hearings that were held.

The comments and testimony represented input from Federal and State agencies, professional and scientific societies, standards organizations, trade associations, a variety of industrial groups and companies within such groups, testing laboratories and individuals. The written comments and testimony are part of the public record which is available for inspection and copying in the Department's Central Reference and Records Inspection Facility, Room 7068, Main Commerce Building, 14th Street between E Street and Constitution Avenue NW., Washington, D.C. 20230.

The comments and testimony on the proposed procedures have been carefully considered and evaluated. A summary and analysis of the public's comments and testimony has been prepared by the Department. This document also is available for inspection and copying at the Department's Central Reference and Records Inspection Facility mentioned above.

A number of substantive changes in the proposed procedures have been made as a result of the public's comments. Some of the more significant changes include a structuring of the program on a product-by-product basis rather than on a class of technology basis. Initially, it was presumed that there existed general and concurrent needs within various classes of technology for the accreditation of laboratories to test all, or many, of the various products within each class. On the basis of the comments received, it is believed that this assumption may not be valid. Accordingly, the procedures have been revised to allow the initiation of accreditation services on a product-by-product basis. To counter the potential for establishment of innumerable separate services that might result, the revised procedures will allow the Secretary of Commerce to group similar or related products, as appropriate, when initiating accreditation services.

The proposed procedures called for the establishment of a National Laboratory Accreditation Board, composed only of Federal employees, for each class of technology for which a need has been determined. This Board was to develop and recommend to the Secretary, criteria which testing laboratories desiring to be accredited would have to meet. To assist each Board that was established there would also be established, for consultation purposes, a National Laboratory Accreditation Advisory Committee which would include representatives from the private sector. In order, however, to allow for a greater participation of the private sector in the development of criteria, the concept of separate Boards and Advisory Committees has been dropped. The revised procedures provide for the establishment of National Laboratory Accreditation Criteria Committees which will be composed of government and private sector members. The Secretary will consider the recommendations of these Committees in promulgating accreditation criteria.

Although the proposed procedures spoke of the need for coordination in carrying out the program, they lacked any arrangement of coordination with other programs that may exist or be in development. Accordingly, in order to enable a national institutional mechanism for laboratory accreditation to serve as a focus for coordinating laboratory examination and accreditation programs that now exist or may develop in the Federal, State and private sectors, the coordination feature has been revised and highlighted in the revised procedures. A reference to coordination with such governmental and private sector programs and its importance in this program is set out in the introductory portion of the procedures which describes the program and its goals. Also, section 4(d) of the procedures requires the Secretary to solicit the views of Federal regulatory agencies before commencing the accreditation process if he believes that the accreditation of testing laboratories to serve a specific product affects an existing or developing testing laboratory examination or accreditation program of such regulatory agencies. Objections by the head of those agencies would be sufficient cause for the Secretary to cease further actions regarding that particular accreditation program. In cases where other Federal agencies have an interest in a particular laboratory accreditation program being carried out the Secretary is required, under section 9 of the revised procedures, to consult with appropriate officials at the policy-making levels of those agencies. Moreover, those agencies would have the opportunity to designate representatives to serve on each National Laboratory Accreditation Criteria Committee established by the Secretary of Commerce in which they had an interest.

The proposed procedures emphasized a concern with the technical competence of those testing laboratories that would be accredited under this program. Many comments, however, expressed the view that laboratories equally competent on a technical basis are not of equal utility to all users. It was contended that users require information of a non-technical nature concerning testing laboratories, i.e., what the kind of information needed is. Manifestly, general criteria standards recognized by consensus standards groups

Others commented that testing laboratories engaging in certain product assurance activities should, for accreditation, be required to operate in accordance with appropriate professional and ethical business criteria. Otherwise, such laboratories, even though technically competent, could unduly restrict trade, impose unnecessary restrictions on their clients, and keep desirable products from the marketplace.

On the basis of these comments and after further reflection on the matter, the revised procedures state clearly that this program may examine the professional as well as the technical competence of testing laboratories. The general criteria established by the Secretary and the Criteria Committee call for the inclusion of professional and ethical business practices, as appropriate, in such criteria. These considerations are stated clearly in sections 2 and 7(a) of the revised procedures.

*Effective date.* The procedures set out below shall become effective on February 25, 1976.

Issued February 20, 1976.

BETSY ANCKER-JOHNSON,
*Assistant Secretary for Science and Technology.*

Part 7 is added to Title 15 CFR to read as follows:

Sec.
7.1 Purpose.
7.2 Description and goal of program.
7.3 Definitions.
7.4 Finding of need to accredit testing laboratories.
7.5 Statement of the basis for a preliminary finding of need.
7.6 Establishment and functions of a National Laboratory Accreditation Criteria Committee.
7.7 Development and recommendation of criteria for accrediting testing laboratories.
7.8 Publication of proposed criteria.
7.9 Coordination with Federal agencies.
7.10 Establishment of fees and charges.
7.11 Participation of testing laboratories.
7.12 Reference to accredited status.
7.13 Revocation or termination of accreditation of a testing laboratory.
7.14 Cessation of accreditations.
7.15 Refund of fees and charges.
7.16 Amendment or revision of criteria.
7.17 User education and reports.
7.18 Support function.

AUTHORITY: Sec. 2, 31 Stat. 1449, as amended; sec 1, 64 Stat. 371 (15 U.S.C. 272); Reorganization Plan No. 3 of 1946, Part VI.

**§ 7.1 Purpose.**

The purpose of this part is to establish procedures under which a National Voluntary Laboratory Accreditation Program will function.

**§ 7.2 Description and goal of program.**

(a) This program establishes a national voluntary system that would examine the professional and technical competence of testing laboratories that serve regulatory and non-regulatory product evaluation and certification needs. Laboratories that meet the qualifications established pursuant to the procedures set out below would be accredited. This program will also require those laboratories that are accredited to maintain their qualification status through periodic checks and examinations.

(b) The program will seek through coordination and consultation, to maximize benefits derived from other laboratory examination and accreditation activities. In this way, it is intended that the program will avoid duplication of other laboratory examination or accreditation programs conducted by the public and private sectors. To this end, the Secretary will insure that close and continuing coordination and consultation is undertaken and maintained with interested representatives of Federal, State and local governments and of the private sector, including those from professional and trade associations and societies.

(c) The intended goal of this program is to serve, on a timely basis, the needs of industry, consumers, the Government, and others by accrediting this nation's testing laboratories. The achievement of this goal would be sought by fostering and promoting a uniformly acceptable base of professional and technical competence in testing laboratories and by establishing a background of experience necessary to the orderly evolution of a laboratory accreditation system designed to serve national needs as they develop.

**§ 7.3 Definitions.**

(a) The term "Secretary" means the Secretary of Commerce or his designee.

(b) The term "Product" includes the plural thereof and means a type or a category of manufactured goods, constructions, installations and natural and processed materials or those associated services whose characterization, classification or functional performance determination is specified by standards.

(c) The term "Criteria Committee" means a National Laboratory Accreditation Criteria Committee appointed by the Secretary under these procedures.

(d) The term "person" means associations, companies, corporations, educational institutions, firms, government agencies at the Federal, State and local level, partnerships, and societies, as well as divisions thereof, and individuals.

(e) The term "testing laboratory" means any "person", as defined above, whose functions include testing, analyzing or inspecting "products," as defined above, and/or evaluating the designs or specifications of such "products" according to the requirements of applicable standards.

(f) The term "general criteria" means those characteristics of a testing laboratory commonly found in, and generally expected of, such a laboratory serving the product under consideration. See in this connection § 7.7(a).

(g) The term "specific criteria" means those detailed requirements deemed essential to assuring an acceptable examination and evaluation of the testing function performed by a testing laboratory in performing specific tests related to identified standards for the product under consideration. See in this connection § 7.7(a).

**§ 7.4 Finding of need to accredit testing laboratories.**

(a) Any person may request the Secretary to find that there is a need to accredit testing laboratories which render services regarding a specific product so that it may be ascertained whether such product meets the requirements of applicable standards.

(b) Such a request shall be in writing and will include the following:

(1) Identification of the product;

(2) Text of an applicable standard;

(3) Text of a test method, if not included in the applicable standard identified in paragraph (b)(2) of this section; and

(4) Basis of need for accrediting testing laboratories that serve the product identified in paragraph (b)(1) of this section. The basis will provide information relative to the items set out in § 7.5 and will include, where appropriate, documentary evidence on such items as:

(i) the number of testing laboratories that is believed will want to be accredited to serve the product identified in paragraph (b)(1) of this section; and

(ii) the number of users of testing laboratories that is believed will desire services of testing laboratories accredited to serve the product identified in paragraph (b)(1) of this section.

(c) The Secretary may ask for more information to support a request made under paragraph (a) of this section if he feels it is necessary to do so. If on the basis of the information provided or because of the lack of resources, the Secretary is unable to justify the making of a preliminary finding of need, he will decline to act further on the request. The Secretary shall in that event notify the requester in writing within ten (10) working days after making a decision and shall state the reasons for so declining.

(d) If a request received under this section is believed to affect an existing or developing testing laboratory examination or accreditation program of a Federal regulatory agency, the Secretary shall seek from the head of such agency its views relative to the Secretary's making a preliminary finding of need. If within thirty (30) days after receipt of the Secretary's solicitation of views, or such extension of time as may be agreed to by the Secretary, the head of the affected Federal regulatory agency explains, in writing, his objections to the Secretary's making a preliminary finding of need, the Secretary shall cease to act further on the making of such finding. In that event, the Secretary shall notify the requester of such objections and of his declination to act on the request pursuant to paragraph (c) of this section.

(e) If, on the basis of the information provided to him, the Secretary finds that a need exists to accredit testing laboratories that serve a specific product, he shall publish a notice in the FEDERAL REGISTER indicating that such finding is a preliminary finding. The notice shall include a statement as called for in § 7.5 as to the basis for the Secretary's finding

and shall provide at least a thirty (30) day period for the submission of written comments thereon. In the event that a public hearing or hearings are held on this preliminary finding as authorized under paragraph (f) of this section, the period allowed for the submission of written comments shall be extended to the date on which such hearing or hearings are held.

(f) Interested persons wanting to express their views in an informal hearing shall notify the Secretary of that desire within fifteen (15) days after the notice is published in the FEDERAL REGISTER. Upon receipt by the Secretary of such request, informal public hearings shall be held so as to give all interested persons an opportunity for the oral presentation of data, views, or arguments, in addition to the opportunity to make written submissions. If deemed appropriate by the Secretary, such hearings may be held at two locations, one of which shall be east of the Mississippi River and the other west thereof. Notice of such hearings shall be published in the FEDERAL REGISTER at least twenty (20) days in advance thereof. A transcript shall be kept of any oral presentation.

(1) All written and oral comments will be filed in the Central Reference and Records Inspection Facility, Room 7068, Commerce Building, 14th Street between E Street and Constitution Avenue NW., Washington, D.C. 20230, and will be available for public inspection at that location.

(g) After evaluating the comments received, the Secretary shall publish a notice in the FEDERAL REGISTER making a final finding of need or withdrawing his preliminary finding of need to accredit testing laboratories that serve a specific product. The notice shall state the basis for the Secretary's final finding of need or for the withdrawal of his preliminary finding.

(h) The notice published under paragraph (g) of this section, if it sets out the Secretary's final finding of need, will also include:

(1) Identification of the product for which testing laboratories will be accredited to serve;

(2) The identification of applicable standards, including the test methods involved; and

(3) A statement that the Secretary is publishing simultaneously with this notice, a separate notice in the Federal Register advising that pursuant to the provisions of the Federal Advisory Committee Act (Pub. L. 92-463, dated October 6, 1972) the Secretary will form a National Laboratory Accreditation Criteria Committee pursuant to § 7.6 or will utilize an existing Criteria Committee previously established under that section. Except where the Secretary utilizes an existing Criteria Committee such separate notice will outline the functions and duties of the Committee, its size, and the basis for selection of the members thereof.

**§ 7.5 Statement of the basis for a preliminary finding of need.**

The statement setting forth the basis for the preliminary finding of need referred to in § 7.4(e) shall as a minimum address the following items:

(a) Whether the establishment of general or specific criteria and other conditions for accrediting testing laboratories that serve a specific product would benefit the public interest;

(b) Whether there is a national need to accredit testing laboratories for the specific product involved beyond that served by any existing laboratory accreditation programs in the public or private sector;

(c) Whether for the specific product involved, there is in existence a standard that is deemed by the Secretary as being of importance to commerce, consumer well-being, or the public health and safety;

(d) Whether there is in existence a valid testing methodology as determined by the Secretary for ascertaining conformity to the standard of the specific product involved; and

(e) Whether it is feasible and practical to accredit testing laboratories that serve the specific product involved.

**§ 7.6 Establishment and functions of a National Laboratory Accreditation Criteria Committee.**

(a) The Secretary will establish a Criteria Committee and appoint the Chairman and members thereto following:

(1) Publication of the separate FEDERAL REGISTER notice referred to in § 7.4(h)(3) that announces the Secretary's intention to form a Criteria Committee, as distinguished from an announcement of intent to utilize an existing committee; and

(2) The filing of a charter setting forth the purpose and nature of the Criteria Committee.

(b) The membership of the Criteria Committee will be composed of employees of the Department of Commerce, other Federal agencies, and qualified representatives chosen from among producers, distributors, users, consumers, testing laboratories, academia, and general interest groups, including State and local governmental bodies and agencies affected by the Secretary's finding of need to accredit testing laboratories serving a specific product. The membership of each Criteria Committee shall be selected so as to provide an equitable balance that represents the interests affected by the Secretary's finding of need.

(c) The establishment and functioning of each Criteria Committee formed and utilized by the Secretary under these procedures shall be governed by the applicable provisions of the Federal Advisory Committee Act, cited earlier herein. Persons selected to serve on a Criteria Committee may be paid travel expenses and per diem, provided authorized travel is involved.

(d) Upon formation of the Criteria Committee, the Secretary will request it to develop and recommend to him general and specific criteria to accredit testing laboratories that serve a specific product. The Secretary, in a written communication to the Chairman of the Committee, shall designate a time period for the development of general and specific criteria.

(e) When developing general or specific criteria, the Criteria Committee may, where it deems such action to be appropriate, consult with other interested public and private parties, including Federal, State and local agencies and private standards bodies. Exchanges of correspondence, memorandums and other evidence of such consultation will be made a matter of public record.

**§ 7.7 Development and recommendation of criteria for accrediting testing laboratories.**

(a) The Secretary, and the Criteria Committee acting at the request of the Secretary, in developing general and specific criteria to accredit testing laboratories that serve a specific product shall consider factors such as:

(1) For general criteria pertaining to testing laboratories:

(i) Organization;

(ii) Staff;

(iii) Physical plant;

(iv) Operational processes;

(v) Control procedures;

(vi) Quality assurance; and

(vii) Professional and ethical business practices, as appropriate.

(2) For specific criteria pertaining to testing laboratories:

(i) Personnel and equipment qualifications required of the testing laboratory function;

(ii) Requirements applicable to proficiency sample programs;

(iii) Application requirements;

(iv) Initial and periodic examination and audit procedures; and

(v) Professional and technical qualifications of personnel who examine testing laboratories.

(b) The general and specific criteria developed under this section for accrediting testing laboratories will be based upon criteria found in existing standards where such existing criteria are deemed appropriate. Where appropriate existing criteria cannot be found, the Criteria Committee will, at the request of the Secretary, undertake to develop and recommend to him such appropriate general and specific criteria as may be needed.

(c) The criteria shall contain instructions for making application by testing laboratories serving the product involved and shall require that each testing laboratory that desires to participate in this program must agree to conditions that include but are not limited to the following:

(1) Be examined and audited, initially and on a continuing basis;

(2) Pay accreditation fees and charges; and

(3) Avoid reference by itself and forbid others utilizing the services of an accredited testing laboratory from referencing its accredited status in consumer media and in product advertising or on product labels, containers and packaging or the contents therein.

(d) The criteria shall contain a statement that compliance by testing laboratories with the general and specific criteria and other conditions established by the Secretary and which are accredited by him under these procedures shall in no way relieve such laboratories from the necessity of also observing and being in compliance with any existing Federal, State and local statutes, ordinances, and regulations that may be applicable to the operation of such laboratories, including consumer protection and antitrust laws.

(e) In carrying out the activities authorized by this section:

(1) No action will be taken or criteria developed that would prohibit the accreditation of a testing laboratory solely on the basis of that laboratory's association or nonassociation with manufacturing, distributing or vending organizations, or because the testing laboratory is a foreign firm;

(2) No action will be taken under this program to develop a product standard or test method standard;

(3) No action will be taken under this program to modify a product standard or a test method standard where such a standard is in existence;

(4) No general or specific criteria will be promulgated unless compliance with such criteria and its implementation has been determined by the Secretary to be feasible and practical and not contrary to the public interest; and

(5) The Secretary, under this program, will not ask for or accept confidential business data, trade secrets or other proprietary information.

**§ 7.8 Publication of proposed criteria.**

(a) Upon its development of the general and specific criteria for accrediting testing laboratories under § 7.7, the Criteria Committee shall forward its recommendations for such criteria to the Secretary for his consideration. The Secretary, after consideration of such criteria will publish in the FEDERAL REGISTER a notice giving the complete text of the proposed general and specific criteria, and inviting any interested persons to submit written comments on such proposed criteria within forty-five (45) days after its publication in the FEDERAL REGISTER, unless another time limit is provided by the Secretary.

(b) Interested persons wanting to express their views in an informal hearing shall notify the Secretary of that desire within fifteen (15) days after such proposed criteria are published in the FEDERAL REGISTER. Upon receipt by the Secretary of such request, informal public hearings shall be held so as to give all interested persons an opportunity for the oral presentation of data, views, or arguments, in addition to the opportunity to make written submissions. If deemed appropriate by the Secretary, such hearings be held at two locations, one of which shall be east of the Mississippi River and the other west thereof. Notice of such hearings shall be published in the FEDERAL REGISTER at least twenty (20) days in advance thereof. A transcript will be kept of any oral presentation.

(1) All written and oral comments will be filed in the Central Reference and Records Inspection Facility, Room 7068, Commerce Building, 14th Street between E Street and Constitution Avenue NW., Washington, D.C. 20230, and will be available for public inspection at that location.

(c) The Secretary upon receipt of all written and oral comments will request the Criteria Committee to conduct and return to him in writing, within a time period specified by the Secretary, its evaluation and recommendations with respect to such comments. After considering the Criteria Committee's evaluation and recommendations, the Secretary will prepare his evaluation and publish in the FEDERAL REGISTER a notice:

(1) Announcing the final general and specific criteria that testing laboratories must meet in order to be accredited and the date when such final criteria shall go into effect which shall not be less than thirty (30) days after the date of publication of such notice;

(2) Stating that the proposed general and specific criteria will be further developed before final publication; or

(3) Withdrawing the proposed general and specific criteria from further consideration.

**§ 7.9 Coordination with Federal agencies.**

As a means of assuring effective and meaningful cooperation, input, and participation by those Federal agencies that have an interest in and may be impacted by the laboratory accreditation program carried out under these procedures, the Secretary shall undertake to communicate and consult with appropriate officials at policy making levels within those agencies. These coordination efforts will include opportunities for representatives designated by those agencies to serve on each Criteria Committee established by the Secretary in which those agencies have an interest.

**§ 7.10 Establishment of fees and charges.**

(a) The Secretary in conjunction with the use of the Working Capital Fund of the National Bureau of Standards, as authorized by section 12 of the Act of March 3, 1901, as amended (15 U.S.C. 278b), for this program shall establish fees and charges for examining, accrediting, and auditing testing laboratories. The fees and charges established by the Secretary, which may be revised by him when he deems it appropriate to do so, shall be in amounts calculated to maximize the self-sufficiency of this program. A separate notice will be published in the FEDERAL REGISTER simultaneously with the notice of proposed general and specific criteria referred to in § 7.8(a). Such notice will set out a schedule of estimated fees and charges the Secretary proposes to establish. The notice would be furnished for informational and guidance purposes only in order that the public may evaluate the proposed criteria in light of the expected fees to be charged.

(b) At such time as the Secretary publishes the notice announcing the final general and specific criteria referred to in § 7.8(c)(1), he shall simultaneously publish a separate notice in the FEDERAL REGISTER setting forth the final schedule of fees that will be charged testing laboratories that serve a specific product. The effective date of such final schedule of fees shall be the same as the date on which the final general and specific criteria are to take effect.

(c) Revisions, if any, to the fees and charges established by the Secretary under paragraph (b) of this section shall be published in subsequent FEDERAL REGISTER notices and shall take effect not less than thirty (30) days after the date of publication of such notice. Mention of such revisions shall also be published in the appropriate quarterly reports referred to in § 7.17(a).

**§ 7.11 Participation of testing laboratories.**

(a) Each testing laboratory serving a product for which final general and specific criteria have been promulgated under § 7.8(c)(1), and desiring to be accredited under this program, will notify the Secretary of its desire pursuant to the provisions of such criteria.

(b) After receipt and evaluation of the testing laboratory's application and information contained therein, the Secretary shall, upon the acceptance thereof, notify the applicant testing laboratory and the National Bureau of Standards in writing of the specific applicable examination requirements for accreditation and the fees and charges for such examination and accreditation. If the application is not accepted, the Secretary shall notify the applicant testing laboratory of the reasons for rejection of its application, and such testing laboratory may reapply under § 7.13(d) after correcting the deficiencies set out in the Secretary's notification of rejection. Alternatively, the applicant testing laboratory shall have thirty (30) days to request a hearing pursuant to 5 U.S.C. 556. In the event, however, that the applicant testing laboratory requests a hearing within that thirty (30) day period the Secretary's rejection shall be stayed until the hearing held pursuant to 5 U.S.C. 556.

(c) A testing laboratory desiring to be accredited under this program to serve the product identified by the Secretary in his final finding of need under § 7.4(g) in accordance with the standards and test methods identified by the Secretary in that finding must meet the general and sepcific criteria promulgated by him.

(d) Upon receipt by the National Bureau of Standards of the applicant testing laboratory's written request for examination and of the fees and charges specified in paragraph (b) of this sec-

tion, the National Bureau of Standards, on behalf of the Secretary, will arrange for by contract or will itself conduct, the examination in accordance with the examination requirements of the Secretary. In all cases where testing laboratories are examined, the National Bureau of Standards will assure that the personnel used by the contractor or by the National Bureau of Standards possess the professional and technical qualifications set out in the specific criteria promulgated under § 7.8(c)(1). If the National Bureau of Standards conducts the examination, the resultant examination report will be forwarded to the Secretary. In cases where the examination report was prepared by a contractor, the National Bureau of Standards, before making payment thereunder or forwarding the report to the Secretary, will review the report to assure that the contract terms have been fulfilled.

(e) The Secretary, after reviewing the examination report furnished under paragraph (d) of this section, will make a determination granting or proposing to deny accreditation to the applicant testing laboratory, not later than twenty (20) working days following the date on which the report is received by him. If the determination is not made within such time limit, the Secretary shall notify the applicant testing laboratory in writing of the reasons for the delay. Upon making his determination, the Secretary will notify the testing laboratory in writing of its accreditation status. If the Secretary proposes to deny accreditation to an applicant testing laboratory, the notification will state the reasons for such proposed denial.

(f) If an applicant testing laboratory is notified by the Secretary that he proposes to deny accreditation, the testing laboratory shall have thirty (30) days from the date of receipt of such notification to request a hearing under the provisions of 5 U.S.C. 556. The Secretary's proposed denial shall become final through the issuance of a written decision to the applicant in the event that the applicant does not appeal such notification by the end of that thirty (30) day period. In the event, however, that the applicant testing laboratory requests a hearing within that thirty (30) day period, the Secretary's proposed denial shall be stayed until the hearing held pursuant to 5 U.S.C. 556.

**§ 7.12 Reference to accredited status.**

Except as limited under § 7.7(c)(3), a testing laboratory accredited under this program may use the following statement on its letterheads and in professional, technical and trade publications: "Accredited by the Department of Commerce, National Laboratory Accreditation Program for (appropriate wording as authorized by the Secretary's notification under § 7.11(e))."

**§ 7.13 Revocation or termination of accreditation of a testing laboratory.**

(a) If the Secretary finds that a testing laboratory which he has previously accredited has violated the terms of its accreditation or the provisions of these procedures, he may, after consultation with such testing laboratory, notify that testing laboratory that he proposes to revoke its accreditation.

(b) Upon receipt of a notice from the Secretary of the proposed revocation, which notice shall set forth the reasons for such proposed revocation, the accredited testing laboratory shall have thirty (30) days from the date of receipt of such notification to request a hearing under the provisions of 5 U.S.C. 556. The Secretary's proposed revocation shall become final through the issuance of a written decision to the testing laboratory in the event that such testing laboratory does not appeal the proposed revocation within that thirty (30) day period. In the event, however, that the accredited testing laboratory requests a hearing within that thirty (30) day period, the Secretary's proposed revocation shall be stayed until the hearing held pursuant to 5 U.S.C. 556.

(c) A testing laboratory may at any time terminate its participation and responsibilities under this program or withdraw its application for accreditation by giving written notice to the Secretary. Upon receipt by the Secretary of such notice, he shall terminate further processing of the testing laboratory's application for accreditation. If such testing laboratory has been accredited, the Secretary shall terminate that testing laboratory's accreditation. The Secretary shall notify the testing laboratory that its accreditation has been terminated pursuant to its request.

(d) A testing laboratory whose application has been rejected or whose accreditation has been denied, revoked or terminated or which has withdrawn its application prior to being accredited may reapply for and be accredited if it meets the applicable general and specific criteria promulgated by the Secretary under § 7.8(c)(1) and agrees also to meet the conditions set out under § 7.7(c) and the provisions of § 7.12.

**§ 7.14 Cessation of accreditations.**

(a) The Secretary may cease the accreditation of testing laboratories that serve a specific product if he finds that there is no longer a need to accredit such laboratories. An action to cease such accreditations shall commence with the issuance of a preliminary finding which shall be published in the FEDERAL REGISTER. Such notice shall set forth the Secretary's reasons for his preliminary finding and shall, as a minimum, address those relevant items listed in § 7.5 which formed the basis for his original finding of need to accredit testing laboratories serving a specific product.

(b) The notice published under paragraph (a) of this section shall provide at least a sixty (60) day period for the submission of written comments on the Secretary's preliminary finding. In the event that a public hearing or hearings are held on this preliminary finding as authorized under paragraph (c) of this section, the period allowed for the submission of written comments shall be extended to the date on which such hearing or hearings are held.

(c) Interested persons wanting to express their views in an informal hearing shall notify the secretary of that desire within twenty (20) days after the notice is published in the FEDERAL REGISTER. Upon receipt by the Secretary of such request, informal public hearings shall be held so as to give all interested persons an opportunity for the oral presentation of data, views, or arguments, in addition to the opportunity to make written submissions. If deemed appropriate by the Secretary, such hearings may be held at two locations, one of which shall be east of the Mississippi River and the other west thereof. Notice of such hearings shall be published in the FEDERAL REGISTER at least twenty (20) days in advance thereof. A transcript shall be kept of any oral presentation.

(1) All written and oral comments will be filed in the Central Reference and Records Inspection Facility, Room 7068, Commerce Building, 14th Street between E Street and Constitution Avenue NW., Washington, D.C., 20230, and will be available for public inspection at that location.

(d) After evaluating the comments received, the Secretary shall publish a notice in the FEDERAL REGISTER making a final finding, or withdrawing his preliminary finding, that there is no longer a need to accredit testing laboratories that serve a specific product. The notice shall state the basis for the Secretary's final finding or for the withdrawal of his preliminary finding. If the notice sets forth the Secretary's final finding that there is no longer a need to accredit testing laboratories that serve a specific product, such notice shall also state the effective date of such final finding which shall not be less than sixty (60) days after the publication of the notice.

(e) If the Secretary ceases the accreditation of testing laboratories that serve a specific product as provided for in this section, he shall withdraw the accreditation previously issued to all those testing laboratories serving the same specific product. Any testing laboratory whose accreditation to serve a specific product has been withdrawn by the Secretary under this subsection may seek to be accredited to serve a different specific product under these procedures, and may be so accredited if it meets the general and specific criteria promulgated by the Secretary under § 7.8(c)(1) that are applicable to that different specific product and if it agrees also to meet the conditions set out under § 7.7(c) and the provisions of § 7.12.

(f) The Secretary may reinstitute the accreditation of testing laboratories that serve a specific product which he previously ceased accrediting under this section. In that event he shall follow the same procedures set out under § 7.4 relative to the finding of need to accredit testing laboratories that serve a specific product.

**§ 7.15 Refund of fees and charges.**

(a) If a testing laboratory withdraws its application for accreditation after it has submitted the required examination

fees and provides written notice to the Secretary of such withdrawal prior to the issuance of an accreditation of the denial thereof, the testing laboratory will be refunded such fees except for the application fee, if any, and for any other costs that have been incurred relative to its application.

(b) If a testing laboratory terminates its participation and responsibilities under this program at any time after it has been accredited or after it has been notified by the Secretary that it is not being accredited, no part of the fees and charges paid by the testing laboratory will be refunded.

(c) If the accreditation of a testing laboratory is revoked by the Secretary under § 7.13, no part of the fees and charges paid by the testing laboratory will be refunded.

(d) If the Secretary ceases the accreditation of testing laboratories that serve a specific product under § 7.14 and withdraws the accreditation of a testing laboratory to test a specific product under that section, such testing laboratory will be refunded the unexpended part of the examination fees or charges paid by such testing laboratory to maintain its accredited status under this program: *Provided, however*, That no such testing laboratory will be refunded its original application fee, if any, to be accredited to serve a specific product.

**§ 7.16 Amendment or revision of criteria.**

The Secretary, or a Criteria Committee acting at the request of the Secretary, may undertake the development of amendments or revisions of any applicable general or specific criteria previously promulgated by the Secretary by following the same procedures pertaining to the original development of such criteria.

**§ 7.17 User education and reports.**

(a) For each specific product for which the Secretary has made a final finding under these procedures that a need exists to accredit testing laboratories that serve such product, he will publish a quarterly report noting all action taken by him regarding such matters as accreditations, revocations, the establishment of fees and charges, the promulgation of general and specific criteria and any amendments or revisions to such criteria. Such publications shall clearly state that testing laboratories accredited by the Secretary under these procedures are in no manner immune from the necessity of being in compliance with all legal obligations and responsibilities imposed by existing Federal, State, and local laws, ordinances, and regulations, including those related to consumer protection and antitrust prohibitions.

(b) The Secretary will also prepare an annual report summarizing all activities carried out under these procedures which shall include a listing of all testing laboratories accredited by the Secretary during the year to which the annual report relates.

(c) As a means of giving prompt notice to the public of accreditation actions taken by the Secretary, he shall, in addition to the reports called for under this section, publish in the FEDERAL REGISTER all actions taken by him during the preceding month which grant, revoke, terminate or result in the withdrawal of the accreditation of a testing laboratory. Such notice shall include the name and address of the testing laboratory concerned, and a brief explanation of the action taken by the Secretary with respect to that laboratory.

**§ 7.18 Support function.**

The Secretary shall make provisions for administrative and technical support and staff services as may be needed to carry out this program.

[FR Doc.76-5333 Filed 2-24-76;8:45 am]

ATTACHMENT 2

U.S. DEPARTMENT OF COMMERCE

OFFICE OF THE SECRETARY

*Reprinted from Federal Register, Volume 42, Number 47—Thursday, March 10, 1977.*

*(Pages 13326-13336)*

OFFICE OF THE SECRETARY

## NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM

### Preliminary Finding of Need To Accredit Testing Laboratories That Test Thermal Insulation Materials

*Introduction.* In a notice published in the FEDERAL REGISTER on February 25, 1976 (41 FR 8163–8168), the Secretary of Commerce promulgated procedures for the operation of a National Voluntary Laboratory Accreditation Program (NVLAP). As announced in that notice, the goal of this program is to provide in cooperation with the private sector a national voluntary system to examine upon request the professional and technical competence of private and public testing laboratories that serve regulatory and non-regulatory product evaluation and certification needs. The program will accredit those laboratories that meet the qualifications established under the mentioned procedures. Section 7.4(b) of those procedures sets out the requirements to be met by those persons who seek to have the Secretary find that there is a need to accredit testing laboratories which render services regarding a specific product so that it may be ascertained whether such product meets the requirements of applicable standards.

Pursuant to the referenced procedures, the Thermal Insulation Manufacturers Association, Inc., Mount Kisco, New York; the National Mineral Wool Insulation Association, Inc., Summit, New Jersey; and the National Cellulose Insulation Manufacturers Association, Inc., Elk Grove Village, Illinois, filed with the Secretary of Commerce on December 1, 1976, a joint request that the Secretary find that there is a need to accredit testing laboratories which render services in the field of thermal insulation. The requestors state that they are trade associations which are users of testing laboratories that serve regulatory and nonregulatory product evaluation and certification needs.

*Summary of request.* The request identifies the product as measurement services associated with thermal insulation and classifies such services as measurement of the following properties of thermal insulation:

1. Thermal properties;
2. Dimensions, stability and density properties;
3. Strength properties;
4. Fire properties; and
5. Properties of vapor barriers.

For each classification of measurement service specified above, the request identifies a number of standard test methods, recommended practices, or definition of terms promulgated by the American Society for Testing and Materials (ASTM). The request contends that these standards can serve as a point of reference for ascertaining the technical competence and proficiency of testing laboratories that provide measurement services as classified by the request. Appendix 1 to this notice identifies these classes of measurement services and lists 51 related ASTM standards that were submitted with the request.

The request indicates that the measurement services for which it seeks to have testing laboratories accredited were selected on a priority basis with a view as to what is feasible and practical at this time. In support of its judgment in selecting the measurement services listed above, the request identifies in those measurement services several test methods or recommended practices (identified by asterisk (*) in Appendix 1) that can be served directly or indirectly through the use of existing competences or services of the National Bureau of Standards. In addition, the request states that such measurement services would satisfy the major provisions of 45 identified specifications for thermal insulation and that accreditation of testing laboratories offering such measurement services would serve the initial needs of users of the program. Appendix 2 to this notice lists the thermal insulation specifications contained in the request and illustrates their use of measurement services of the type classified and identified by the request. Appendix 3 to this notice lists the titles of these specifications. The request notes that a laboratory accreditation program for thermal insulation may eventually need to enlarge and expand its classification of measurement services to accommodate the large numbers of specifications, test methods and recommended practices that are applicable to thermal insulation. The request references 121 test methods or recommended practices and 113 specifications for thermal insulation that may eventually need coverage by an expanded accreditation program for thermal insulation.

The request furnishes numerous documents in support of its belief that a laboratory accreditation program in the field of thermal insulation would benefit the public interest. These documents consist of or otherwise identify policy statements, assessment reports, major standards and codes, surveys of regulations, impact studies, public laws, and consumer guidelines that stress the need for energy conservation and adequate thermal insulation. The request indicates that these attachments illustrate the importance of thermal insulation in energy conservation, demonstrate the involvement of government with the problem, and show the impact of energy conservation and thermal insulation actions upon the public sector and the consumer.

The requestors claim that without accredited testing laboratories to evaluate thermal insulation, conditions exist for product misrepresentation and restraint of trade. The request states that a laboratory accreditation program in the field of thermal insulation would facilitate commerce and benefit the consumer interest without undue intervention of the government in the marketplace. The requestors state that they know of no other existing or contemplated program in either the public or private sector to accredit laboratories that test thermal insulation.

The requestors estimate that between 25 to 40 laboratories would desire to be accredited for the testing of thermal insulation. In support of this estimate, the request reference laboratories listed in the ASTM Directory of Testing Laboratories, the Directory of the American Council of Independent Laboratories, and a report issued by the Energy Research and Development Administration, ERDA TID–27210, Industrial Thermal Insulation, An Assessment.

The request further states that the number of users that would desire services of accredited testing laboratories in the field of thermal insulation is difficult to estimate accurately but is believed to be in the thousands. The request claims that manufacturers, and purchasers of thermal insulation, building code jurisdictions and federal agencies concerned

with energy conservation and thermal insulation are all users that have a potential interest in the accreditation of laboratories that test thermal insulation.

*Analysis of request.* A careful analysis was made of the request which consisted of two volumes entitled, "An Application to the Secretary of Commerce for a National Voluntary Laboratory Accreditation Program, 15 CFR, Part 7, for Thermal Insulation". The results of this analysis are contained in a report entitled, "Summary and Analysis Report, Thermal Insulation, February 1977", hereafter referred to as the Summary and Analysis Report.

*Compliance of request to section 7.4(b) of NVLAP procedures.* Any requests submitted under the NVLAP procedures must comply with subsections 7.4(b) (1), (2), (3), and (4). Specifically, these subsections are as follows:

(b) Such a request shall be in writing and will include the following:

(1) Identification of the product;

(2) Test of an applicable standard;

(3) Test of a test method, if not included in the applicable standard identified in paragraph (b) (2) of this section; and

(4) Basis of need for accrediting testing laboratories that serve the product identified in paragraph (b) (1) of this section. The basis will provide information relative to the items set out in § 7.8 and will include, where appropriate, documentary evidence on such items as:

(i) The number of testing laboratories that is believed will want to be accredited to serve the product identified in paragraph (b) (1) of this section; and

(ii) The number of users of testing laboratories that is believed will desire services of testing laboratories accredited to serve the product identified in paragraph (b) (1) of this section."

While the submitted request conforms to subsection 7.4(b) (4), it does not specifically identify a specific product as required by subsection 7.4(b) (1) for which testing laboratories render services. However, an analysis of the request discloses that in reality the specific product for which testing services would be provided is "thermal insulation materials." The submitted request is also in conformity with subsection 7.4(b) (2) as it identifies 45 specification standards applicable to thermal insulation materials" as set out in Appendix 3 to this notice. Finally, the request complies with subsection 7.4(b) (3) in that test methods are included which are applicable to these 45 specification standards.

The submitted request will, therefore, be accepted on the above basis.

*Basis for preliminary finding of need.* In accord with section 7.5 of the procedures of the National Voluntary Laboratory Accreditation Program the following information and comment are provided in support of the preliminary finding of need set out in this notice.

a. *Does the establishment of general or specific criteria and other conditions for accrediting testing laboratories that test thermal insulation materials benefit the public interest?*

After careful analysis of the request, and its attachments, it is concluded that the establishment of criteria and other conditions for accrediting such testing laboratories would benefit the public interest. This conclusion is based upon the following findings:

1. Conservation of energy is in the public interest;

2. Thermal insulation of industrial processes and commercial and residential buildings is generally recognized as an effective approach to conserving energy;

3. Standards and codes now contain or reference, and will increasingly utilize, specifications for thermal insulation materials that require testing of such insulation.

4. A number of acceptable methods exist for testing of thermal insulation, although such methods will need to be increased in number and/or further refined for testing of thermal insulation materials under conditions of realistic use.

5. Methods of testing thermal insulation materials are prone to errors in their application that may be reduced by programs for laboratory accreditation that are not now available.

Statements and opinions in support of these findings were derived from a careful reading and evaluation of the request and its attachments. These statements are contained in the Summary and Analysis Report.

b. *Is there a national need to accredit testing laboratories that test thermal insulation materials beyond that served by any existing laboratory accreditation programs in the public or private sector?*

There is no existing laboratory accreditation program, either public or private, in the field of thermal insulation materials.

The findings listed above point to the importance of adequate thermal insulation in the national energy conservation effort and the fact that test methods applicable to thermal insulation materials are subject to error in their application. As specifications frequently require application of such test methods to determine compliance of thermal insulation material to requirements, erroneous judgments deriving from erroneous test results can be made concerning the adequacy of thermal insulation material.

Laboratory accreditation under the NVLAP can assist in improving the reliability of test results regarding the properties of thermal insulation. This will enhance the ability of users of thermal insulation materials to plan and implement efficient energy-use systems, thereby helping to reduce costs and waste of fuel resources. With more reliable test results, producers will be encouraged to implement more effective quality control procedures to reduce variability of thermal insulation production. Further, certifiers, regulators, and code jurisdictions will have available better quality assurance capabilities.

c. *For thermal insulation materials is there in existence a standard that is deemed by the Secretary as being of importance to commerce, consumer well-being, or the public health and safety?*

In this preliminary finding of need, the specific product involved is thermal insulation material. The standards submitted by the requestors are the 45 specification standards set out in the Appendix 3 to this notice.

This listing of specifications includes Federal, military, maritime and ASTM specifications relating to various forms (blankets, boards, loose fill, etc.) of a wide range of materials used for thermal insulation. The list of specifications applies to both industrial and residential usage related to insulation for pipes, ducts, machinery, and structural panels (floors, walls, ceilings).

It is clearly evident that the listed specification standards as a body are vitally important to the conservation of energy, both commercially and residentially. It is therefore concluded that the listed specification standards are significantly important to commerce, consumer well-being, or the public health and safety.

d. *Is there in existence a valid testing methodology as determined by the Secretary for ascertaining conformity to the 45 specification standards for thermal insulation materials?*

Of the several test methods and recommended practices proposed in the request and shown by appendices 4 through 8 to this notice to be related to thermal insulation specifications, several are considered to be fundamental and/or known to be proven in practice and it is concluded that they are valid. These methods include ASTM standards C177, C518, C335, C236, C653, C687, C167, C302, C303, C519, C520, D1622, C165, C203, C209, C446, D1621, E84, E136, and E96. The titles of these methods are shown in Appendix 3 to this notice.

Other methods processed by the request and shown to be referenced in thermal insulation specifications relate to definition of terms, sampling techniques or tests and practices used by laboratories to test thermal insulation materials for intended use. These methods include ASTM standards C390, C168, C585, C356, D2842, D2126, D591, C272, D756, C411, C450, D781, D828, C273, D2020, C445, and D777. Titles for these standards are also shown in Appendix 1 to this notice. After an examination of these latter methods it is concluded preliminarily that they are valid.

It should be noted that Appendices 4 through 8 to this notice identify several ASTM standard methods that are not referenced by those thermal insulation material specifications included in the request. As they are not specifically related to thermal insulation materials as defined by specifications listed in Appendix 3 to this notice, they are not demonstrated to be "associated services" as required by the NVLAP procedure's definition of the term "product."

Accordingly, ASTM methods C691, C550, D828, C447, C569, C589, C755, C686, D1625, C677, D1204, D682, D1790, and D1922 are deleted as test methods or recommended practices within the scope of this laboratory accreditation program.

*e. Is it feasible and practical to accredit testing laboratories that test thermal insulation materials?*

In regard to technical considerations, the proposed laboratory accreditation program is both feasible and practical. As indicated by the requestors, a basis exists for ascertaining conformity of measurement services to several of the ASTM standard methods that would be applicable to the program. There also exists established and interested technical committees in the private sector that are active in the field and whose advice and assistance in establishing needed additional methodology will be invaluable. Several government agencies and industrial entities have programs involved with evaluation and effective utilization of thermal insulation materials and their competence could presumably be relied upon.

In regard to utilization of the program, the requestors estimate that 25 to 40 testing laboratories would desire to be accredited under the proposed program. A review of laboratory directories, surveys and other information described in the Summary and Analysis Report identifies 55 laboratories that are active in testing of thermal insulation. The information reviewed was somewhat limited and insufficiently detailed for the purpose of this review so this latter number may be conservative.

The 37 ASTM standard test methods, including recommmended practices, applicable to the proposed laboratory accreditation program will serve the major provisions of the 45 thermal insulation specifications listed in Appendix 3 to this notice. Many of these test methods and recommended practices will also serve the provisions of other thermal insulation specifications. The need for energy conservation and the importance of adequate thermal insulation materials in serving this need should encourage a large constituency of users to utilize the proposed laboratory accreditation program.

Based on the above described examination and analysis, it is hereby concluded that it is feasible and practical to accredit testing laboratories to test thermal insulation materials.

*Preliminary finding of need.* The request, including the 16 attachments which were submitted in support thereof, has been carefully examined and analyzed. Based on that examination and analysis, which are described above, it is hereby preliminarily found that a need exists to accredit testing laboratories that test thermal insulation materials as required by the 45 specification standards set out in Appendix 3 to this notice. The test methods, including recommended practices, that are included under this preliminary finding of need are those listed in Appendix 9 to this notice.

*Request for comments.* Interested persons desiring to comment on the preliminary finding of need set out above are invited to submit such comments, in four copies, on or before April 11, 1977, to the Assistant Secretary for Science and Technology, Department of Commerce, Room 3862, Main Commerce Building, Washington, D.C. 20230.

Any person desiring to express his or her views in an informal hearing relative to the mentioned preliminary finding of need shall do so by communicating that desire in writing on or before March 25, 1977, to the Assistant Secretary for Science and Technology at the address shown in the preceding paragraph. Upon receipt of such request, informal public hearings will be held so as to give all interested persons an opportunity for the oral presentation of data, views, or arguments, in addition to the opportunity to make written submissions. If deemed appropriate, such hearings may be held at two locations, one of which shall be east of the Mississippi River and the other west thereof. Notice of such hearings will be published in the FEDERAL REGISTER at least twenty (20) days in advance thereof. A transcript will be made of any oral presentation.

*Procedure following receipt of comments.* Upon receipt of the comments submitted in response to this notice, including the testimony of any hearings that may be held in conjunction therewith, a full and complete evaluation of such comments and testimony will be undertaken. Upon completion of that evaluation, a notice will be published in the FEDERAL REGISTER announcing a final finding of need to accredit testing laboratories that test thermal insulation materials or withdrawing the preliminary finding of need announced in this notice. In either event, the notice will set out the basis for the final finding of need or for the withdrawal of the preliminary finding of need in accordance with sections 7.4 (g) and (h) of the NVLAP procedures.

As an integral part of the process of evaluating the comments received, close communication and consultation will be undertaken with those Federal agencies which are believed to have an interest in or may be impacted by this particular laboratory accreditation program. In this way an effective and meaningful cooperation with interested Federal agencies may be established.

The request submitted by the trade associations, identified earlier herein, to accredit testing laboratories that test thermal insulation materials, is not believed to affect an existing or developing testing laboratory examination or accreditation program of a Federal regulatory agency. Accordingly, no attempt is being made, pursuant to section 7.4(d) of the mentioned procedures to seek from the head of any Federal regulatory agency its views relative to the preliminary finding of need announced by this notice.

Before a final finding of need in this matter is announced, a determination will be made on whether the program to accredit testing laboratories that test thermal insulation materials would have a major inflationary impact under the criteria set out in Department Administrative Order 218-6, dated September 12, 1975, entitled "Inflationary Impact of Legislative and Regulatory Proposal."



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*Documents in public record.* The documents which are part of the public record include the December 1, 1976 request filed by the trade association requesters and the 16 attachments submitted in support thereof, the Summary and Analysis Report and its appendices, which was referred to earlier in this notice, and the referenced Department Administrative Order 218-6. Such documents are available for inspection and copying in the Department's Central Reference and Records Inspection Facility, Room 7068, Main Commerce Building, 14th Street between E Street and Constitution Avenue, N.W., Washington, D.C. 20230.

All written and oral comments furnished in response to the invitation made by this notice will also be made part of the public record. Such comments will be available for inspection and copying at the inspection facility referenced in the preceding paragraph.

Any person having questions or desiring further information relative to the matters covered in this notice may contact Dr. Howard I. Forman, Deputy Assistant Secretary for Product Standards, Department of Commerce, Room 3876, Main Commerce Building, Washington, D.C. 20230. Dr. Forman's telephone number is (202) 377-2221.

Issued: March 7, 1977.

BETSY ANCKER-JOHNSON,
*Assistant Secretary for Science and Technology.*

APPENDIX 1

CLASSIFICATION AND IDENTIFICATION OF MEASUREMENT SERVICES AS PROPOSED BY THE REQUEST

*Classification 1: Measurement of Thermal Properties*

*ASTM Standard and Title*

C177 [1]—Steady State Thermal Transmission Properties by means of the Guarded Hot Plate

C518 [1]—Steady State Thermal Transmission Properties by means of the Heat Flow Meter

C335 [1]—Thermal Conductivity of Pipe Insulation by Guarded End Apparatus

C236 [1]—Thermal Conductance and Transmittance of Built-up Sections by means of the Guarded Hot Box

C691 [1]—Thermal Transference of Non-Homogeneous Pipe Insulation at Temperatures Above Ambient

C653—Recommended Practice for Determination of Thermal Resistance of Low Density Mineral Fiber Blanket-Type Building Insulation

C687—Recommended Practice for Determination of Thermal Resistance of Low—Density Fibrous Loose Fill Type Building Insulation

C390—Preformed Thermal Insulation Sampling

C168—Definition of Terms Relating to Thermal Insulating Materials

*Classification 2: Measurement of Dimension, Stability and Density Properties*

*ASTM Standard and Title*

C167 [1]—Tests for Thickness and Density of Blanket or Batt Type Thermal Insulating Materials

[1] See footnotes at end of article.

C302 [1]—Tests for Density of Preformed Pipe Covering Type Thermal Insulation

C303 [1]—Test for Density of Preformed Block Type Thermal Insulation

C519 [1]—Test for Density of Fibrous Loose Fill Building Insulations

C520 [1]—Test for Density of Granular Loose Fill Insulations

C549 [1]—Tess for Trueness and Squareness of Block Thermal Insulations

D1622 [1]—Test for Apparent Density of Rigid Cellular Plastics

C585—Recommended Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS System)

C355—Test for Water Vapor Transmission of Thick Materials

D2842—Test for Water Absorption of Rigid Cellular Plastics

D2126—Test for Response of Rigid Cellular Plastics to Thermal and Humid Aging

D689—Test for Starch in Paper

C272—Test for Water Absorption of Core Materials for Structural Sandwich Constructions

D756—Tests for Resistance of Plastics to Accelerated Service Conditions

D826—Test for Degree of Wet Curl of Paper

D1204—Measuring Changes in Linear Dimensions of Non Rigid Thermoplastic Sheeting or Film

C411—Tests for Hot Surface Performance of High Temperature Thermal Insulation

C447—Recommended Practice for Estimating the Maximum Use of Temperature of Preformed Homogeneous Thermal Insulation

C450—Recommended Practice for Prefabrication and Field Fabrication of Thermal Insulating Fitting Covers for NPS Piping, Vessel Lagging, and Dished Head Segments

*Classification 3: Measurement of Strength Properties*

*ASTM Standard and Title*

C165 [1]—Test for Comprehensive Strength of Preformed Block Type Thermal Insulation

C203 [1]—Test for Breaking Load and Calculated Flexural Strength of Preformed Block Type Thermal Insulation

C446 [1]—Test for Breaking Load and Calculated Modulus of Rupture of Preformed Insulation for Pipes

C869 [1]—Test for Indentation Hardness of Preformed Thermal Insulation

C589 [1]—Test for Apparent Impact Strength of Preformed Block Type Insulating Materials

C686 [1]—Test for Parting Strength of Mineral Fiber Batt and Blanket Type Insulation

D1621 [1]—Test for Compressive Properties of Rigid Cellular Plastics

D1623 [1]—Test for Tensile Properties of Rigid Cellular Plastics

D781—Test for Puncture and Stiffness of Paperboard Corrugated and Solid Fiberboard

D828—Test for Tensile Breaking Strength of Paper and Paperboard

D1790—Test for Brittleness Temperature of Plastic Film by Impact

C209—Testing Insulating Board (Cellulosic Fiber) Structural and Decorative

C273—Shear Test in Flatwise Plane of Flat Sandwich Construction or Sandwich Cores

D1922—Test for Propagation Tear Resistance of Plastic Film and Thin Sheeting

D882—Test for Tensile Properties of Thin Plastic Sheeting

*Classification 4: Measurement of Fire Properties*

*ASTM Standard and Title*

E84 [1]—Standard Method of Test for Surface Burning Characteristics of Building Materials

E136 [1]—Tests for Noncombustibility of Elementary Materials

*Classification 5: Measurement of Properties of Vapor Barriers*

*ASTM Standard and Title*

C677 [1]—Recommended Practice for Use of a Stndard Reference Sheet for the Measurement of the Time-Averaged Vapor Pressure in a Controlled Humidity Space

E96 [1]—Tests for Water Vapor Transmission of Materials in Sheet Form

C755—Recommended Practice for Selection of Vapor Barriers for Thermal Insulation

D2020—Test for Mildew Resistance of Paper and Paperboard

C445—Test for Normal Total Emittance of Surfaces of Materials 0.01 inch or Less in Thickness at Approximately Room Temperature

D777—Test for Flammability of Treated Paper and Paperboard

APPENDIX 2

MEASUREMENT SERVICES REQUIRED BY SPECIFICATIONS LISTED IN ATTACHMENT 12B OF THE REQUEST

| SPECIFICATIONS FOR THERMAL INSULATION LISTED IN ATTACHMENT 12B | REFERENCES MEASUREMENT OF | | | | |
|---|---|---|---|---|---|
| | Thermal Properties | Dimension Stability Density | Strength Properties | Vapor Barrier Properties | Fire Properties |
| HH-B-00100 | | | X | X | X |
| HH-C-561 | | | NONE | | |
| HH-I-521 | X | X | | X | X |
| HH-I-515 | X | X | | | |
| HH-I-545 | X | X | | | X |
| HH-I-558 | X | X | X | | X |
| HH-I-574 | X | X | | | |
| HH-I-585 | X | O | | | |
| HH-I-578 | | | NONE | | |
| HH-I-1030 | X | X | | | X |
| HH-I-1252 | X | O | | X | |
| MIL-STND-769F | O | O | O | | |
| LLL-I-535 | X | X | X | | O |
| MIL-I-742 | X | X | X | | |
| MIL-I-2781 | X | X | X | | |
| MIL-I-2818 | X | X | | | |
| MIL-I-2819 | X | X | X | | |
| MIL-I-5475 | X | X | | | |
| MIL-I-22023 | X | X | | | |
| MIL-I-22344 | X | X | | | |
| MIL-I-23128 | X | X | | | |
| 32-MA-1e | X | X | | | |
| 32-MA-3c | X | X | | | |
| C-262 | X | X | | | |
| C-391 | X | X | | | |
| C-516 | X | X | | | |
| C-517 | X | X | X | | |
| C-533 | X | X | X | | |
| C-549 | X | X | | | |
| C-553 | X | X | | | |
| C-592 | X | X | | | |
| C-610 | X | X | X | | |
| C-640 | X | X | X | | |
| C-665 | X | X | | X | X |
| C-728 | X | O | X | | X |
| C-764 | X | X | | | X |
| C-739 | X | X | | | X |
| C-578 | X | X | X | | X |
| C-591 | X | X | X | | X |
| C-532 | X | X | X | | O |
| 32-MA-4b | X | X | X | | X |
| 32-MA-8 | X | X | X | | X |
| HH-I-524 | X | X | X | | X |
| HH-I-530 | X | X | X | | X |
| HH-I-550 | X | X | X | | X |

NOTE: "X" Direct Reference
"O" Indirect Reference

APPENDIX 3

SPECIFICATIONS LISTED IN ATTACHMENT 12B OF REQUEST

H-H-B-00100—Barrier material vapor for fire retardant reinforced for pipe and duct insulation

H-H-C-561—Cork; compressed (corkboard) (for thermal insulation)

H-H-I-521—Insulation blankets, thermal (mineral fiber, for ambient temperatures)

H-H-I-515—Insulation blanket, thermal-acoustical, and insulation thermal, vegetable or wood fiber

H-H-I-545 [1]—Insulation, thermal and acoustical (mineral fiber, duct lining material)

H-H-I-558—Insulation, blocks, boards, blankets, felts, sleeving (pipe and tube covering), and pipe fitting covering, thermal (mineral fiber, industrial type)

H-H-I-574 [1]—Insulation, loose fill (Perlite)

H-H-I-585—Insulation, thermal (Vermiculite)

H-H-I-578—Insulation pipe covering and block (Vermiculite)

H-H-I-1030—Insulation, thermal (mineral fiber, for pneumatic or poured application)

H-H-I-1252—Insulation thermal, reflective (aluminum foil)

MIL-8tnd-769F—Thermal insulation requirements for machinery and piping

LLL-I-535—Insulation board and block, thermal

MIL-I-742 [1]—Insulation board, thermal, fibrous glass

MIL-I-2781 [1]—Insulation, pipe, thermal

MIL-I-2818—Insulation blanket, thermal, fibrous mineral

MIL-I-2819 [1]—Insulation block, thermal

MIL-I-15475—Insulation felt, thermal, fibrous glass semi-rigid

MIL-I-22023 [1]—Insulation felt, thermal and sound absorbing felt, fibrous glass, flexible

MIL-I-22344—Insulation, pipe, and thermal, fibrous glass

MIL-I-23128 [1]—Insulation blanket, thermal, refractory fiber, flexible

Maritime No. 32-MA-1e—Insulation: mineral fiber, blanket type (3-8 pounds per cubic foot)

Maritime No. 32-MA-3c—Insulation; felt, fibrous glass

C262—Mineral fiber batt insulation (industrial type)

C391 [1]—Amosite asbestos thermal insulation for pipes

C516—Vermiculite loose fill insulation

C517—Diatomaceous earth block and pipe thermal insulation

C533 [1]—Calcium silicate block and pipe thermal insulation

C549 [1]—Perlite loose fill insulation

C553—Mineral fiber blanket and felt insulation (industrial type)

C592—Mineral fiber blanket insulation and blanket type pipe insulation (metal mesh covered) (industrial type)

C610—Expanded perlite block and pipe thermal insulation

C640—Corkboard and cork pipe insulation for low temperature thermal insulation

C665—Mineral fiber blanket thermal insulation for wood frame and light construction buildings

C728 [1]—Perlite thermal insulation board

C764—Mineral fiber loose fill thermal insulation

C739—Cellulosic fiber (wood base) loose fill thermal insulation

C578—Preformed, block-type cellular polystyrene thermal insulation

C591—Rigid preformed cellular urethane thermal insulation

C532—Structural insulating formboard (cellulosic fiber)

Maritime No. 32-MA-4b—Plastic material: thermal, cellular, rigid (urethane)

Maritime No. 32-MA-8—Insulation: pipe covering, thermal, rigid (urethane)

H-H-I-524—Insulation board, thermal (polystyrene)

H-H-I-530—Insulation board, thermal (urethane)

H-H-I-550—Insulation sleeving, thermal (urethane)

See footnotes at end of article.

APPENDIX 4

THERMAL PROPERTY TEST METHODS REQUIRED BY SPECIFICATIONS LISTED IN ATTACHMENT 12B OF THE REQUEST

| SPECIFICATIONS | ASTM METHOD REFERENCED BY SPEC | | | | | | | | Definitions |
|---|---|---|---|---|---|---|---|---|---|
| ATTACHMENT 12B | C177 | C518 | C335 | C236 | C691 | C653 | C687 | C390 | C168 |
| HHB-00100 | | | | | | | | | |
| HHC-561 | | | | | | | | | |
| HHI-521 | X | X | | X | | X | | | |
| HHI-515 | X | | | | | | | | |
| HHI-545 | X | | | | | | | | O |
| HHI-558 | X | | X | | | | | | X |
| HHI-574 | X | | | | | | | | |
| HHI-585 | X | | | | | | | | |
| HHI-578 | | | | | | | | | |
| HHI-1030 | X | O | | X | | | X | | X |
| HHI-1252 | X | | | | | | | | |
| MIL-STND-769F | O | | O | | | | | | O |
| LLLI-535 | X | O | | | | | | | |
| MILI-742 | X | | | | | | | | |
| MILI-2781 | | | X | | | | | | |
| MILI-2818 | X | | | | | | | | |
| MILI-2819 | X | | | | | | | | |
| MILI-5475 | X | | | | | | | | X |
| MILI-22023 | X | | | | | | | | X |
| MILI-22344 | | | X | | | | | | |
| MILI-23128 | X | | | | | | | | |
| 32-MA-1e | X | | | | | | | | X |
| 32-MA-3c | X | | | | | | | | |
| C-262 | X | | | | | | | X | |
| C-391 | | | X | | | | | | |
| C-516 | X | | | | | | | | |
| C-517 | X | | X | | | | | | |
| C-533 | X | | X | | | | | X | X |
| C-549 | X | | | | | | | | |
| C-553 | X | | | | | | | | X |
| C-592 | X | | | | | | | X | X |
| C-610 | X | | X | | | | | | X |
| C-640 | X | | X | | | | | X | |
| C-665 | X | X | | | | X | | | X |
| C-728 | X | X | | | | | | X | X |
| C-764 | X | X | | X | | | X | | X |
| C-739 | X | X | | X | | | X | X | X |
| C-578 | X | | | | | | | X | X |
| C-591 | X | | X | | | | | X | |
| C-532 | X | O | | | | | | | |
| 32-MA-4b | X | | | | | | | | |
| 32-MA-8 | | | X | | | | | | |
| HHI-524 | X | | | | | | | O | O |
| HHI-530 | X | | | | | | | | |
| HHI-550 | X | | X | | | | | | |

NOTE: "X" Direct Reference
"O" Indirect Reference

APPENDIX 5

DIMENSION, STABILITY, DENSITY TEST METHODS REQUIRED BY SPECIFICATIONS LISTED IN ATTACHMENT 12B OF THE REQUEST

| SPECIFICATION ATTACHMENT 12B | ASTM TEST METHOD REFERENCED BY SPEC | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C167 | C302 | C303 | C519 | C520 | C550 | D1622 | C585 | C355 | D2842 | D2126 | D591 | C272 | D756 | D826 | D1204 | C411 | C447 | C450 |
| HHB-00100 | | | | | | | | | | | | | | | | | | | |
| HHC-561 | | | | | | | | | | | | | | | | | | | |
| HHI-521 | X | | | | | | | | | | | | | | | | | | |
| HHI-515 | X | | | | | | | | | | | | | | | | | | |
| HHI-545 | X | | | | | | | | | | | | | | | | | | |
| HHI-558 | X | X | X | | | | | | | | | | | | | | X | | |
| HHI-574 | O | | | | X | | | | | | | | | | | | | | |
| HHI-585 | O | | | | | | | | | | | | | | | | | | |
| HHI-578 | | | | | | | | | | | | | | | | | | | |
| HHI-1030 | X | | | | | | | | | | | | | | | | | | |
| HHI-1252 | O | | | | | | | | | | | | | | | | | | |
| MIL-STND-769F | O | O | O | | | | | | | | | | | | | | O | | |
| LLLI-535 | O | O | | | | | | | X | | | | | | | | | | |
| MILI-742 | X | | | | | | | | | | | | | | | | | | |
| MILI-2781 | | X | | | | | | | | | | | | | | | X | | |
| MILI-2818 | X | | | | | | | | | | | | | | | | | | |
| MILI-2819 | O | | X | | | | | | | | | | | | | | X | | |
| MILI-5475 | X | | | | | | | | | | | | | | | | | | |
| MILI-22023 | X | | | | | | | | | | | | | | | | | | |
| MILI-22344 | | X | | | | | | | | | | | | | | | | | |
| MILI-23128 | X | | | | | | | | | | | | | | | | | | |
| 32-MA-1e | X | | | | | | | | | | | | | | | | | | |
| 32-MA-3c | X | | | | | | | | | | | | | | | | | | |
| C-262 | X | | | | | | | | | | | | | | | | | | |
| C-391 | | X | | | | | | | | | | | | | | | | | |
| C-516 | O | | | | X | | | | | | | | | | | | | | |
| C-517 | O | X | X | | | | | | | | | | | | | | | | |
| C-533 | O | X | X | | | | | X | | | | | | | | | X | | |
| C-549 | O | | | | X | | | | | | | | | | | | | | |
| C-553 | X | | | | | | | | | | | | | | | | | | |
| C-592 | X | | | | | | | | | | | | | | | | | | |
| C-610 | O | X | X | | | | | | | | | | | | | | | | |
| C-640 | O | X | X | | | | | | | | | | | | | | | | |

APPENDIX 5, CONTINUED

DIMENSION, STABILITY, DENSITY TEST METHODS REQUIRED BY SPECIFICATIONS LISTED IN ATTACHMENT 12B OF THE REQUEST

| SPECIFICATION ATTACHMENT 12B | ASTM TEST METHOD REFERENCED BY SPEC | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C167 | C302 | C303 | C519 | C520 | C550 | D1622 | C585 | C355 | D2842 | D2126 | D591 | C272 | D756 | D826 | D1204 | C411 | C447 | C450 |
| C-665 | X | | | | | | | | | | | | | | | | | | |
| C-728 | O | O | | | | | | | O | | | | | | | | | | |
| C-764 | O | | | X | | | | | | | | | | | | | | | |
| C-739 | O | | | X | | | | | | | | X | | | | | | | |
| C-578 | O | | X | | | | | | X | | | | X | | | | | | |
| C-591 | O | X | X | | | | | | X | | X | | | | | | | | |
| C-532 | O | O | | | | | | | X | | | | | | | | | | |
| 32-MA-4b | O | | | | | | X | | | | | | X | X | | | | | |
| 32-MA-8 | | O | | | | | X | | | | | | | X | | | | | |
| HHI-524 | O | | | | | | X | | X | | X | | X | | | | | | |
| HHI-530 | O | | O | | | | X | | X | X | | | O | | | | | | |
| HHI-550 | O | X | | | | | | | X | | | | | X | | | | | |

NOTE: "X" Direct Reference
"O" Indirect Reference

APPENDIX 6

STRENGTH PROPERTY TEST METHODS REQUIRED BY SPECIFICATIONS LISTED IN ATTACHMENT 12B OF THE REQUEST

| SPECIFICATION ATTACHMENT 12B | ASTM METHODS REFERENCED BY SPEC | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | C165 | C203 | C446 | C569 | C589 | C686 | D1621 | D1623 | D781 | D828 | D882 | D1790 | C209 | C273 | C1922 |
| HHB-00100 | | | | | | | | | X | X | | | | | |
| HHC-561 | | | | | | | | | | | | | | | |
| HHI-521 | | | | | | | | | | | | | | | |
| HHI-515 | | | | | | | | | | | | | | | |
| HHI-545 | | | | | | | | | | | | | | | |
| HHI-558 | X | | | | | | | | | | | | | | |
| HHI-574 | | | | | | | | | | | | | | | |
| HHI-585 | | | | | | | | | | | | | | | |
| HHI-578 | | | | | | | | | | | | | | | |
| HHI-1030 | | | | | | | | | | | | | | | |
| HHI-1252 | | | | | | | | | | | | | | | |
| MILI-STND-769F | O | O | O | | | | | | | | | | | | |
| LLLI-535 | | | | | | | | | | | | | X | | |
| MILI-742 | | | | | | | | | X | | | | | | |
| MILI-2781 | | | X | | | | | | | | | | | | |
| MILI-2818 | | | | | | | | | | | | | | | |
| MILI-2819 | X | X | | | | | | | | | | | | | |
| MILI-5475 | | | | | | | | | | | | | | | |
| MILI-22023 | | | | | | | | | | | | | | | |
| MILI-22344 | | | | | | | | | | | | | | | |
| MILI-23128 | | | | | | | | | | | | | | | |
| 32-MA-1e | | | | | | | | | | | | | | | |
| 32-MA-3c | | | | | | | | | | | | | | | |
| C-262 | | | | | | | | | | | | | | | |
| C-391 | | | | | | | | | | | | | | | |
| C-516 | | | | | | | | | | | | | | | |
| C-517 | X | X | X | | | | | | | | | | | | |
| C-533 | X | X | X | | | | | | | | | | | | |
| C-549 | | | | | | | | | | | | | | | |
| C-553 | | | | | | | | | | | | | | | |
| C-592 | | | | | | | | | | | | | | | |
| C-610 | X | X | X | | | | | | | | | | | | |
| C-640 | | X | | | | | | | | | | | | | |
| C-665 | | | | | | | | | | | | | | | |
| C-728 | X | X | | | | | | | | | | | X | | |
| C-764 | | | | | | | | | | | | | | | |
| C-739 | | | | | | | | | | | | | | | |
| C-578 | X | X | | | | | | | | | | | | | |
| C-591 | X | | X | | | | | | | | | | | | |
| C-532 | | | | | | | | | | | | | X | | |
| 32-MA-4b | | X | | | | | X | | | | | | | X | |
| 32-MA-8 | | X | | | | | X | | | | | | | X | |
| HHI-524 | | X | | | | | X | | | | | | | | |
| HHI-530 | O | X | | | | | X | | | | | | | | |
| HHI-550 | | | | | | | X | | | | | | | | |

NOTE: "X" Direct Reference
"O" Indirect Reference

APPENDIX 7

FIRE PROPERTY TEST METHODS REQUIRED BY
SPECIFICATIONS LISTED IN ATTACHMENT 12B OF THE REQUEST

| SPECIFICATION ATTACHMENT 12B | ASTM TEST METHOD REFERENCED BY SPEC E84 | E136 | Other |
|---|---|---|---|
| HHB-00100 | X | | |
| HHC-561 | | | |
| HHI-521 | X | | |
| HHI-515 | | | |
| HHI-545 | X | | |
| HHI-558 | X | | |
| HHI-574 | | | |
| HHI-585 | | | |
| HHI-578 | | | |
| HHI-1030 | X | | |
| HHI-1252 | | | |
| MIL-STND-769F | | | |
| LLLI-535 | O | | |
| MILI-742 | | | |
| MILI-2781 | | | |
| MILI-2818 | | | |
| MILI-2819 | | | |
| MILI-5475 | | | |
| MILI-22023 | | | |
| MILI-22344 | | | |
| MILI-23128 | | | |
| 32-MA-1e | | | |
| 32-MA-3c | | | |
| C-262 | | | |
| C-391 | | | |
| C-516 | | | |
| C-517 | | | |
| C-533 | | | |
| C-549 | | | |
| C-553 | | | |
| C-592 | | | |
| C-610 | | | |
| C-640 | | | |
| C-665 | X | | |
| C-728 | X | | |
| C-764 | X | | |
| C-739 | X | | |
| C-578 | | | D1692* |
| C-591 | | | D1692* |
| C-532 | O | | |
| 32-MA-4b | | | D1692* |
| 32-MA-8 | | | D1692* |
| HHI-524 | | | D1692* |
| HHY-530 | | | D1692* |
| HHI-550 | | | D1692* |
| ALL BUILDING CODES | X | | |
| SEVERAL BUILDING CODES | | X | |

*Request proposes alternative use of E84.
NOTE: "X" Direct Reference
"O" Indirect Reference

APPENDIX 8

VAPOR BARRIER TEST METHODS REQUIRED BY SPECIFICATIONS LISTED IN ATTACHMENT 12B OF THE REQUEST

| SPECIFICATIONS ATTACHMENT 12B | ASTM METHOD REFERENCED BY SPEC C677 | E96 | C755 | D2020 | C445 | D777 |
|---|---|---|---|---|---|---|
| HHB-00100 | | | | X | | X |
| HHI-521 | X | | | | X | |
| HHI-1252 | X | | | | X | |
| C-665 | X | | | | X | |

APPENDIX 9

ASTM TEST METHODS, AND RECOMMENDED PRACTICES APPLICABLE TO PRELIMINARY FINDING OF NEED

*ASTM Designation and Title*

C177 [1]—Steady State Thermal Transmission Properties by means of the Guarded Hot Plate

C518 [1]—Steady State Thermal Transmission Properties by means of the Heat Flow Meter

C335 [1]—Thermal Conductivity of Pipe Insulation by Guarded End Apparatus

C236 [1]—Thermal Conductance and Transmittance of Built up Sections by means of the Guarded Hot Box

C653—Recommended Practice for Determination of Thermal Resistance of Low Density Mineral Fiber Blanket-Type Building Insulation

C687—Recommended Practice for Determination of Thermal Resistance of Low-Density Fibrous Loose Fill Type Building Insulation

C390—Preformed Thermal Insulation Sampling

C168—Definition of Terms Relating to Thermal Insulating Materials

C167 [1]—Tests for Thickness and Density of Blanket or Batt Type Thermal Insulating Materials

C302 [1]—Test for Density of Preformed Pipe Covering Type Thermal Insulation

C303 [1]—Test for Density of Preformed Block Type Thermal Insulation

C519 [1]—Test for Density of Fibrous Loose Fill Building Insulations

C520 [1]—Test for Density of Granular Loose Fill Insulations

D1622 [1]—Test for Apparent Density of Rigid Cellular Plastics

C585—Recommended Practice for Inner and Outer Diameters of Rigid Thermal Insulation for Nominal Sizes of Pipe and Tubing (NPS system)

C355—Test for Water Vapor Transmission of Thick Materials

D2843—Test for Water Absorption of Rigid Cellular Plastics

D2126—Test for Response of Rigid Cellular Plastics to Thermal and Humid Aging

D691—Test for Starch in Paper

C272—Test for Water Absorption of Core Materials for Structural Sandwich Constructions

D756—Tests for Resistance of Plastics to Accelerated Service Conditions

C411—Tests for Hot Surface Performance of High Temperature Thermal Insulation

C450—Recommended Practice for Prefabrication and Field Fabrication of Thermal Insulating Fitting Covers for NPS Piping, Vessel Lagging, and Dished Head Segments

C165 [1]—Test for Compressive Strength of Preformed Block Type Thermal Insulation

C203 [1]—Test for Breaking Load and Calculated Flexural Strength of Preformed Block Type Thermal Insulation

C446 [1]—Test for Breaking Load and Calculated Modulus of Rupture of Preformed Insulation for Pipes

D1621 [1]—Test for Compressive Properties of Rigid Cellular Plastics

D781—Test for Puncture and Stiffness of Paperboard Corrugated and Solid Fiberboard

D828—Test for Tensile Breaking Strength of Paper and Paperboard

C209—Testing Insulating Board (Cellulosic Fiber) Structural and Decorative

C273—Shear Test in Flatwise Plane of Flat Sandwich Construction or Sandwich Cores

E84 [1]—Standard Method of Test for Surface Burning Characteristics of Building Materials

E136 [1]—Tests for Noncombustibility of Elementary Materials

E96 [1]—Tests for Water Vapor Transmission of Materials in Sheet Form

D2020—Test for Mildew Resistance of Paper and Paperboard

C445—Test for Normal Total Emittance of Surfaces of Materials 0.01 inch or less in Thickness at Approximately Room Temperature

D777—Test for Flammability of Treated Paper and Paperboard

FOOTNOTES

[1] Related to existing NBS Competence, Reference Sample or Calibration Services.

[2] Excluding requirements other than those related to testing of thermal, mechanical, fire, and vapor barrier properties.

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UNITED STATES
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
WASHINGTON, D.C. 20545

JUN 6 1977

OFFICE OF THE ASSISTANT ADMINISTRATOR
FOR CONSERVATION

Honorable John Dingell, Chairman
Subcommittee on Energy and Power
Committee on Interstate and Foreign Commerce
U.S. House of Representatives

Dear Mr. Dingell:

In Mr. Jack E. Snell's testimony before the House Energy and Power Subcommittee on May 9, 1977 six questions related to the President's Energy Policy Act were listed. The following is our response to those questions. The answers to questions 1 and 2 address the specific residential energy conservation measures indentified in section 101. The remaining answers are general in nature.

Sincerely,

Maxine Savitz

Maxine Savitz, Director
Division of Buildings
and Community Systems

cc: Clarence J. Brown
House of Representatives

I. Is the technology in hand to do the job?

A. Caulking and weatherstripping - the materials are available and there is no new technology needed.

B. Furnace efficiency modifications

1. Replacement burners - means replacement of the gas flow orifice with one with a smaller opening. The new orifice should be sized to match the heating rate of the furnace with the required heat load of the residence. Once the required heat load is known the orifice sizing and replacement is readily done. Replacement does not increase combustion efficiency but does reduce the gas flow rate. To obtain the most efficient operation a corresponding reduction in air flow must be made. As there is no provision in the furnace to adjust air flow, a restriction in the flue can be used to control the air flow. This device is addressed in the next item.

ll. Modifying flue openings - flue restrictors and flue dampers have been designed. The operational function and need for flue restrictors and dampers is well understood.

lll. Replacement of gas pilot lights - these are available in the market place.

C. Clock thermostats - there are approximately 25 companies that market clock thermostats. They are priced in the range of $30 to $100.

D. Ceiling, attic, wall, and floor insulation - Several types of insulations are available; there are many manufacturers of each type. Each type has certain beneficial characteristics, the problem is to determine the proper insulation for each particular application.

E. Hot water heater insulation - ERDA funded developed of an insulation kit. It is on the market. A report and flyers on the kit are in printing.

F. Storm windows - there are many storm window manufacturers and the windows are readily available

2. Are there suitable standards, practices, and know-how available to effectively and safely apply this technology

A. Caulking and weatherstripping - these are materials that are readily applied by homeowners. There are techniques that will measure the total infiltration in a house and indicate when caulking and weatherstripping are needed.

B. Furnace efficiency modifications

1. Replacement burners - American Gas Association certifies furnace capacity range. Many building codes specify that furnaces used outside the range are in violation of the code. Gas furnace servicemen can and have readily made the burner change effectively and safely.

ll. Modifying flue opening - there are two types, vent restrictors and vent dampers. ANSI committee Z-223 interprets their standard as placing no prohibition on vent restrictors. ANSI committee Z-21 has approved an electrically operated vent damper at the April 20, 1977 meeting. It is presently being reviewed by the ANSI membership. The thermal vent damper standard is being developed and the subcommittee intends to act on the standard in June.

AGA in its SHEIP program will develop a training program to train service people.

lll. Replacement of gas pilot lights - there are devices available and are addressed in ANSI specification Z-2120 1975.

C. Clock thermostats - Depending on type the home owner or a trained electrician can install clock thermostats.

D. Ceiling, attic, wall and floor insulation standards or specifications are issued by the American Society for Testing and Materials (ASTM), industrial associations and government agencies. The types of insulation considered and the available standards are:

1. Mineral fibers

A. ASTM C 665-70, mineral fiber blanket thermal insulation for wood frame and light construction buildings.

B. ASTM C 764-73, mineral fiber loose fill thermal insulation.
C. Federal specification HHI-521 on unfaced and faced blanket insulation.
D. Federal specification HHI-1030 on loose mineral fiber insulation.

2. Cellulose
A. ASTM C 739-73, cellulosic fiber (wood base) loose fill thermal insulation.
B. National Cellulose Insulation Manufacturers Association N-101-73, standard specification for cellulosic fiber (wood base) loose fill thermal insulation.
C. Federal specification HHI-515C on cellulose.

3. Cellular foam - no standards available. There is a sub group of ASTM developing a first draft

3. Are the data and educational materials available to communicate to householders the information they must have to do their part?

For home insulation there is an excellent HUD publication available, - "In the Bank - Up the Chimney". There are two other publications, the NBCS document, "Making the Most of Your Energy Dollar" and the FEA document, "Home Energy Saver's Workbook".
In addition, ERDA and FEA have several bulletins and brochures discussing energy conservation techniques and devices to the public. FEA under the state program and ERDA with its extension service pilot program will be disseminating materials and testing our various different channels of communication.
ERDA with FEA and HUD is writing a comprehensive home buyers guide directed at the residential energy conservation measures. Recommendations and practices will be discussed on a regional basis.

4. Vermiculite -ASTM C 516-75, vermiculite loose fill insulation
5. Perlite - ASTM-C, 549-73, Perlite loose fill insulation.

There are a few federal specifications on the manufacture of insulation; however, there are no federal specifications on the installation of insulation.

E. Hot water heater Insulation - Insulation is easily installed on water heaters. The Johns-Manville kit referred to in the answer to question I has simple instructions as to how to apply the insulation safely and effectively.

F. Storm windows - there are many capable installers of storm windows and their practices and know-how has been developed over a long period.

4. Are there sufficient industrial capacity and professional and skilled work power available to meet the goals by 1985?

We have not analyzed the industrial capacity or the work force, We defer to FEA for this answer. It would seem that many of the residential energy conservation measures will require a skill that can easily be acquired. This effort should therefore be a force in reducing unemployment.

5. Is there willing leadership and cooperation within both industry and government as well as effective organizational and institutional mechanism in place to make these programs work?

As pointed out in previous answers, there is cooperation in many areas among federal agencies. ERDA has many people that work with leading professional societies that will make these programs work. Industries form associations that they use to respond to their needs. The leadership in these organizations is in continued communication with ERDA and is willing to aid in making these programs work. For example several of the insulation associations work closely with ASTM to establish specifications.

6. Are there adequate mechanisms to stimulate and motivate building and occupants, industry and labor, and utilities to act in meeting these goals?

The President's National Energy Act is directed at establishing an adequate mechanism, specifically Title I, Part A - Energy Conservation Program for Existing Residential Buildings, subpart 1-3, Part B - Energy Efficiency of Consumer Products and, Part C - Energy Conservation Program for Schools and Hospitals; Title II Part A - Residential Energy Tax Credit and Part C - Business Energy Tax Credit

Mr. DINGELL. The Chair recognizes as the next witness the Honorable John F. O'Leary, Administrator of the Federal Energy Administration. We are pleased you are here with us, Mr. O'Leary.

Mr. O'Leary, if you will identify yourself for the purpose of the record.

## STATEMENT OF JOHN F. O'LEARY, ADMINISTRATOR, FEDERAL ENERGY ADMINISTRATION

Mr. O'LEARY. My name is John F. O'Leary. I am Administrator of FEA, and I want to apologize to you and the members of the committee for my tardiness today. I was, as you know, appearing before a Senate committee, and the interrogation went on longer than I thought.

Mr. DINGELL. The Chair has been so advised.

In the interest of time, your full statement will be inserted in the record, and the Chair will recognize you for a summary.

Mr. O'LEARY. Mr. Chairman, there are 2 or 3 points I would like to summarize in this. First of all, I would like to read from page 2 of the statement, the National Energy Act objectives as we see them. There are 6 ambitious goals: First, to reduce the rate of growth of energy consumption to below 2 percent per year; second, to reduce oil imports to less than 6 million barrels per day, about one-eighth of total energy consumption; third, to reduce gasoline consumption by 10 percent below the current level; fourth, to insulate 90 percent of American homes and all new buildings; fifth, to increase annual coal production by at least 400 million tons by 1985; and, finally, to use solar energy in more than 2-1/2 million homes.

Mr. Chairman, I think now I should summarize the 4 major features of the plan, which you will find at the bottom of page 4: First, the stress on conservation and increased fuel efficiency; second, rational pricing and production policies; third, substitution of abundant energy sources for those in short supply, and finally, development of nonconventional technologies for the future. These are the important elements in my prepared statement, Mr. Chairman.

I would like to add that the reason all of us are concerned in this matter is because of a growing public awareness that domestic resources are inadequate for the future and we can no longer continue to rely on foreign resources to continue the old practices.

With that, Mr. Chairman, I would like to expose myself to any questioning that you may have.

[Mr. O'Leary's prepared statement follows:]

STATEMENT OF JOHN F. O'LEARY, ADMINISTRATOR OF THE FEDERAL ENERGY ADMINISTRATION

Mr. Chairman and members of the subcommittee—

It is a pleasure to be here today begin your hearings on provisions of the proposed National Energy Act. Your Committee plays an important part in the review and passage of the act, and I look forward to working closely with you in the coming weeks.

The diagnosis of the U.S. energy problem is very simple: demand for energy is increasing, while the available domestic supplies of oil and natural gas have been declining. The cure, however, is far from simple, and its solution requires attention to complex economic, political, and social factors, as well as technical matters.

The energy problem must be addressed comprehensively. We need to identify levels of domestic energy demand, domestic supply, and oil imports that will be consistent both internally and with other goals of public policy, such as economic growth, and protection of public health and safety and the environment.

The President's national energy plan does address the energy problem comprehensively. By doing so, it would reduce imports to a manageable level, by encouraging increased energy supplies and more efficient use. This approach would bring about effective conservation, without changing the basic standard of living or interfering with continued economic growth; it would provide generous incentives for new energy production; without providing windfall profits unrelated to economic contributions; and it would encourage increased use of coal, and other abundant energy sources with appropriate concern for human health and the environment.

The National Energy Act proposes six ambitious goals for the American people to be achieved by 1985:

To reduce the rate of growth of energy consumption to below 2 percent per year;

To reduce oil imports to less than 6 million barrels per day, about one-eighth of total energy consumption;

To reduce gasoline consumption by 10 percent below the current level;

To insulate 90 percent of American homes and all new buildings;

To increase annual coal production by at least 400 million tons; and

To use solar energy in more than 2-1/2 million homes.

These goals are established to deal with three over-riding objectives. As an immediate objective that will become even more important in the future, the U.S. should conserve energy to reduce dependence on foreign oil and vulnerability to supply interruptions. In the medium term, the U.S. should keep U.S. imports sufficiently low to weather the period during the 1980's when world oil production approaches its capacity limitation. In the long run, beyond 2000, the U.S. should have available renewable and essentially inexhaustible sources of energy for sustained economic growth.

The U.S. seeks to achieve those objectives within the context of certain fundamental principles. Economic growth with high levels of employment and production must be maintained. National policies for the protection of the environment must be continued. Above all, the U.S. must solve its energy problems in a manner that is fair to all regions, sectors, and income groups.

I want to emphasize to you that the National Energy Plan has been designed to be fair. Taken as a whole, it distributes benefits and burdens equitably among various sectors and income groups in this country. As you consider the various provisions of the National Energy Act, I would urge you to bear in mind that each measure should be considered not only on its own, but also as part of a complex whole which is designed to be fair to all groups and sectors within our society. Many groups will find in this bill provisions which impose burdens or sacrifices on them; the temptation to seek exemptions from burdens and sacrifices will be very strong. But the United States will solve its energy problem only if it adopts a plan that is fair, and any fair plan will impose burdens on everyone.

The National Energy Plan has four major features:

Conservation and increased fuel efficiency;

Rational pricing and production policies;

Substitution of abundant energy sources for those in short supply; and

Development of nonconventional technologies for the future.

Conservation, including increased fuel efficiency, is the cornerstone of the Plan. We do not seek to reduce energy consumption in absolute terms. Rather, we seek to reduce the rate of increase of energy consumption from the 1950-1973 average of 3.5 percent to less than 2 percent per year. The conservation goal is fully consistent with the President's economic goals, including high rates of employment and expanding output.

The strategy of the plan is to achieve sensible, cost-effective conservation in all sectors of energy use: in transportation, homes and other buildings, factory equipment, and appliances. Much of the Nation's current stock of automobiles, buildings, equipment, and other capital goods uses energy inefficiently. Our conservation measures would modify that capital stock in an orderly way, so that by the mid 1980's we will be able to use energy far more efficiently than we do today.

Although no one can predict future supply with complete confidence, the prospects for world oil supply are not reassuring. To act prudently, we should not rely on a continuous flow of large new discoveries in meeting our new demands. To increase the likelihood of avoiding severe adverse consequences during the 1980's, we should begin now to improve the energy efficiency of our stock of capital goods. We should

also promote conservation through more realistic pricing of energy so that consumers receive proper signals concerning the costs of energy. In developing the conservation program, we have sought to minimize direct regulation of energy use in order to maintain a high degree of free choice among individuals and corporations. We have time now to allow some adjustments to be made voluntarily.

The conservation programs of the National Energy Act would reach all major segments of energy consumption. Two of the act's major proposals would provide a good deal of latitude among consumers: A tax on automobiles with fuel economy less than the fleet averages under current legislation, with corresponding rebates on fuel-efficient cars; and a standby tax on gasoline, designed to take effect if total national consumption exceeds prescribed target levels. The latter proposal would provide a challenge to the American people to meet a common goal. The tax would be imposed only if the American people failed to meet annual goals by more than 1 percent. This represents the type of challenge Americans have been so successful in meeting in the past and will likely meet in the future.

The National Energy Act proposes a wide variety of financial incentives, regulatory changes, and other measures to achieve conservation in homes and commercial buildings. These incentives, coupled with rising fuel prices, should make homeowners and businesses willing and able to insulate buildings and otherwise conserve energy. We will discuss these more fully in separate statements. If the voluntary measures do not succeed, mandatory measures, such as requiring that houses be insulated before they are sold, will have to be considered.

For the industrial and utility sector, the National Energy Act contains a program of economic incentives and disincentives and regulatory measures. It creates incentives to decrease use of energy in general and in particular to reduce peak load use of energy by industry. Also, incentives are created for the cogeneration of electricity and industrial process steam to achieve much greater efficiency of production by making beneficial use of waste heat.

The plan would reform the pricing of oil and natural gas so as to provide strong incentives for new production, to avoid windfall profits on production from existing fields, and to promote conservation through more realistic pricing of these fuels in the marketplace.

The plan provides very significant incentives for new production. Over the next 3 years, the price of newly discovered oil would be allowed to rise to the 1977 world oil price, adjusted for inflation. This measure would yield revenues greater than those available to oil producers anywhere in the world. The incentive would be higher, for example, than the level of revenues for production in the North Sea, where producers have to contend with deep water and 30-foot waves. The proposed incentives for new natural gas production are also generous. Moreover, the National Energy Act would end the interstate-intrastate distinction for pricing new gas, together with its distorting effect on production and distribution.

To bring about more realistic prices for oil in the marketplace, the National Energy Act contains a crude oil equalization tax, designed to raise the total wellhead price of domestic crude oil to the level of the world oil price. Only if domestic wellhead prices are raised to the world level will consumers recognize the true replacement cost of oil and respond by conserving. Producers, however, should not earn windfall profits arising from price increases unrelated to any risk-taking or economic contribution on their part. Rather, the proceeds of the price increase should be returned to the American people.

The National Energy Act contains provisions designed to bring about conversion by industrial firms and electric utilities from scarce oil and natural gas to coal and other abundant fuels. Coal constitutes 90 percent of U.S. conventional energy reserves, but last year contributed to only 18 percent of U.S. energy consumption. A major strategy for reducing U.S. dependence on oil imports and for assuring sufficient natural gas for high priority residential and commercial use is to induce industry and utilities to convert to coal and other abundant domestic fuels.

Under the proposed legislation, taxes would be levied on the use of oil and natural gas by industrial firms and utilities. By thus raising the prices of oil and natural gas to these users, the legislation would provide incentives for conversion to coal and other sources of energy. In addition, the legislation contains a revised and simplified regulatory program for oil and natural gas conversions. Restrictions would be placed on the burning of oil and gas in new facilities, and permits would be required for conversion of existing facilities to either oil or natural gas. The National Energy Plan includes policies and programs to ensure that as the United States increases its use of coal, public health, safety and the environment are protected.

The Plan contains a variety of measures to promote the development and use of nonconventional energy sources. Tax credits for residential and business use of solar energy, a tax deduction for intangible drilling costs of geothermal drilling equivalent to that available for oil and gas production, and new research and development initiatives should contribute significantly to the development of renewable and essentially inexhaustible energy sources for the country's long-term future.

The macroeconomic impacts of the National Energy Act would be small, below the range of confident projection when compared to a $2 trillion economy. In general, analyses indicate that the Plan would not have a negative impact. However, in assessing the economic consequences of the Plan, we should not become mired in the relatively small differences in econometric projections covering an 8 year period. Rather, we should focus on the economic consequences of not dealing with the energy problem effectively. Standard econometric projections assume there will be enough energy to maintain economic activity. That assumption is coming increasingly into question. In the mid-1980's, the U.S. stock of capital goods may require more energy than the world will supply at reasonable prices; this would have severe adverse effects on the whole U.S. economy.

Therefore, the proper question is not whether the macroeconomic effects of the National Energy Plan are slightly positive or slightly negative. The proper question is whether there is any other approach that will achieve the needed improvement in the U.S. energy situation consistent with other basic public policies and with significantly better macroeconomic consequences. On the basis of our study of these matters, we have concluded that there is not.

The principle of fairness which underlines the Plan requires special attention to the needs of the poor, especially the elderly poor. The Plan proposes to expand the existing weatherization program that provides insulation and other energy-saving measures for the homes of the poor. Two additional measures are part of the Plan, but are not included in the National Energy Act. The Department of Health, Education and Welfare will prepare proposed legislation to revise the existing Federal-State Emergency Assistance Program to provide assistance to those in need during an energy emergency. And, the long-term needs of the poor, and in particular the elderly poor for protection from rising energy prices will be met through reform of the welfare system, on which the Administration is now hard at work.

Mr. Robert Hemphill of my staff will testify shortly on the rationale and detailed content of our proposals to save energy in our existing homes. I wish to emphasize two things about these proposals. First, home conservation is one part of our Plan which produces net benefits to those who participate, rather than net sacrifices. Though many of the investments we are encouraging require significant investment, energy cost reductions more than outweigh these costs over the life of the materials. Though some behavioral changes which we encourage, such as lowered winter temperatures or elimination of unnecessary lighting, require some sacrifices of convenience or comfort, these sacrifices are small compared to the savings which would be realized by individuals and the Nation.

The second point I wish to make is that nothing in our proposals for homeowners is mandatory, as I mentioned earlier. Virtually all of the changes to buildings and equipment included in our proposals are already in the homeowners own self-interest, without special subsidies. We have proposed these subsidies to speed the adoption of these changes and to focus the consumers attention on the benefits of conservation. We will not be reluctant, however, to consider various mandatory requirements if they are needed to achieve our home conservation goals.

Mr. Chairman, the energy crisis is probably the most important domestic problem we will have to address during the next several years. It is a problem that will test our vision, our creativity, and our courage. Future generations—including our own children and grandchildren—will look back at what we did in facing this problem. They will inquire whether we made effective use of the time available to us. It is, therefore, essential to have close cooperation between the Administration and the Congress now, while we still have time to deal with the energy problem in an orderly manner. I look forward to working with you on the large and complex task that lies before us.

Mr. DINGELL. The Chair will recognize members of the subcommittee for the purpose of asking questions. The Chair recognizes first the gentleman from Ohio, Mr. Brown.

Mr. BROWN. Mr. Administrator, on page 16, lines 3 through 15, why should the utilities be required to make a list of suppliers and

contractors and banks and savings and loans institutions who offer loans for the purchase and installation of residential energy conservation measures? What expertise do they have in this area?

Mr. O'LEARY. Mr. Chairman, Mr. Brown, we are now finding a situation in which there is the possibility for rip-off artists entering the home insulation field, and this is one attempt to get some quality control into that business.

Mr. BROWN. What about the possibility of a little family relationship between the lending institutions and the guy who does the work, and the utility? Suppose that the guy who is on the list is a rip-off artist, who bears the legal responsibility for inadequate work?

Mr. O'LEARY. I think that you will find when we finally develop the regulations, that there will be audit requirements to go along with this, Mr. Brown.

Here is the way I would see it at the moment: It seems to me that what we need, first of all, is to provide a list of good, competent people in order to undertake this work. Secondly, to prevent any development of any monopolies or oligopolistic control of this market, one of the parallels we find here is that a broadly constructed qualified list of bidders for government procurement seeks to achieve both of these objectives, to include people who are qualified, and to prevent any monopolistic elements getting into the business. That is the sort of thing we should ensure, and the only way is to provide an additional tier of quality control at the State level.

Mr. BROWN. I might say to you that that is an additional tier of government. A lot of small business people have trouble getting through the tiers of government that we have now, and you will just simply put out of business a lot of people who are in this business and perform adequately, but do not have the lawyer and all the other people they will need to keep up with Federal regulations.

On page 17, line 5, how will the Administrator determine if the utility has dedicated all capital reasonably available to it, toward meeting the requirements of this program? That is, for the most part, a quote.

Mr. O'LEARY. I think what you look at is: Is the program being fully funded and fully carried out? If not, you come to the question: Is the utility, in fact, holding back? I think probably the first question is more important. Is the program proceeding, or are there——

Mr. BROWN. On the basis of the discussion with the FEA representative who sat in that chair ahead of you, it would be $25 per inspection for 90 percent of 40 million homes if this works right, and that is about $900 million——

Mr. O'LEARY. Just under a billion dollars.

Mr. BROWN. ——which is very close to a billion bucks, and it seems to me that is a fairly sizable impact on the economy and the utility industry in terms of the necessity of coming up with funding.

On page 20, lines 11 through 16, if the FEA Administrator determines that a public utility fails to comply with any order, he may order such public utility not to increase any rate at which it sells natural gas or electricity.

What sort of due process guarantees will be available to a utility under this part of the bill, and how does it impact on the regulations of the State utility commissions and their right to regulate?

Mr. O'LEARY. Mr. Brown, this represents preemption to that degree of the State public utility's right to regulate. The due process would be, of course, the normal right of appeal that the utilities would have under ordinary circumstances and also would have full access to courts in an appeal proceeding.

Mr. BROWN. There is no due process guarantee before you make that decision, however, is there, in this legislation?

Mr. O'LEARY. I think by the time you see the full regulations that are developed pursuant to this regulation, you will see there will be a notice——

Mr. BROWN. It is not in the bill. In other words, Congress doesn't know what you will hawk up as the Administrator of FEA to protect the individual American citizen, person, or institution with whom you are dealing.

In other words, we place total reliance on FEA to provide regulations that will fully protect the private individual.

Mr. O'LEARY. Mr. Chairman, I think if the FEA did not issue regulations that did assure due process in a case like this, then those regulations would be declared invalid. I think this would be a mandatory requirement on us.

Mr. BROWN. Frankly, I don't want to trust either the FEA or the courts. I think the Congress should put into this legislation the due process arrangements either under the Administrative Procedure Act or some other. Would you object to that?

Mr. O'LEARY. Mr. Chairman, I am sure we can work out something that will meet both of our requirements in that area.

Mr. DINGELL. The time of the gentleman has expired. The Chair advises that we would appreciate submission by you, Mr. O'Leary, of appropriate language to accomplish the goals described.

The Chair advises that we are imposing, to the great regret of the Chair, a 7-day limit on submissions, so I am sure we will have your assistance and cooperation.

Mr. BROWN. Let me say I have no desire to be rude to the witness, but I can't take wandering answers on this basis. I have to get a yes/no answer, or some specifics, rather than sort of general bluebook kind of response.

Mr. DINGELL. The Chair is indeed sympathetic with the situation the gentleman finds himself in. The Chair assures him that we are in this, to the regret of the Chair and over the protest of the Chair, together.

The Chair recognizes now the gentleman from New York, Mr. Ottinger, for 5 minutes.

Mr. OTTINGER. Thank you, Mr. Chairman.

Your statement and the plan that you have put forward say you don't contemplate a decrease in energy use. What you contemplate through the conservation program is merely a decrease in the rate of growth of energy use.

I, myself, feel that the situation is more serious, so as to warrant more far-reaching steps. I think that the penalty we are paying in terms of price outflow of money to the Arab countries is a danger-

ous one, our dependence on imports is a national security risk, and that we should go further in conservation than it is contemplated.

I am also very dubious about placing complete reliance on taxation in increasing the price of energy as a method of conservation at least to the extent that we do it, and I wondered if the President has said he is willing to be flexible and look at alternatives, if we might not put a rationing and allocation program into place which, if it doesn't achieve certain goals, would be then be ready to cooperate? Are you prepared to comment on that?

Mr. O'LEARY. Yes, I would, Mr. Chairman. I will comment on that from a personal basis. I administered the oil import control program during the period 1962, roughly, to 1967. In the West Coast area of the United States we had the program geared to imports that were the difference between demand and supply. That, of course, was a national security program.

At some point we found that we had, through error, underestimated the amount of import requirement. We would have found it, I think, in most circumstances, impossible not to increase the import allocation, because in peacetime with supplies pressing on the market, I don't believe that the American people would be receptive to a posture that required allocation and control when there are plentiful supplies a stroke of the pen away.

I think that given the tradition of this country, of maximizing personal freedom, what we are trying to do is find ways in which we (a) achieve a conservation objective, and (b) continue the maximization of personal freedoms.

I think in that sort of circumstance the course that Representative Ottinger outlined probably would not be workable in peacetime. Clearly it would be in a serious emergency.

Mr. OTTINGER. I think the American people are ahead of us on this. In the talks I have had in my District, which is a relatively conservative Republican district, I find that there is a preference in the feeling it would be much fairer to allocate or ration than it would be to do so on the basis of price, which is a difficult form of rationing; the great skepticism that people would, in fact, conserve substantial amounts on the basis of price and a feeling that the working family is going to get unduly penalized by the price.

So your estimate of the nonacceptability of this, I am not sure is accurate.

Mr. O'LEARY. I think, Mr. Ottinger, had I not had the experience during World War II with the sort of abuses that a rationing program, even under an emergency setting, can be exposed to, counterfeiting, black market, A, B, and C stamps and what-have-you, I might be tempted to agree with you. But having that experience and seeing the trouble that the government went through to impose, in a time of clear national need, a rationing program and the abuses that program was subject to, I am not sure you could find a program in peacetime with plentiful supplies just offshore, as I say, a stroke of the pen away, that would be satisfactory. I think abuses of a major nature would creep in.

The alternative to that, of course, would be to deliberately establish a white market, as we have discussed, that uses the price mechanism as a rationing device. And I think it gets us back to the point that you are objecting to of depending upon prices.

Mr. OTTINGER. I think that I will probably offer that alternative to Congress in the course of our deliberations. I see the Chairman waving his gavel. We are operating under severe time constraints, but I trust you would be willing to have your people help us work out the best possible rationing system even though you don't think that is the best alternative yourself.

Mr. O'LEARY. Mr. Chairman, we would be delighted to work with you or Representative Ottinger on any aspect of this program.

Mr. DINGELL. The Chair thanks the gentleman. The time has expired. The Chair recognizes the gentleman from California, Mr. Moorhead.

Mr. MOORHEAD. Mr. O'Leary, it is good to see you here again.

Mr. O'LEARY. It is good to see you, Mr. Moorhead.

Mr. MOORHEAD. You are here quite often these days.

On page 10, you discuss certain requirements for States which do not have regulation. How many States do not regulate their utilities?

Mr. O'LEARY. Mr. Chairman, I am only aware of one. Nebraska is the only one that does not. Texas is just beginning to regulate utilities. However, you will find, Mr. Chairman, State public service commissions typically will not have a regulatory writ over all the utilities operating within the State. Municipals, for example, traditionally are not subject to regulation at the State level.

Mr. MOORHEAD. In other words, you have one rule.

Mr. O'LEARY. It is essentially one rule, with one exception, that will apply to about 70 percent of the customers of the service areas in the United States.

Mr. MOORHEAD. I see. On page 11, lines 10 through 15, isn't the language which gives the administration the authority to consider any other factors which the Administrator may deem appropriate a little too broad?

Mr. O'LEARY. No, I don't think so, Mr. Chairman. I think that what we are looking at are regional factors, different climatic factors that could have a bearing on this, and there should be a good bit of flexibility in that. It is quite clear we can't be arbitrary in this process, but we must have the necessary degree of flexibility, I think, to meet the case.

Mr. MOORHEAD. That would let you do virtually anything, however.

Mr. O'LEARY. Well, Mr. Chairman, I think if we were intent upon doing violence to the system, probably you couldn't find a form of language that would prevent that. We don't intend to. We intend to achieve a relatively straightforward objective, and, of course, anytime that we are arbitrary in the development of regulations, they are repealable.

Mr. MOORHEAD. Have economic unemployment factors been taken into consideration?

Mr. O'LEARY. Yes, I think that is one factor you take into account. Mostly, however, this is aimed at differential climates, region by region and State by State.

Mr. MOORHEAD. On page 14, line 9, does the word "occupies" mean that the utility must inform apartment dwellers of suggested energy conservation measures, and, if so, why is it that the apartment dwellers cannot generally install the measures?

Mr. O'LEARY. I think you are working from a different paging than we have.

Mr. MOORHEAD. This is the bill we have, and I will read it to you. "Design to inform no later than January 1, 1980 each residential customer who owns or occupies residential building in which the suggested measures have not been installed" and they go down the line, (a), (b), (c); this is in the bill.

Mr. O'LEARY. Let Mr. Hemphill respond to that, Mr. Chairman.

Mr. HEMPHILL. Was your question whether this implies apartment dwellers?

Mr. MOORHEAD. Yes.

Mr. HEMPHILL. It may apply to it, but the program, specifically in the definition section, limits it to 1- and 2-unit buildings.

Mr. MOORHEAD. It would apply to duplexes, where there is a tenant, however?

Mr. HEMPHILL. Yes, sir. We did not mean to imply there that the apartment dweller should be subject to——

Mr. MOORHEAD. It says anybody who occupies a residential building——

Mr. HEMPHILL. But the definition of residential building limits it to 1 or 2 units.

Mr. MOORHEAD. I understand.

We were talking earlier about potential mandatory requirements so far as the insulation is concerned, and I think one of the big problems we have with any program like this is the confusion that would abound where people are doing virtually every kind of thing to insulate their home and meet the requirement and get the money that may be available or other things.

When you start talking about mandatory requirements later on, you are going to possibly penalize a lot of people who in good faith went ahead and did what they thought was right, and I think we are getting into a lot of trouble when we start talking about that. Standards could change from one Congress to another. I think this uncertainty causes a lot of difficulty.

Mr. O'LEARY. I understand your point of view, Mr. Moorhead.

Mr. MOORHEAD. The other matter that I was concerned with is the situation where you start telling people that they will have a list of contractors, or imply a certain list of contractors is necessary. I think on this kind of work some of the best insulation that you are going to get will be put in by people, themselves, in their own homes, because they can't afford several thousand dollars to hire somebody to come in and do it. They want to conserve and so forth, so they will go out to supply houses and buy the materials themselves and have them installed.

Is it your plan to have regulations that would give them instructions as to how they can do this and how they can do their own work and still receive the benefits?

Mr. O'LEARY. Mr. Moorhead, nothing in this plan will preempt a householder from doing his own work. As a matter of fact, I have done a good bit of this myself, and I noticed the other evening that Dr. Schlesinger's garage is filled with insulation material, and I expect he intends to do it himself as well.

It would be unfortunate if we were to take motivation away from people.

The only point that is served by this list is that it will give a householder who is not able or willing to do so himself, a list of people who are acceptable and who are competent to do the work and avoid the fly-by-night attitude I was discussing earlier with Mr. Brown.

Mr. DINGELL. The time of the gentleman has expired.

The Chair recognizes the gentleman from Massachusetts, Mr. Markey.

Mr. MARKEY. Thank you.

I have a couple of questions, one following up on what Mr. Ottinger asked, and that is with reference to page 95 of the National Energy Plan. In 1976, you estimate United States fuel demand at the equivalent of 37 million barrels of oil per day; for 1985 you estimate 48.3 million per day without the plan, and in 1985 with the plan, 46.4 million per day.

Going from 37 million to 46 million seems to me quite a substantial increase in our energy consumption. I am wondering about the last column, 1985 plan, plus additional conservation, which brings us down to 45.2 million barrels of oil equivalent per day. What do you have included in that last column that is not included in the legislation which you would consider, I would imagine, as alternatives?

Mr. O'LEARY. That is the proposed gasoline tax. If that were to go into effect, these are the sorts of results that we would see, differential results that we would expect.

Mr. MARKEY. The gasoline tax at which level?

Mr. O'LEARY. At the 5 cents a year, all the way through the program.

Mr. MARKEY. The Administration projection is a 5-cent tax; would it have that kind of impact on the energy consumption?

Mr. O'LEARY. No, 5 cents per year on through the period between now and 1985, Mr. Markey.

Mr. MARKEY. With or without the gasoline tax, do you think that the 46.4 million barrels of oil equivalent per day level is an acceptable level by 1985, or should we be shooting for lower levels?

Mr. O'LEARY. I think you have to distinguish between what you can do beginning in 1977, with a program that probably will not go fully into effect until early 1970, in a period of essentially 5 years.

For example, it would have been nice if in the field of automobile efficiency the Congress had acted in 1962 rather than 1975 to put limitation on the fleet mix. We didn't do it. We didn't see the reason for it. The Administration didn't propose it; the Congress didn't enact it, and the consequence is we will not get those savings that are mandated by EPCA until the 1985 model year and won't rule that population of automobiles into the system until 1990, roughly, so it takes time.

Beginning where we are, this is, I think, a reasonable set of objectives, Mr. Markey.

Mr. MARKEY. On page 8 of your testimony today, you talk about the types of incentives which you are going to give in the development of new oil resources. You say "Over the next three years, the

price of newly discovered oil would be allowed to rise to the 1977 world oil price, adjusted for inflation. This measure would yield revenues greater than those available to oil producers anywhere in the world. The incentive would be higher, for example, than the level of revenues for production in the North Sea, where producers have to contend with deep water and 30-foot waves."

Do we have to give them that level of incentive? Is there a way we could perhaps reduce the incentive and use our conservation or other means so we wouldn't have to become so dependent on the oil companies?

Mr. O'LEARY. You know two of the things we are trying to do. First of all, we are trying to achieve a lower requirement for energy for all of our activities, thus the conservation, the energy efficiency program, and, secondly, move the economy as rapidly as we can away from oil and gas over to alternative fuels.

The fact, however, is that we will continue to be dependent for a substantial percentage of our energy requirements on oil for the next 15 or 20 years, and some portion of that will be imported oil. That will be imported at the world price. We feel if we can achieve a substantial increase or indeed any increase over what would otherwise occur, based on domestic resources for this kind of program, it is probably in our best interest as a country to pay a domestic producer the $13.15 or what it is at that time, than to pay this same amount to a foreign producer. However, I can understand your concern in this area, and I think it is soundly based.

Mr. MARKEY. Thank you.

Mr. DINGELL. The time of the gentleman from Massachusetts has expired. The Chair recognizes the gentleman from New Jersey, Mr. Maguire.

Mr. MAGUIRE. I meant to start by complimenting you and the others in the administration who I think have done a monumental piece of work on the energy proposals. I think it is a thoughtful, sophisticated, and comprehensive proposal that you have made, and I find myself in great sympathy and support with much of it. I also hope that I can somehow avoid the problem which I think is going to arise and perhaps my own questioning in a moment will belie my hope, but I hope I am going to be able to avoid picking off this or that aspect of the program, because I think when we do that, we may end up with far too little, and I am prepared, in light of the comprehensiveness of the program and the thoughtfulness of it, to try to give as much benefit of the doubt as I can in a situation in which I may have an individual disagreement.

However, I do have some questions. The first follows on the question that Mr. Markey touched on a moment ago, and that is the rationale for pegging all energy prices to whatever one admits is an arbitrary OPEC price. I know all about the economic calculation of the marginal additional barrel, et cetera. But when you boil it down, there are two objectives that might be in your mind when you propose what are arbitrary prices. One is to get more oil, and the other is to conserve.

Now, as I understand the analyses of you and your planners, you really don't believe that we can get oil that isn't there, and, secondly, as you, yourself, have pointed out, the cost factors for

getting the oil that is there are greatly exceeded by using the OPEC price presently for oil. As I understand it, it costs about 15 cents to raise a barrel of oil in Saudi Arabia. It costs $3 or $4 to raise a barrel on land in the United States, and even in the North Sea, I think the figures are $5 to $6, which includes all the dryholes, the return on investment, the whole package. So when we get to a $13 figure, the question arises as to why $13, rather than $10 or $16, or anything else? Do you honestly believe that we need that $13 price to bring out additional oil?

Secondly, of course, the other objective might be to conserve. I commend the administration for its emphasis on conservation. But I would ask, what portion of this proposal that we have OPEC prices for new oil and indirectly then through the averaging of oil prices that we have a new gas price which is at least indirectly related to OPEC oil prices, what portion of that is based on the argument that this produces increased conservation and why aren't alternative strategies, many of which you yourselves propose, the efficacious ones, if we are talking about consumption of energy with inelasticities of demand in relation to price which are well known?

In other words, I have a little bit of the same problem here with the pricing that I have had in the past. I wondered if you could justify your departure from any reference to cost-based pricing?

Mr. O'LEARY. I shall try.

Mr. MAGUIRE. And help us to understand what portion of the response is related to the theory that we will get additional oil and gas and how much of it is related to the theory that we will get additional increments of conservation and why do you believe that we will?

Mr. O'LEARY. First of all, I want to disassociate the marginal pricing thrust of the President's program for any impact on consumption. As you know, we have an excise tax that operates in that sphere. That is designed to take the excess in price of industry up to the world market price. I think that is where we achieve the conservation saving. The price, then, is simply a matter of changing the posture of the industry with regard to its future investments.

I think if you take a look at what has been happening in the last 2 or 3 years, you will find that investments in new oil-producing facilities by the oil industry are extremely conservative—very conservative step-outs from nonproducing areas and a lot of in-field drilling. Out of the 36,000 wells drilled last year, two-thirds are producers. I think that is evidence of a pretty conservative investment policy.

What we would like to see is some reward given to the industry for taking a less conservative investment stance and going for the new field wildcat. We have said,"Well, if we are going to pay $13.50 for a barrel of imported oil, let's give the industry $13.50 for a barrel of new field domestically-produced oil." It is that simple.

I think there is a continuum on price response as far as finding goes. Putting this price at this level would put us farther up this finding curve than it would be if we maintained ourselves at the old levels.

Mr. DINGELL. The time of the gentleman has expired.

Mr. MAGUIRE. I had one additional short question.

Mr. DINGELL. The Chair advises the gentleman that his time has expired.

Mr. MAGUIRE. Are we going to have another round?

Mr. DINGELL. The Chair will advise the gentleman when we see how the time goes.

The Chair notes that we have had substantial difficulty in getting standards through voluntary needs through organizations like ASTM and AMSI. What authorities do you have in the bill and what authorities are required in the bill to assure that these measures move forward expeditiously and that we do not have this unnecessary delay in the industry by bringing forward such things like flue dampers and other economizing devices? You can submit that for the record.

[The following statement was received for the record.:]

We recognize that unnecessary delays have occurred in the development of standards for important energy conservation measures. Because the voluntary standards setting process relies in large measure on the donated time of various individuals and businesses for both the development and review of standards, agreement is often slow to occur and may even be blocked by some organizations. Though standards setting is not properly handled by the private sector, it is important to prevent special interests from controlling this process.

We do not believe that additional legislative authority, beyond that contained in the National Energy Act, section 101-109, is needed to assure timely development of energy standards. It may be necessary for us to provide funds to certain standards developing organizations if we are to meet the deadlines we have proposed. Sections 102(a) and (b) provided significant authority for the Federal Government to develop and prescribe the necessary supporting standards for the utility conservation programs. It is our intention to take the initiative on all energy related activities that involve consensus standard setting organizations where the voluntary process has not produced results quickly enough. They will be invited to participate in the development of standards for Federal energy programs and requested to accelerate action in this regard. The schedule will be directed by the Federal Government, to reduce any delays that might be encountered by consensus standards setting organizations.

Mr. DINGELL. You have here in section 106, "The Administrator may by order upon petition by a public utility and for good cause, supersede any law or regulation of any State or public subdivision thereof, to the extent that such law or regulation prohibits a public utility from taking any action required to be taken under Section 103 of this Act."

That is very, very broad, is it not?

Mr. O'LEARY. It is, Mr. Chairman.

Mr. DINGELL. Would you submit to us in writing a justification for the very great breadth of that.

[The following statement was received for the record:]

This provision is justified by the need to insure that conservation activities are lawful activities for a public utility to engage in and are activities for which legitimate costs can be recovered from those who benefit. This provision protects utilities against the argument that conservation activities are actually or arguably unlawful under State law, and concomitantly removes this problem as a roadblock in the implementation of the program. Under section 106, a pre-emption may only occur after petition by a public utility and only for good cause. The main implication of this provision is that the utility conservation program can move forward without impediment. No adverse impact on State law or utility regulation is expected.

Mr. DINGELL .You also have under section 107, "No public utility shall be subject to any liability under any provision in any contract which restricts any public utility from lending, borrowing, or enter-

ing a new line of business, if such lending, borrowing, or entering a new line of business is required under section 103 of this Act."

That, again, I note is most broad.

Can you submit to us a justification of both of those sections? The Chair is not quite sure what State and local laws and regulations and contracts you are suppressing under those. You might advise us as to what you are doing.

Section 108, "The Administrator is authorized to promulgate such rules as may be necessary to carry out this subpart."

That affords you enormous authority. I would like to have some amplification as to what it is you intend to do and why that breadth is required.

[The following statement was received for the record:]

We do not believe that section 108 confers an overly broad authority. This authority is identical to that contained in section 365 of the Energy Policy and Conservation Act, with respect to State Energy Conservation Plan. There are several areas in sections 101-109 which will require elaboration through regulations in order to give adequate guidance to utilities and to assure that the intent of the act is carried out. Examples include: (1) further description of the minimum consumer protection program required by section 102; (2) further description of how utility commissions are to help restrain utilities from unfair practices, as pointed out by Congressman Reuss. This may include further definitions of "fair and reasonable" interest rates; (3) rules to assure that insulation contractors and financial institutions are treated fairly in the lists which the utilities and contractors are required to provide to their customers; (4) further description of how we will determine whether alternative programs proposed by utilities under section 104 are adequate or not. As we begin to develop the rules required by this act, issues which we have not anticipated will need resolution. The section 108 authority will assure implementation of the program.

Mr. DINGELL. Mr. O'Leary, I observe here and earlier in the proposal that you have distinguished between nonregulated utilities and public utilities. I am troubled that this may lead to a number of possibilities such as the possibility that you might be excluding certain consequences with regard to either public utilities or nonregulated utilities.

I am interested to know why the distinction and whether the universe covered by each of those definitive terms is the same and why it is necessary to have a different term for a regulated utility, a public utility and a nonregulated utility.

It strikes me that you may have set the basis for things to fall between the cracks.

Mr. O'LEARY. Mr. Chairman, we do have two modes of utility operation here. One is the conventional public service commission regulated utlity providing a broad service to a large marketing area. The other one is the nonregulated municipal organization that is not regulated at all at the State level.

The way it breaks down is about 70 percent of the service areas of the United States fall under the first category for natural gas and 3 percent under the second category. I think it is about the same for electric. Had we not set up the dichotomy established here, we would have had something fall very distinctly between the chairs. We hope this avoids it.

Mr. DINGELL. The proposal makes possible inclusion in the rate base of the cost of this service of insulation and inspection, et cetera. I would like to have a full justification as to why that is done and what is the necessity of it.

[The following statement was received for the record:]

This bill does not provide for a rate-based program. However, we saw no reason from the Federal standpoint to prohibit such programs. Several States are now considering rate-base treatment of utility conservation expenses and may implement them by the time this act passes. Such programs have the potential to save as much or more residential fuel as the minimum programs we have proposed in the National Energy Act, and may thus be considered for approval by the administrator under section 104.

The programs referred to would allow utilities to include the costs of installing conservation measures in their customers' homes in the capital base for the purposes of setting rates for natural gas or electricity. This concept has been most clearly developed for natural gas utilities. Its applicability to electric utilities has not been determined.

In the development of a conservation program for existing residential buildings, we recognized that certain States are currently considering making such rate-base treatment of conservation expenses mandatory for all utilities in that State. Among the benefits of such programs are: (1) a bureaucratic certainty that all residences will be covered, including rental units and low-income units; (2) an incentive to the utility by allowing them a return on their costs; ;and (3) the possible justification of distributing the cost of the residential conservation program to all utility customers, because of the treatment of saved fuel as a new source of supply.

However, there are several unattractive features. First, an equity problem arises through requiring a homeowner who has insulated in the past to pay for the insulation of his or her neighbor as well. Second, commercial and industrial customers may not be willing to pay for residential conservation measures unless clearer guarantees of future supplies are made. Third, utility commissions would be required to make rate decisions about the quantities of fuel saved that are very detailed and perhaps beyond the current state of empirical knowledge. Fourth, allowing utilities to earn a profit on the measures significantly. And fifth, forcing all citizens to permit their local utility to enter into work on their homes could be opposed strongly by the public.

Mr. DINGELL. Also, what are the consequences, Mr. O'Leary? I have some great apprehensions as to what this will do to the person who does not need to insulate his home but who will be paying for insulation and inspection for his neighbor. I find that difficult to defend on the basis of fundamental justice.

Do you want to comment on that?

Mr. O'LEARY. Mr. Chairman, I have to tell you that I have the same reservation that I have expressed to you before with regard to the Rosenberg plan on inclusion of these costs in the rate base. I have no difficulty at all on seeing them passed through on the State expense basis, but when they are put below the line and capitalized, it causes me difficulty because of the long-term impact on ratepayers. We would look at this provision most carefully.

Mr. DINGELL. I would appreciate it if you do so because it troubles me greatly.

In the standardmaking section under 102 at page 11, you have the authority to set standards for insulation in any residential energy conservation measure. This is a matter that troubles me most greatly because I see nothing but fly-by-night manufacturers of insulation and fly-by-night installers getting into the business.

What specific authorities will you need to get control of that kind of abuse. We may have a major scandal on our hands unless we have appropriate and prudent controls at this time?

Since my time has expired, I will have to ask you to submit your answer for the record and give us your comments.

[The following statement was received for the record:]

Sections 101-109 of the National Energy Act, along with the relevant sections of the ECPA, provide us adequate authority to develop and implement ways of controlling this kind of abuse. The standards required by section 102 may be of three types: (1) standards for application of conservation measures by climate zone and by construction type, (2) standards for safety and effectiveness of conservation measures; and (3) standards for installation of conservation measures. As we work with States and with other Federal agencies, using the authorities included in title IV, part B, of the ECPA, we will be able to assist States in the development of effective consumer protection programs.

Mr. DINGELL. The Chair will now recognize Mrs. Harrison for the purpose of asking questions.

Mrs. HARRISON. Mr. O'Leary, would you submit for the record, please, material on section 107 which states that no public utility shall be subject to a new liability under any contract provision restricting the public utility from lending, borrowing or entering a new line of business if it pertains to section 103?

Mr. O'LEARY. We shall.

[The following information was supplied for the record:]

Section 107 is directed only to private contractual obligations and does not amend Federal or State statutes.

Mr. DINGELL. The Chair recognizes Mr. Hunt.

Mr. HUNT. Thank you, Mr. Chairman.

Mr. O'Leary, in previous hearings before this subcomittee the constraints of labor, qualified personnel relative to do the work, has been a major impediment from the standpoint of realizing these conservation savings.

I would appreciate it if you would submit for the record what plans you have relative to manpower training, the amount of money, the schedule and the number of people expected to be trained between now and 1985 in this area.

Mr. O'LEARY. We will be pleased to do that.

[The following statement was received for the record:]

As stated in response to another question, we have spoken with contractors and utilities who are already inspecting and installing measures in homes. They have stated that training people to do this work is not difficult. Their estimates of training periods are 1 to 3 weeks, with an apprenticeship in on-the-job installation experience of no more than 3 months. Though States may wish to provide training courses specifically for this type of work, we do not believe that a Federal program of training is necessary.

A detailed comparison of the skills needed for a home conservation program with the skills available in the labor force has not been attempted. The relevant skills are commonly available in the construction industry.

A person trained in the inspections required for this program could be expected to visit four homes a day, or about 1000 homes per year. If as many as 40 million homes must be inspected over a 6-year period, about 7,000 inspectors will be needed.

In the study conducted for the FEA or rate-base treatment of utility conservation expenses, it was estimated that the 7-year program contemplated at that time would require a total of 70,000 person-years of work per year. The program proposed by the National Energy Act is between two and three times this size, but is spread out over a somewhat longer period. Acccurate estimation of the labor requirements is difficult, since detailed data are not collected on those businesses whose experience is most relevant to our interests. Also, it is difficult to predict to what extent increased demand for manufacture and installation of conservation materials can be handled through more effective use of the existing capital stock and labor force.

Mr. HUNT. I am concerned that a shortage in insulation materials or indeed in glass might result in a great spike in the price of these materials. There is an intent stated in the administration that the

Administrator of FEA is going to make sure that the consumer is not gouged in this respect.

I would like to know what trigger mechanisms are anticipated to be used and what pricing techniques will be used to make sure the consumer is not gouged?

Mr. O'LEARY. We will provide that.

[The following statement was received for the record:]

Generally, the impact of a tax credit and higher energy prices could be to increase the demand for conservation materials and the price of these materials, other things equal. Higher prices of materials, certainly, could hinder the effectiveness of the program.

One way to offset the tendency of increased demand for conservation materials to produce higher prices is to increase the supplies of the materials. The feasibility of this happening is discussed in the answer to the questions posed by Congressman Reuss.

The existing insulation industry is highly concentrated and profit motivated. They are primarily interested in maximizing their long-term rate of return on investment, perhaps through greater volume. It should be noted, however that this industry has already committed to substantially expanding its capacity. Adequately using additional capacity will restrain cost growth.

There are many substitutes for fiberglass and rockwool insulation whose production can expand more rapidly. The Department of Commerce is currently surveying the production capacity of many of these substitutes. Increased production of these substitutes could offset increased demand.

Furthermore, the insulation industry, including the retailers, will want to keep prices low both for reasons of "goodwill" and to avoid direct Federal price control.

This issue is crucial to the effectiveness of the programs. We do not propose a mandatory price reporting system but will evaluate it closely and frequently, particularly in the early stages of the program.

Mr. HUNT. There is previous legislation that has established and funded to some degree State energy conservation offices. The relationship between FEA, the public utilities and the public utility commissions with these State energy offices is one. Again, we would like to have some comments on these offices since they seem to be a potentially integral part of this system.

[The following statement was received for the record:]

The Energy Conservation and Production Act authorizes supplemental funds for State conservation programs. One of the uses of this money can be consumer protection activities at the State level. The division of responsibility between various State offices with respect to utility conservation programs will of course be up to each Governor or legislature. We are working with a number of Federal agencies to develop possible consumer protection programs for implementation by States.

Mr. O'LEARY. If I could clean up the last point and comment on that as well, we have discussed the peaking or the spiking with the major insulation manufacturers in the United States. They tell us that the lead times involved here present them with no difficulty. They will in fact be able to provide the raw materials and the manufactured product on an orderly and well-scheduled basis over the nine years that we are forecasting here without getting into a spiking situation.

We would intend to set up a statistical monitoring program and in the event that we found that there were indeed abuses at the manufacturing level of what would appear to be orderly pricing practices, we would report that back to the Congress.

Mr. HUNT. We have gone through a similar exercise with the middle distillate price. The middle distillate price did go through the trigger mechanism, is that correct?

Mr. O'LEARY. We are in hearings now. These people are not regulated. I think the publicity would have a lot to do with it. They are large firms that value their public reputation. I think a good, comprehensive reporting system and the use of the media in order to report any apparent abuses would be sufficient control. If not, the Congress certainly would have a call on it.

The second one has to do with the relationship of the State conservation offices or the State energy offices. We would expect them to do a substantial part of the quality control that will be necessary in order to effect this program. We have, as you know, authority under EPCA to work with them outside of the mandated aspects of the conservation program. We expect this program will be a heavy taker of the funds that are available under that program.

I would see this in terms of perhaps a one to two man augmentation of each of the State energy offices in order to assure that there were sufficient inspections to maintain quality control so necessary to the success of this program.

Mr. HUNT. Would there be any priority as to what geographic area of the country would receive the insulation materials first if there was a spiking problem?

Mr. O'LEARY. If we got into a priority program, I imagine it would be done on the basis of cost effectiveness, that is, the most severely weather-impacted parts of the country would come first. I would not anticipate that, however, Mr. Hunt, if what we understand from the insulation manufacturers is accurate.

Mr. HUNT. Thank you very much, Mr. Chairman.

Mr. DINGELL. The Chair observes that we have about 10 minutes remaining on the vote on the floor. The Chair will recognize the gentleman from Ohio, Mr. Brown, for five minutes.

Mr. BROWN. Mr. Administrator, under the legislation which permits the insulation to be installed and financed by the utility, what sort of interest rate would be permitted under this bill, do you have any idea?

Mr. O'LEARY. I don't have any idea, but I think this is the kind of proposal that we will get back from the public service commissions. I would not like to see much more return than you would find from a normal business investment, Mr. Brown.

Mr. BROWN. On that basis it may be that they won't want to do it. You have a fundamental problem there. If you take their funds for this purpose and they need to also expand their electric generation capacity or some other things or their storage capacity for natural gas, as we do in Ohio, then the utility may have to make a decision as to whether or not it is going to use its money for that or something else.

I think you have a serious problem, particularly if interest rates start to escalate rapidly. We have used this program before with student loans. The result is that the bank doesn't make the student loans.

Mr. O'LEARY. That is why we opened up the secondary market as a balancing proposal in the legislation.

Mr. BROWN. There are certain of the measures required to be offered under this program by local building codes or by Federal

law in other areas. That is the Consumer Product Safety Commission or OSHA, how will these Federal and local regulations be superseded?

Mr. O'LEARY. I can't imagine we would ever supersede a Federal regulation.

Mr. BROWN. I would imagine you would have conflicting regulations because it happens all the time in this wonderful government of ours.

Mr. O'LEARY. I am sure it does in other areas but not in this well ordered energy world of ours.

Mr. BROWN. I don't believe that, but I want to know what you are going to do about it so please submit an answer in writing to me indicating what you do when you have two conflicting regulations which require Americans to do conflicting things or not to do conflicting things.

Mr. O'LEARY. Certainly.

[The following statement was received for the record:]

As currently drafted, the utility program contained in sections 101-109 of the proposed bill does not conflict with other Federal statutes or regulations. The bill has been drafted to contain sufficient flexibility so that utility proposals can be structured in accordance with the provisions of existing law.

Mr. BROWN. How do you anticipate the cost in energy of the insulation methods, that is, the manufacture of those insulation methods? There are several different kinds. Several of them are highly energy intensive and some of them are not particularly energy intensive. I wonder if you have a method for balancing those things out?

Mr. O'LEARY. We do indeed and those are dollars. We are not on a net energy efficient economy. We are on a dollar economy and I would prefer and I am sure you would prefer to see the market work these things out rather than have us further involve our perfect energy knowledge into that aspect of the business.

Mr. BROWN. The other thing I would look at is the question of how the utilities are required to do this inspection. Suppose 36 million homeowners in the United States come to their local utility quickly and say we would like to have that inspection.

Where do the people come from to make that inspection and where does the money come from to finance it and what do you do when the man goes to his local insulation dealer and there is no insulation available because of what Mr. Reuss says? It will take nine years for this industry to rev up and get the job done. By that time you have insulated 90 or 100 percent of the homes in the country if we are lucky. Then where do the new homes get their insulation?

Do all the insulation people go out of business at that point?

Mr. O'LEARY. I will be glad to address that in the record.

[The following statement was received for the record:]

Generally, the availability of insulation is discussed in the answers to Congressman Reuss' questions.

As the job nears completion, the growth of the insulation industry will level off. The program will be implemented over several years, allowing the industry to recoup its investment. Those businesses involved in installation of conservation measures are similar in skills to others in the remodeling and construction industry. We expect that the performance standards being developed by HUD under title III of the

ECPA will result in higher levels of conservation materials. These standards will be going into effect in the early 1980's, at the time when the retrofit program will be nearing completion. Thus, to some extent, the increased demand in new construction will offset the decreased demand in the retrofit sector.

Mr. DINGELL. Mr. O'Leary, can you inform us of the labor supply necessary to provide the insulation service. What studies were done on that point?

Mr. O'LEARY. Partial studies were made under the Rosenberg plan. This is a matter of about 70,000 people in the labor plan. We can look upon this as something in the range of 100,000 to 150,000 new jobs created under this program.

[The following statement was received for the record:]

As described in response to another question, in the study conducted for the FEA of rate-base treatment of utility conservation programs, it was estimated that the 7-year program contemplated at that time would require a total of 70,000 person-years of work per year. The program proposed by the National Energy Act is between two and three times this size, but is spread out over a somewhat longer period. Accurate estimation of the labor requirements is difficult, since detailed data are not collected on those businesses whose experience is most relevant to our interests. Also, it is difficult to predict to what extent increased demand for manufacture and installation of conservation materials can be handled through more effective use of the existing capital stock and labor force.

However, much of the labor required is relatively unskilled, in that short training courses can be used to teach the skills necessary for apprenticeship. At the present time, the Nation needs such jobs to meet the challenges of unemployment.

Mr. DINGELL. Are you able to tell us about the supplies of insulating materials? Are they adequate to carry out the program in the time we have?

Mr. O'LEARY. The estimate we have on the basis of discussions with the insulation manufacturers indicate that that will not be a constraint.

Mr. DINGELL. Will you submit to us such studies as you have on both of those points?

Mr. O'LEARY. We shall indeed.

[The following statement was received for the record:]

Generally, four factors will determine the availability of insulating materials: (1) the degree to which the industry is currently at capacity (2) the leadtime necessary for increased production; (3) the scarcity of raw-material inputs; (4) the timing of the program.

The attractiveness of investment created by this new market will draw substantial capital funds into this industry. The insulation industry claims to be currently near full production capacity, although some existing capacity has not been fully utilized. The major manufacturers have indicated to us that planned expansion should be able to handle large increases over the next 5-10 years. In response to a request by the Energy and Power Subcommittee, the Office of Business Research and Analysis of the Department of Commerce is surveying the production capacity of the insulation industry. The results of this survey should be available by the middle of July.

The answer to Congressman Reuss' questions elaborate on the feasibility of the insulation industry expanding production over time.

Data on the availability of raw-materials for the production of insulation, glass, aluminum, and other products, is not available at this time. We will pursue this issue.

Mr. DINGELL. Are you able to tell us about capital contraints? Are there any capital constraints in connection with this or are there any structural constraints inside of the industry?

Mr. O'LEARY. Mr. Chairman, I don't think that the size of this program will lead us to the point where we are capital constrained. The structure of the industry as you know is very haphazard. I do

fear and I think we must guard against the development of a fly-by-night operator as somebody who preys upon the participants in this program.

[The following statement was received for the record:]

Capital requirements to build new capacity vary widely from product to product. Fiberglass insulation is relatively capital intensive. Storm window assembly is done by literally hundreds of small businesses with little capital required. Those companies with the greatest capital requirements for increased production are generally well-established firms with good access to capital markets.

There does not appear to be any structural constraints with the insulation industry.

Mr. DINGELL. How about the electric utility industry. Are there construction or capital constraints there?

Mr. O'LEARY. I think opening up the secondary market for loans for this purpose removes any possible constraint that may be operating in that area.

Mr. DINGELL. Would you give us any studies you have on this point and any suggestions you have with regard to this matter?

Mr. O'LEARY. We don't have studies but we have suggestions and we will be pleased to provide them.

Mr. DINGELL. That would be most useful. I believe we have still with us our witness from the Federal Power Commission, Mr. Taylor. Are you still here?

The Chair will request that the staff get in touch with the Federal Power Commission and have them give us their comments with regard to the structural constraints and the other matters now under discussion.

Mr. O'Leary, there is a problem we had this morning. I might as well advise you about it. Our staff asked the Department of Labor to come in and they said they could not. I am being compelled to proceed with substantial speed. I don't want anybody at the White House to get the idea that they are not going to provide witnesses to the committee at the time and place called for. I have to sit here and listen to it. If I want a witness up here, he is going to be here.

You might let the folks downtown understand that we won't tolerate the kind of response to our staff that was received this morning. I will inform them more directly myself, but as long as you are going down that way, I think it might be well for you to inform them that they are going to get a not very pleasant call from me on this point.

Mr. O'LEARY. The administration certainly wants to help with these bills and I will certainly do as you instructed.

Mr. DINGELL. The committee will stand in recess until 2 o'clock.

[Whereupon, at 12:55 p.m., the subcommittee recessed, to reconvene at 2 p.m. the same day.]

AFTER RECESS

[The subcommittee reconvened at 2 p.m., Hon. John D. Dingell presiding.]

Mr. DINGELL. The subcommittee will come to order.

This afternoon we will hear a panel of witnesses, representatives on behalf of the Community Services Administration; Mr. Reich, Chairman of the Energy Task Force, Federal Trade Commission; Mr. Michael A. Brown, Acting Executive Director, Consumer Prod-

uct Safety Commission; Mr. William E. Penoyar, Director, Construction and Forest Product Division, Bureau of Domestic Commerce, Department of Commerce.

I understand the witness on behalf of the Community Services Administration will be Patricia Stolfa.

If our panelists will come forward, we will proceed to hear your testimony in whichever order you wish to be heard.

**STATEMENT OF WILLIAM E. PENOYAR, DIRECTOR, CONSTRUCTION AND FOREST PRODUCTS DIVISION, BUREAU OF DOMESTIC COMMERCE, U.S. DEPARTMENT OF COMMERCE, ACCOMPANIED BY FRANKLIN E. WILLIAMS, INDUSTRY SPECIALIST**

Mr. PENOYAR. Mr. Chairman, distinguished committee members and visitors: I am William E. Penoyar, Director of the Construction and Forest Products Division, Office of Business Research and Analysis, in the Commerce Department's Bureau of Domestic Commerce. Accompanying me is Franklin E. Williams, our Industry Specialist for several building materials, including insulation and metal storm doors and windows.

We are pleased to have this opportunity to make a few comments and try to answer any questions you have concerning thermal products or the industry.

Thermal insulation materials used in residential construction are produced from many products, including fibrous or cellular mineral matter such as glass silica, rock, or slag; fibrous or cellular organic matter such as cane, rubber, wood, and bark; cellular organic plastics such as polystyrene and polyurethane; and heat reflecting metals such as aluminum. The metals are usually used in combination with one of the other materials. These basic materials are available in several forms, including batts, blankets, boards, sheets, or loose fill.

Although accurate figures are not available, and comparisons are difficult to make, our best estimate is that about 80 percent of the total insulation market is supplied by mineral wool, most of which is fiberglass for new residential construction; about 10 percent is organic cellulose, mostly loose blowing wool for professional installation in existing single family dwellings; and about 10 percent is supplied by various plastics and expanded mineral particles such as perlite and vermiculite. Unfortunately, the Bureau of the Census does not survey this industry in sufficient detail to provide more precise production estimates, and industry data are not always available because of strong market concentrations for a few products.

There are probably between 300 and 400 companies manufacturing some type of building insulation at present, with many others considering entering the market. However, production of the most common materials, such as fiber glass and wood cellulose insulation is concentrated in a few companies.

All segments of the industry have experienced excellent growth during the past few years and contemplate increasing growth rates, with or without legislation such as you are considering here today.

Since the oil shortage of 1973, this growth has been directly tied to rising home heating and cooling costs. New residences are more consistently and fully insulated than old, and many homeowners have voluntarily increased insulation of existing structures in an effort to combat rising fuel bills.

We cannot provide estimates on the industry's ability to expand capacity beyond their current growth rate without making a special survey for each industry sector. However, we do know that the shortage of borax and its derivatives, used as a fire retardants for cellulose insulation, could have a significant adverse impact on the growth potential of this industry sector unless an alternate fire retardant chemical is found soon. One company has successfully used phosphate in their product for many years, but recently had to change to borate materials because of recent code changes requiring reduced levels of smoke contribution for this type of product.

We are also aware of a lawsuit involving a patented process for making cellulose insulation with very little capital investment, but producing a substandard product. This legal action will slow down the interest of small business in entering this market.

Mr. Chairman, this concludes my prepared comments. We are now ready to try to answer whatever questions you may have.

Mr. DINGELL. Thank you very much, sir.

Ms. Stolfa.

## STATEMENT OF PATRICIA STOLFA, REPRESENTING COMMUNITY SERVICES ADMINISTRATION

Ms. STOLFA. I thank you for the opportunity to present for your consideration some information on the experience of the Community Services Administration in conducting its comprehensive emergency energy conservation services program. This program is authorized by our legislation, section 222(a)(12), of the Economic Opportunity Act, as amended.

The weatherization portion of that program includes some 860 local projects which have worked on a total of 150,000 dwellings of the poor and near-poor in the past three years. With its current funding, the program is operating at a level of approximately 200,000 dwellings per year with a very modest expenditure of about $200 per dwelling for materials.

I should be careful to qualify that statement so you understand that expenditure reflects the limited funds available and represents only between 10 and 20 percent of the optimal levels of insulation as recommended to us by the National Bureau of Standards.

Most of the CSA weatherization funds have gone for materials, while manpower has been supplied through other sources, the two most important being EDA's title X Job Opportunities Program, and CETA.

During the past year, more than $20 million in title X jobs went into CSA-sponsored weatherization projects; more than $5 million in CETA slots were assigned by prime sponsors to the local weatherization projects. Title X funds in most projects have run out. At the same time, CSA has a substantially increased energy appropriation for the balance of fiscal year 1977. Our initial fiscal

year 1977 appropriation was $27.5 million for the first six months of the fiscal year; the First Supplemental Appropriation includes $282.5 million, $82.5 million of which will be used for an expanded section 222(a)(12) program. There are many advantages to this expanded program, not the least of which is the closer correspondence to the level of need.

Let me highlight the question of need: There are 14 million households below 125 percent of the poverty threshold. Fifty-five percent are renters, sixty percent live in single-family dwellings, and twenty-two in apartments of eight units or less; in central cities twenty percent live in apartments of nine units or more, which compares with eleven percent for the Nation as a whole. The large majority of these dwellings are in need of improvements which will stop air infiltration; for example, we know that 71 percent have no window weatherstripping. We also know from exerience that many have broken windows and doors, and holes in the floor or siding, and that many of the heating sources are operating at very low efficiency because of lack of adequate maintenance.

We also know from the experience of ongoing weatherization programs that a significant number of these dwellings need major repair, such as rewiring, a new roof, foundation repair, or new siding, before insulation can be safely installed. Resources other than energy funds need to be made available for such work.

We also think that the expanded weatherization program presents some important opportunities, particularly in the job creation field.

An expanded CSA weatherization program requires an approximately equal amount for labor to carry out the weatherization work at the local level. This is because our funds are used primarily for the purchase of materials and require the local projects to solve the problem of securing subsidized or voluntary labor to match materials resources. An employment program designed to complement weatherization activities could have many attractive features:

The job creation impact is prompt; the time lags involved in the planning of major "public works" endeavors is avoided; there is a nationwide systm of Community Action Agencies out there doing the job now.

The jobs themselves involve work on the accomplishment of national goals of the highest priority: energy conservation and improvement of housing.

Jobs are within the skill range of most of the currently unemployed, yet because the functions required are at varying degrees of technical proficiency, there is scope for skill-expansion; i.e., they need not be "dead end" jobs.

Issues of "job-displacement" are avoided; those to be employed are not on a public payroll and are not performing ongoing functions.

Take-home pay is sufficient to maintain decent living standards, but does not push the boundaries of some current CETA programs.

There is reduced danger of pressure for large continued Federal payments after high overall unemployment levels have receded—i.e., less pressure from mayors or organized public unions, and individuals do not have public section "job rights."

There is a tangible product that results from work services which fill a recognized need in the local community and that permits

taxpayers to hold public managers accountable for funds and gives them confidence that funds have not been abused or misplaced.

The future maintenance of these jobs need not depend on continuing Federal support; the skills learned will be marketable, particularly as the need for increased energy conservation becomes ever more apparent; and long-range programs that can provide mobility into careers in the competitive market appear feasible.

The foregoing have been designed to briefly acquaint you with the agency's experience to date in energy programming, and to provide you with a general sketch of the level of need of that portion of the population which is least able to meet its energy emergencies without some form of assistance. More detailed information on either of the above can be provided on request.

I would like to conclude by pointing to what we consider to be a unique contribution on the part of our agency and its constituency. Because we have been working on weatherization projects, we can begin to provide to other parts of the community at large the experienced manpower necessary for an energy conservation/weatherization effort.

Such an effort could, in part at least, be patterned along the lines of an energy conservation corps, as has been conceptualized by the Pennsylvania State Office of Economic Opportunity with emphasis on development of career ladder positions in energy conservation which could include basic infiltration work such as weatherstripping and caulking; insulation installation, including more highly skilled wall applications; furnace tune-up and modification; assembly and installation of solar collectors; foreperson and supervisory positions; and conservation assessment technicians, or energy auditors.

We believe that our crews have and will continue to develop skills that will be useful to the entire community as it moves to accomplish its energy objectives.

Mr. DINGELL. Thank you very much.

Mr. Brown.

## STATEMENT OF MICHAEL A. BROWN, ACTING EXECUTIVE DIRECTOR, CONSUMER PRODUCT SAFETY COMMISSION

Mr. M. BROWN. I am Michael A. Brown, Acting Executive Director of the Consumer Products Safety Commission. I am here today to discuss the health and safety aspects of home insulation as seen by the Commission, and to discuss the Commission's ability to deal with these aspects.

The Consumer Product Safety Commission at this time has no regulatory development project under way in connection with home insulation. However, we have pending before the Commission a petition from the Consumer Office of the Metropolitan District Attorney's Offices of Denver, Colorado. This petition will be before the Commission in the next month and depending upon the decision of the Commissioners this will set the future course of action by the Commission in this area.

In preparing the background material for the Commissioners in this area we have discovered in the area of home retrofit for

insulation that mineral wool, plastics, and cellulosics make up the major material used in these and there have been different health hazards alleged to be associated with these products.

The area of cellulosics, plastics and fibrous glass all are alleged to present fire hazards to varying degrees. Inhalation of particles has presented a health hazard, particularly the possibility of being a cancer-causing agent, and finally, urea formaldehyde products have been alleged to be a problem.

The ability of the Consumer Product Safety Commission to deal with these hazards has been brought into doubt by a recent decision of March 11, 1977 in a case involving the Kaiser Aluminum Company and the Consumer Product Safety Commission. The judge's decision, if upheld, would not allow the Consumer Product Safety Commission to deal with any of these insulation materials which are not actually installed by consumers and in fact the extent to which those materials could be dealt with is in doubt.

The Commission is currently appealing this decision and it is liable to be one to two years before this decision is clear and the Commission's authority in this area is clarified. That concludes my outline of the issues.

[Mr. Brown's prepared statement follows:]

STATEMENT OF MICHAEL A. BROWN, ACTING EXECUTIVE DIRECTOR, U.S. CONSUMER PRODUCT SAFETY COMMISSION

Mr. Chairman and Members of the Committee: I am Michael Brown, Acting Executive Director of the Consumer Product Safety Commission. I am here today to discuss the health and safety aspects of home insulation and outline the Consumer Product Safety Commission's ability to deal with these aspects.

At the present time, the Consumer Product Safety Commission has no rulemaking activity ongoing in connection with home insulation. However, we are considering a petition from the Metropolitan Denver District Attorney's Consumer Office concerning alleged health and safety hazards associated with home insulation.

The future action of our agency with respect to home insulation will be determined by the Commission's decision on this petition. However, in preparing and gathering informational materials to aid the Commission in making its decision on this petition the staff of the agency has accumulated data on the health and safety aspects of home insulation.

Home insulation products are divided into three major categories. They are:

MINERAL WOOL, which is generic a term that includes both rock wool and fibrous glass insulation. Rock wool is made by blowing steam through molten rock while fibrous glass is made from spun silicates. Fibrous glass insulation can be blown or can be purchased in batts with either a foil or kraft paper vapor barrier. Rock wool is normally blown or poured in. The basic insulation material is non-combustible; however, in the kraft paper vapor barrier small amounts of combustible binders are used in manufacturing the product.

Another type of home insulation is CELLULAR PLASTIC, which can be made of polystyrene, polyurethane, or urea formaldehyde. Polystyrene and polyurethane are manufactured at large manufacturing plants and, although the basic material is flammable, flame retardants are usually added during the manufacturing process. Urea formaldehyde is often mixed at the installation site and the physical properties of the final product are determined by the skill of the operator, the degree of mixing of the reactants, and the curing time.

The last type of home insulation is CELLULOSIC INSULATION which is manufactured by finely grinding virtually any cellulose product (paper, cardboard, etc.), and mixing in necessary chemicals. This product may be poured in or may be made at a fixed site, placed into bags and then blown in. Because of the large number of cellulose manufacturers, the lack of a uniform method of manufacturing and poor quality control in some instances, the physical properties of the final product varies considerably from one manufacturer to the next.

The information we have accumulated on the alleged hazards associated with home insulation includes the following:

Mineral Wool—There is considerable interest in the effects of inhalation of the types of fiber used in fibrous glass insulation because of the cancer causing potential of similar fibers. However, there is presently no evidence of pathologic effects in humans. These products are basically non-combustible, but some problem with the flammability of the vapor barrier has been alleged. At this time our staff does not believe flammability of the vapor barrier to be a problem of major significance.

Plastic—If improperly cured, urea-formaldehyde insulation can release formaldehyde gas which is irritating to the eyes and mucous membranes of the nose and throat. Improperly mixed or inadequate fire retardants can result in polyurethane or polystyrene igniting and burning rapidly with emission of large amounts of smoke.

Cellulose—The flame retardant salts used in the product can be absorbed through the skin, but this would require the unlikely situation of the consumer being in direct contact with the product. These chemicals are water soluble and may leach out over time thus reducing the flame retardancy. Failure to exercise proper care during installation may result in the insulation being placed too close to a light fixture, furnace, or similar heat producing device, increasing the likelihood of ignition. The amount of fire retardant added to the product and the resultant fire resistance of the insulation varies from one manufacturer to the next.

The ability of the Consumer Product Safety Commission to deal with these health and safety problems has recently been brought into question by the case of *Kaiser Aluminum and Chemical Corp.* v. *U.S. Consumer Product Safety Commission, et. al.*, U.S. District Court for Delaware, Civil Action No. 76-44, in an Opinion dated March 11, 1977. In this case the court held that the Commission does not have jurisdiction over aluminum branch circuit wire and wiring systems used in homes even though consumers purchase and install such items. Briefly stated, the judge ruled that these products are not consumer products as defined in Section 3(a)(1) of the Consumer Product Safety Act because he believes Congress did not intend the Commission to regulate products used by consumers that become part of a house. A copy of that decision is attached for your consideration.

The Commission authorized appeal of this case and our request for an appeal is before the Solicitor General. In the meantime, this opinion has been cited in a challenge to our standard for architectural glazing materials. It is possible that the Commission may decide to await some clarification of this decision before investing the time and resources to take any action in similar areas such as home insulation.

Thank you for your attention. At this time I would be pleased to answer any questions you may have.

Mr. DINGELL. In order to have a complete record here, would you repeat your statement again as to the litigation in question and what are the issues involved, please?

Mr. M. BROWN. At the present Kaiser Aluminum questions our ability to regulate aluminum wiring devices used in the home.

The Commission relied heavily on the legislative history, particularly of this committee, and the fact that we were able to go purchase the aluminum wire and wiring devices on undercover buys posing as homeowners. We used this before the district court to show this was in fact a consumer product as defined under section 3(a)1 of the Consumer Product Safety Act.

Judge Stapleton disagreed with us and believed that although consumers could buy this, the operative area to be looked at was not whether a consumer could buy it, but whether it was going to be used by a consumer with a direct contact. Therefore, he believes we do not have jurisdiction over aluminum wire and wiring devices.

Applying that reasoning to the home insulation area, of course, any home insulation that was not going to be installed by a consumer or handled by a consumer would be outside the ambit of our authority.

Judge Stapleton relied very heavily upon the traditional distinction between the Federal Government and state and local code

authorities, believing it was reserved to the State and local code authorities to deal with these areas particularly when installation practices are very much a portion of the effectiveness or the safety of the devices.

We have given notice to the Attorney General we want to appeal the case. It is pending, of course, before the Solicitor General for his decision as to whether he will allow us to appeal.

Mr. DINGELL. Thank you.

Mr. Reich.

## STATEMENT OF ROBERT B. REICH, ASSISTANT DIRECTOR FOR EVALUATION, BUREAU OF CONSUMER PROTECTION, FEDERAL TRADE COMMISSION

Mr. REICH. Mr. Chairman and members of the committee, I am Robert B. Reich, Assistant Director for Evaluation of the Federal Trade Commission's Bureau of Consumer Protection. I am happy to be here today to discuss certain provisions of the proposed National Energy Act dealing with utility programs to encourage residential insulation.

At the outset I should emphasize that I am here as a staff member and that my views do not necessarily represent the view 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. I will highlight several issues in the proposed legislation which the task force is now examining. We will be prepared to submit to the committee a detailed appraisal of these provisions.

The proposed legislation 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 financers of home insulation.

Moreover, if the insulation or the installation is defective and the consumer therefore chooses to withhold payment, the utility might attempt to retaliate by terminating service. Such a potentially coercive debt collection technique may well discourage complaints.

Even worse, the insulation debt may create a security interest that attaches to the residence. Failure to pay might lead to foreclo-

sure. Indeed, low income consumers have in the past lost their homes as a result of fraudulent home improvement services.

The proposed legislation also may open the door to competitive abuses. By both advising their customers of the need for insulation and supplying it, utilities may be tempted to overstate the need. By virtue of their special access to consumers, utilities may have a distinct marketing advantage over other suppliers and financers of home insulation; they therefore may be able to overcharge for supplies, services, and capital. By the same token, they may be able to underprice their home insulation competitors and recover the difference in higher energy rates. Lastly, there is the danger that they might tie their provision of home fuel to particular energy-saving devices that only they can supply.

I hasten to add that this parade of horribles is purely hypothetical, and each of these possibilities 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 anticompetitive acts or practices...which relate to the implementation of the utility programs." But are State regulatory authorities capable of adequately policing these transactions? Are consumers adequately represented on such bodies? If not, are utilities and their subcontractors who conform to an FEA approved plan immune from challenges by the FTC for unfairness or deception?

Mr. Chairman, that concludes my prepared testimony and I will be happy to answer any questions the committee might have.

Mr. DINGELL. Mr. Reich, the committee thanks you for your very helpful testimony.

The Chair now recognizes members of the subcommittee for the purpose of asking questions.

The Chair recognizes first the gentleman from California, Mr. Moorhead.

Mr. MOORHEAD. In considering the work that is going to have to be done on private homes, I have been interested in finding out whether all homes basically are applicable to this kind of treatment. For instance, consider the kind of plaster homes that you get in California, where there is a hard cement-like substance put on the outside of houses. Can you use the regular kind of insulation on the walls of that kind of a house?

Mr. PENOYAR. If the walls are wood frame, providing a cavity, insulation can be placed in those walls. However, it is quite expensive to retrofit any residence that does not have any insulation, especially in the walls.

Each cavity which is usually 16 or 24 inches on center has to be entered and insulation blown in. This can be quite expensive.

Mr. MOORHEAD. How would they go about doing it for a plastered house?

Mr. PENOYAR. You would have to go in from the inside or the outside. Normally a small hole is drilled into each cavity and the insulation is blown in through that hole.

Mr. MOORHEAD. How would this affect appearance?

Mr. PENOYAR. From the inside it can be repaired so it is not noticeable by repapering and so forth.

Mr. MOORHEAD. How much does it cost to apply this kind of material to the average home?

Mr. PENOYAR. The normal cost, let's say on a 1,600 square foot, single-family residence for insulating the ceiling only with six inches of insulation would be in the neighborhood of $200 to $250. If you were to go into the walls and insulate the walls up to the R-11 requirement, it would probably add another $800 to $1,000 to the cost.

Mr. MOORHEAD. So what the government would be paying on this would be a relatively small amount, except under the special program you were discussing earlier. Is that right?

Mr. PENOYAR. That is right.

Mr. MOORHEAD. I was somewhat interested in the figure on the number of families that fit into these various categories. What do you mean by 125 percent of poverty level?

Ms. STOLFA. The authorizing legislation for this program specifies that people eligible are not just those up to and at the poverty level, but including the near poor which we have defined administratively to be 125 percent of the poverty level. The poverty level is the regular Federal Government poverty level.

Mr. MOORHEAD. How much money can each one of these families get from the government for this insulation work?

Ms. STOLFA. That varies from place to place. They do not in general receive the money directly. They receive work on their homes. Although there is no absolute maximum, we have suggested maximums depending on the climate area in which the local project is located. In the warmer climates, the suggested figure, beyond which local written justification is necessary, is $250, and in the colder areas the level beyond which written local approval is required is $350 per house.

As a matter of fact, expenditures often have not reached that level because of the small amount of money that has been available for local projects; each project, of course, has many households to which it would like to respond, so in practice, projects have tended to service more households with a lower expenditure.

Mr. MOORHEAD. Is it contemplated the same people would be entitled to both programs? That is, if they got $250 from your program, could they also get the percentages of the total cost paid under the new kind of proosal?

Ms. STOLFA. I understood that to be a tax credit.

Mr. MOORHEAD. It amounts to a tax credit, but they get it back anyway.

Ms. STOLFA. Many, many of our constituents would not be in the taxpaying category so there would not be that possibility. Also, projects do not make direct payments for weatherization, but perform the equivalent work on the dwelling.

Mr. MOORHEAD. They might adopt a program—if a person had no income or such income that they would get a check through the mail. One of the witnesses a little earlier mentioned that.

Ms. STOLFA. I did not hear that witness.

Mr. MOORHEAD. I have no further questions.

Mr. DINGELL. The Chair recognizes Mrs. Harrison for the purpose of asking questions.

Mrs. HARRISON. Mr. Penoyar, in your statement you talk about the growth of the manufacturing of insulation.

Do you have any figures on production capacity? You mentioned there are only three to four hundred companies. We are wondering if there may be constraints.

Mr. PENOYAR. We have no figures on capacity primarily because the industry is quite diverse and the Bureau of Census does not collect information on some of them because there are only a few companies involved. For example, there are only three companies manufacturing fiberglass and it is not appropriate to make normal surveys of industries that are so concentrated. So we do not have any specific figures other than what we get from industry on actual production capabilities at the present time, or what the expansion capabilities might be.

Mrs. HARRISON. Why the limitation on getting statistics from industries that are highly concentrated?

Mr. PENOYAR. Most of the large companies are reluctant to release information as to how much they are producing or what their plans are for future production. We could make a special survey which would be mandatory for them to respond to, but that has not been done at the present time.

Mrs. HARRISON. How long would that take?

Mr. PENOYAR. To get OMB clearance for the questionnaire, get it out and provide time for the people to respond and give us time to analyze it, probably two to three months.

Mrs. HARRISON. Do you have any figures that would indicate what insulation costs might be per home? I realize it would vary with the type of residence, construction and so forth.

Mr. PENOYAR. If you use the example of the 1,600 square foot residence and only insulate the ceiling—there are several assumptions you have to make. Assume there are six inches of insulation required to bring that house up to standard. We estimate it would be about $200 to $250 to do that job.

Mrs. HARRISON. That seems to conflict with the figure Ms. Stolfa gave us.

Ms. STOLFA. I don't think it is in conflict with the figure. I think that the critical point here, and one that has been very important to my agency, is that a year and a half ago the National Bureau of Standards finished pioneering work which indicated that if you want to achieve the maximum savings on your investment, you install a balanced combination of energy conserving home improvements on the house. Our program has been designed to provide that balanced combination, even if projects can only provide ten percent of it. The figures in the National Bureau of Standards example—and these are figures from prices two years ago—to optimally weatherize an average house in Indianapolis, which had some existing insulation— was approximately $1,100. That is because the price of fuel at that time and the climate indicated that that kind of investment would provide the maximum payback. So I don't think we have a dispute on figures as much as we have a difference of opinion on what ought to be done.

Mr. PENOYAR. When I was answering Mr. Moorhead's question concerning insulation of walls in California or anywhere else, the

figure is up in the neighborhood of $1,000 or $1,200 for total insulation of walls and ceiling. This correlates with what Ms. Stolfa has to say.

Mrs. HARRISON. Mr. Reich, in your statement you raised several anticompetitive situations that could exist if public utilities implement this program as outlined in the bill.

Public utilities are not exempt from your jurisdiction generally?

Mr. REICH. I believe that is correct.

They are exempt from certain special statutes and certain of their activities are exempt. It depends on the particular activity you are talking about.

Mrs. HARRISON. You mentioned the Truth-in-Lending Act and Fair Credit Billing Act, and I would think those could be taken care of if need be for purposes of this bill. We are most concerned in this bill with possible anticompetitive and deceptive practices which impact adversely on the consumer. Perhaps the FTC could monitor this program. We are extremely worried that there will be operators who come in and do these jobs very quickly and leave. There is no provision in the bill that the work be warranted.

If the public utilities are to administer this program, perhaps they should be required to warrant the work. What is your reaction to that?

Mr. REICH. There are several related jurisdictional issues that need to be addressed in the legislation. Once the State plans are in fact approved by the FEA, there may be a preemption problem in terms of the FTC or another Federal agency overseeing potentially deceptive or anticompetitive practices.

There is also the question whether the Federal Trade Commission or another Federal agency can in fact preempt States' regulated action. These are legal questions still being worked out in the Federal courts. Some explicit reference to preemption in the legislation might be somewhat helpful in that regard.

It is worth developing a warranty position or a bonding provision requiring that insulaters or other private entrepreneurs provide performance bonds. Not only might the insulation not function as originally intended to or as it was marketed, but it may cause extensive damage if not installed properly. Performance bonding would go beyond the warranty provision and actually provide some degree of insurance against this type of eventuality.

Mrs. HARRISON. The problem of standards for the installation of materials themselves has occurred to us. The point you brought up there at the end of your statement is one that concerns us also. Bonding may be a solution.

You raise too the question of States possibly being the only bodies who could police the anticompetitive and unfair deceptive practice angle of it, if it is implemented by State public utilities. This might require passage of State laws, I would think, in many States which do not presently have such laws.

Mr. REICH. It is possible that mere State involvement or involvement by a state public utility commission might be enough to trigger the doctrine of *Parker* v. *Brown*, which provides a limited State action immunity from Federal antitrust laws.

I underline "possible" because these kinds of preemption issues loom large right now in the Federal courts. The exact limits of the *Parker* v. *Brown* immunity from antitrust enforcement have yet to be defined.

Mrs. HARRISON. I think this is an issue which we will have to consider very carefully.

Mr. REICH. The bill does not address this at all.

Mrs. HARRISON. You mentioned the marketing advantage of utilities over suppliers of home insulation, particularly small business. With this we agree.

Mr. Brown, you mentioned some of the adverse health effects that the insulation materials may have. Are there existing health studies that would provide information to this committee that would be useful?

Mr. M. BROWN. There are several studies which have been conducted of which we are aware. Mainly, though, they have dealt more with the safety area than the health, if I may distinguish the two, safety being in the area of fire and problems such as that.

For example, ERDA in January 1977, just released a survey on cellulosic insulation materials, a 15-page survey, and they performed tests on 19 off-the-shelf products and fire safety was one of the properties of the items covered. We understand they are planning to do a similar report in the near future having to do with the mineral wool and fiber glass classifications.

They are also doing quite a bit in the way of contract work. We rely, as does ERDA, on the National Bureau of Standards, which has just recently done an 80-page literature survey for Housing and Urban Development people on the urea formaldehyde forms of insulation that is probably of lesser concern to this committee because of its expense. It is not as popular an item for local retrofit. This is more of a commercial building-type insulation.

Those are some of the things we are aware of at the present time.

The health aspect is a completely different thing. It has been alleged that the fibrous glass particles are such that they could present an inhalation problem. Most fibrous glass is alleged to be of coarser particles and would not be subject to the problem of inhalation, but we have done no studies and are not aware of anything except experimental work. There has been successful experimental work with laboratory animals to create a cancer condition through injection of glass fibers, but there has been no work that we are aware of that relates the size of fibers or the conditions of exposure to the size of fibers and conditions of exposure to the human being living with this insulation. We are accumulating data for the Commission's consideration of the petition and the petition outlines a wide range of hazards.

Mr. C. BROWN. Is there any area of fireproof insulation, whether it is glass fibers, asbestos or treated forest products materials that is established as clearly non-carcinogenic? You all have done some work with children's garments. Do you understand my question?

Mr. M. BROWN. There is nothing we are aware of where anyone can say everything is clearly safe because it requires a long period of screening with laboratory animals.

Mr. C. BROWN. My question is, have all these insulation products been screened and have any of them been found to be free of carcinogenic qualities?

Mr. M. BROWN. To my knowledge, none of them have been so screened.

Mr. C. BROWN. Fascinating.

Mrs. HARRISON. In summary then, there is at this point no certain data on safety and health issues with regard to insulation materials?

Mr. M. BROWN. The safety areas are much more clearly defined. The health areas are the ones that are up in the air.

Mrs. HARRISON. Thank you.

Mr. DINGELL. The Chair observes with a great deal of pleasure that our good friend and colleague, the chairman of the full committee, is with us today. I want him to know we are delighted that he is here and we are pleased to recognize him for any questions or comments he might have in connection with the energy proposal of the administration, particularly the insulation sections, which are sections 101 through 109.

Mr. STAGGERS. I want to thank the chairman of the subcommittee for yielding and to congratulate him and commend him and the rest of the committee for holding these hearings because I think they are so important to America today.

As the President said when he presented this program to the American people and to the Congress, he said it was the most important program that he would have in his time, probably in this decade.

I would like to ask the young lady, Ms. Stolfa, one question.

You have spoken of the manpower. Could you tell us something about the training program for the people who are going to do this job?

Ms. STOLFA. Yes. We carry out training for crews as well as for crew leaders to assure that adequate quality work is done by those crews.

Each local project is guided by a local project advisory committee which is broadly based.

The PAC is responsible for setting up a system of quality control so that the work may be inspected to assure its being of the highest quality.

At CSA a certain amount of funds are made available for training and technical assistance to local projects and to local crews; we do in some instances provide hands-on training to make sure that the skills are there. We also provide training in proper planning, assessing what is the need on the house, determining what to do first, making sure that the work done on the house represents the best possible expenditure of funds.

Mr. STAGGERS. You have already trained some, but this is a relatively small group at the poverty level.

Ms. STOLFA. It is a fairly small group, when compared with the total population.

Mr. STAGGERS. Where are you going to get the manpower to put this on a national scale?

Ms. STOLFA. That depends on a certain amount of foresight and a certain amount of planning at the local level.

Local projects have to secure the matching labor. The Department of Labor has been very cooperative and has recently sent out a memo to all the prime sponsors encouraging the diversion of CETA slots to weatherization. However, the CETA program was designed not to be run from Washington. It was designed to give the local prime sponsors the options, so there is still some difficulty in finding that matching labor. CETA has been a good source for us. The title X program was a good source.

Mr. STAGGERS. I thank you for your answers.

I again want to commend the committee for having you good people here to give us the benefit of your views.

I suggest the committee now recess until after this vote and come back.

Mr. DINGELL. An excellent suggestion. We will recess briefly, go over and vote and return.

Again, Mr. Chairman, I want to tell you how pleased we are that you are with us. I notice Mrs. Staggers is back there and, of course, we are always pleased to see her, too.

The committee will recess until we can go over and vote and come back.

[Brief recess.]

Mr. DINGELL. The subcommittee will come to order. We thank our panel for their patience, and the Chair will recognize the gentleman from Ohio, Mr. Brown, for the purpose of asking questions.

Mr. C. BROWN. Thank you, Mr. Chairman.

Mr. Penoyar, in your testimony you indicate that many homeowners are insulating their homes irrespective of any legislation we may pass, presumably because of the price of fuel. Has the Department of Commerce made any estimates as to how many homes are likely to be insulated by 1985, even if we don't pass this bill before us?

Mr. PENOYAR. We have information from industry and other sources that would indicate that there are about 9 million houses that have been insulated voluntarily since the 1973 oil shortage.

Mr. C. BROWN. So what percentage is that an increase over the similar period preceding the embargo?

Mr. PENOYAR. There was very little retrofitting going on prior to the big escalation in the cost of fuel. There was some.

Mr. C. BROWN. Would you provide statistics for us, please, at your convenience?

Mr. PENOYAR. Yes, sir.

Mr. C. BROWN. On the last page of your statement, you indicate that increased product demand will place significant pressure on the price of the insulation. Has the Commerce Department estimated how large these impacts will be? What do you anticipate will happen to the price of insulation?

Mr. PENOYAR. It depends really, I think, on how long a time frame we are looking at to get all of the houses in existence up to the current standards.

If the time frame is something like 3 or 4 years, there is going to be a tremendous amount of pressure to get the insulation material. Just looking historically over the last 3 or 4 years, the price has gone up in the neighborhood of 10 to 15 percent per year.

Mr. C. BROWN. Isn't it true, though, that if you talk about retrofitting insulation in 100 percent or 90 percent of the existing homes in the country over the next few years, then what you are saying is we are going to establish a sort of one-shot industry here that if it doesn't make its capital return in those 8 or 9 years it is going to take us to do this job, it is not likely to make them for a long time in the future, because you have only the new homes then to work with, and new homes, in effect, are being insulated in a method different than retrofit insulation; is that not correct?

Mr. PENOYAR. That is correct.

Mr. C. BROWN. What you are talking about is building a program that will have to get its capital cost of increasing the production capacity out of the program in 9 years with a predictable amount of homes on which to base that return in capital investment.

How many manufacturers of fiberglass are there?

Mr. PENOYAR. There are, to our knowledge, three.

Mr. C. BROWN. About what percent of all insulation sold in the United States today is either totally or partially made of fiberglass?

Mr. PENOYAR. Eighty percent of the total insulation market is supplied by fiberglass.

Mr. C. BROWN. Which we don't know whether it is carcinogenic. Could you give us the percentages of the sources of insulation materials?

Mr. PENOYAR. About 10 percent was wood cellulose material.

Mr. C. BROWN. Chopped up newspapers that are treated with some fire-retardant material?

Mr. PENOYAR. That is right.

Mr. C. BROWN. And then blown into the house; is that right?

Mr. PENOYAR. For the most part. There is a capability of making that material into a batt or blanket-type form, but at the present time it is blown in.

Mr. C. BROWN. If you could give us the percentage and the good and bad points of the various sources of insulation products.

Mr. PENOYAR. Eighty percent is fiberglass; 10 percent is wood cellulose, and the remaining 10 percent is some type of plastic or expanded mineral material, like vermiculite or perlite.

Mr. C. BROWN. Mr. Reich, in the summary of your testimony, you list several issues of concern to you. Do you have any answers to these questions? I am beginning to be concerned, myself, as to whether the submission of testimony that embraces a lot of policy questions is not a little bit of a cop-out on the part of the agencies that submit that testimony.

You are telling us, in effect, that the legislation does not address these rather significant policy and economic issues, and so forth, but that they are worthy questions for the committee to address itself to. What the committee is looking for literally is advice from the people who testify before us.

Mr. REICH. As I indicated in my submission, the Federal Trade Commission recently established an energy task force specifically designed to come up with answers to the questions to which you allude within the next two months. We would be perfectly happy to come back with specific answers as soon as we are capable.

Mr. C. BROWN. Could I say that is a wonderful time frame because it comes about the time we will have completed marking up the legislation, and so your answers to your questions will be of academic interest, historically, but we will have gone ahead and done the deed, whatever it is.

Mr. REICH. We would be happy to respond with a detailed appraisal in any time frame that the committee would feel appropriate.

Mr. C. BROWN. One week is about the maximum we could tolerate.

Could you submit for the record possible amendments to correct the implied deficiencies in the bill which your questions suggest.

Mr. DINGELL. Would the gentleman yield?

Mr. REICH. Within a week.

Mr. DINGELL. The Chair will instruct that the record be kept open for purposes of receiving the possible amendments. The Chair specifically instructs you that they are not to be cleared through the Office of Management and Budget, but to be from the Federal Trade Commission and from yourself.

Mr. REICH. Certainly.

Mr. C. BROWN. I would like to ask the Federal Trade Commission, because you are involved with questions of monopoly problems, what has been, and could you get some statistics on this, the historic pattern of the response to such industry expansion as we anticipate here in the development of an insulation industry in a few years to meet a need to retrofit the houses, and then, of course, the subsidizing of that to the sort of normal new product need where that retrofit insulation is no longer appropriate?

In other words, could you give us a picture of whether or not it is going to be 2 or 3 companies which will expand as opposed to all 4 now in the business, whether it will stimulate new companies, and whether, in fact, the cost of that capital expansion won't have to be charged against all of the customers who benefit from that, thereby having a rather specific impact on price and product over what it is now when it is being produced from existing capital investment, equipment, and so forth?

Mr. REICH. We will be happy to submit that as well.

Mr. C. BROWN. Finally, could I ask the operative from the Consumer Product Safety Commission, do you share with any other agency the responsibility for this question of safety, carcinogenicity, and so forth, such as OSHA, or can you give us some advice about how quickly we can get an answer as to whether or not we are forcing the use of a product which at some other time may be banned as dangerous to the health of the people which the Federal Government has now pressed that product upon? Do you follow my questions?

Mr. M. BROWN. Yes. The Product Safety Commission is a user of information. We lean heavily on the National Cancer Institute, Environmental Protection Agency, Food and Drug Administration, NIOSH, the National Institute of Occupational Safety and Health of OSHA, for our information. We do little, if any, research work of our own. We draw from the other technical arms of the government.

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However, I can speak for them, having dealt extensively in other areas such as Tris. There are no short-term, agreed-on screening studies for carcinogens, mutagens, or some other scientific problems we have. There are no premarket screening requirements for these items. Very rarely have manufacturers in the past tested their product for these qualities, so there is generally long-term animal testing required. The interpretation of the data requires specialists, people such as the National Cancer Institute, to give rulings on carcinogenicity. Once that is decided on, the question becomes one of exposure and whether there are acceptable or nonacceptable levels, whether the effects are cumulative, whether the body rids itself of the problem. These are long-term extensive studies.

Mr. C. BROWN. Could you provide us any information you have on that, and is Tris used on these wood fiber products as the fire-retardant, or some other——

Mr. M. BROWN. No, sir, they are borates and ammonias.

Mr. C. BROWN. Are those considered in the carcinogenic area?

Mr. M. BROWN. Not so far, but every day a new scientific study comes up with something else. We will be happy to outline for you what we know from other agencies.

Mr. C. BROWN. I wish you would address the problems related to this question of safety and list the agencies from which similar information might be elicited to give us some clear feeling about whether or not, by encouraging this program, we might be running that risk in the future.

Mr. DINGELL. Without objection, the record will remain open for that, and if the gentleman from Ohio would yield, the Chair would like to indicate strong support of the request of the gentleman from Ohio. I think it would be most valuable for us to have the information requested. The Chair would further request that you do it on a category-by-category basis and also give us also the information you have with regard to the specific insulating materials.

[The following information was received for the record:]

OTHER AGENCIES CONCERNED WITH HEALTH AND SAFETY HAZARDS IN HOME INSULATION

1. MINERAL WOOL—FIBROUS GLASS

The National Institute for Occupational Safety & Health (NIOSH) has just completed a Criteria Document which will recommend an occupational exposure limit of 3 fibers/cc Time Weighted Average (TWA) for glass fibers and other man-made mineral fibers with small diameters of 3.5 microns or less for protection from inhalation. Another exposure limit will be recommended for large diameter fibers.

The Energy Research and Development Agency (ERDA) is planning to issue a report which surveys the hazards associated with mineral wool—fibrous glass insulation.

2. CELLULAR PLASTICS

*Urethane Foams*

NIOSH has available a publication entitled "Good Practices for Employees' Health & Safety—Urethane Foams".

NBS has an active program on foamed polymeric insulations in marine applications.

*Urea-Formaldehyde*

A National Institute for Occupational Safety & Health (NIOSH) Criteria Document has recently been published addressing the health hazards of occupational exposure to formaldehyde. It is being forwarded to the Commission.

A National Bureau of Standards (NBS) literature study on urea-formaldehyde is now being printed for HUD.

The Federal Housing Authority (FHA) has not approved the use of urea-formaldehyde foams in federal housing under its jurisdiction.

3. CELLULOSIC MATERIALS

ERDA issued a report in January 1977, "Survey of Cellulosic Insulation Materials," 15 pages. For this report ERDA performed safety tests including flammability tests on 19 off-the-shelf samples.

4. GENERIC

ERDA has issued a RFP for study of new insulation methods and techniques. The agency will issue at least one contract and possibly two.

ERDA has an ongoing program with the Minnesota Energy Agency to open the walls of selected existing homes to check the condition of the insulation and its effectiveness.

NBS has submitted a proposal to ERDA for a four year research program on cellulosics, fibrous glass, and plastic insulation. Funding to date has not been approved.

Mr. DINGELL. If the gentleman from Ohio will yield briefly to the Chair.

Mr. C. BROWN. Indeed.

Mr. DINGELL. The Chair also has been apprised that there are some problems with regard to shredded cellulose when it is treated with ammonia sulfate as a fire-retardant and is exposed to moisture. I am advised this is a splendid way of causing release of sulfuric acid into the home of the person who uses this kind of insulation. Are you aware of that?

Mr. M. BROWN. We have had it brought to our attention, and we are looking at when it is water soluble, exposed to the moisture, and is no longer fire-resistant.

Mr. DINGELL. It also tends to accumulate moisture, does it not? It is what you call hydroscopic, is that right?

Mr. M. BROWN. That is what we are looking to find out, whether the vapor barriers on these are or are not effective. ERDA has a study going with the Minnesota Energy Agency to check walls of existing homes to determine these things. Cellulose is a new and expanding industry.

Mr. DINGELL. If it does release any corrosive substances, it could corrode the wiring in the house and cause other safety problems, could it not?

Mr. M. BROWN. I am not scientific-based in my background, but I will have it looked into.

Mr. C. BROWN. This raises some interesting questions, Mr. Chairman, and I would like to ask also, in addition to that information, about the price factors involved and the relative cost of setting up and expanding the industry in the various areas. I notice that you said 80 percent of the industry is currently the fiberglasss industry, and there are 4 companies which kind of suggest I should run out and call my broker because there would be 3 firms that it would be nice to buy stock in now if the Federal Government is going to encourage the expansion of that particular industry. But the question is whether or not the fiberglass industry is the one that could respond the quickest. Maybe the wood products industry or the plastic industry would be the quicker response industry in terms of expansion.

Mr. DINGELL. I think that is entirely proper, and without objection, the record will remain open for the receipt of that.

[The following material was received for the record:]

AMMONIUM SULFATE IN CELLULOSIC INSULATION

Several compounds are used as fire retardants in cellulosic insulation. These include ammonium sulfate, boric acid, aluminum sulfate, and calcium sulfate. These are all hygroscopic in varying degrees. In tests on insulation samples reported by ERDA, ammonium sulfate showed the highest moisture gain of the four named. Acids or other compounds formed would depend on the presence of other ingredients—sulfur containing acids such as sulphuric acid would be possible. Moisture coming into contact with ammonium sulphate may generate ammonia gas.

In any case, these fire retardents in the presence of moisture or high humidity can lead to corrision of metals such as aluminum, copper, and steel. Ammonium sulfate appears to be one of the poorer performers in this regard, and has led to excessive corrosion in some laboratory tests.

Mr. DINGELL. If the gentleman will yield further, Mr. Penoyar, you indicated the Bureau of the Census could do special analysis in the insulation industry. You indicated that would take about 60 days.

Mr. PENOYAR. I indicated that our division could do that survey, sir.

Mr. DINGELL. I think we are going to have to request that. One of the things that troubles me is production capacity and whether you can produce the insulation in time to have it available to meet the requirements of the law. I am very much troubled on this matter. I think it would be useful, if you could, if you could break the survey down according to different kinds of material, fiberglass, and so forth. If you have troubles, we would like to know about it so we can provide all possible assistance in getting the study expedited. The Chair will request that you be in touch with either Mrs. Betsy Harrison or Peter Hunt who are handling this part of the bill before the committee, in order to see to it that we get the kind of mutual cooperation that will be helpful to the record.

Mr. C. BROWN. Mr. Chairman, it might be advisable to expand this line of inquiry to some other agencies of the Federal Government and perhaps to some other private agencies and maybe the staff needs to prepare a series of questions. I had in mind, for instance, NIOSH, or OSHA, and the Underwriters Laboratories, and a few other outfits who might be able to contribute something to our knowledge in this area.

Mr. DINGELL. The Chair will cooperate with the gentleman. The Chair does observe that we need some information with regard to flat glass, since that goes into storm windows. I think that would be an essential part of the information that we have to have. If we are going to run into a big shortage in flat glass or a big shortage in glass for storm windows, we will have trouble.

Mr. PENOYAR. We don't see any problem in glass for storm windows and storm doors. Most of the houses in the northern tier of the country already have storm windows and doors on them.

Mr. C. BROWN. Let me tell you one problem, however, and maybe you could address this, also, and that is the natural gas is needed to make glass, whether for storm windows or fiber glass insulation, and much of that is made in my neck of the woods, where we had

the biggest natural gas shortage we have had in a long time during the last winter, and we seem to be staring at our own navel here in connection with this problem. Like the guy in Pogo, the problem may be us, and I wish you would address the intensive, necessary use of gas and other short fuels in this problem.

Mr. PENOYAR. During January and February of this past year, about 30 percent of the fiber glass production was curtailed because of shortage of natural gas.

Mr. C. BROWN. You may also address that in the response. It would be helpful. My time is up long since.

Mr. DINGELL. The Chair recognizes the gentleman from Louisiana, Mr. Moore.

Mr. MOORE. I have no questions, Mr. Chairman.

Mr. DINGELL. The Chair recognizes the gentleman from California, Mr. Moorhead.

Mr. MOORHEAD. I have no further questions at this time.

Mr. DINGELL. The Chair recognizes Mrs. Harrison again, then.

Mrs. HARRISON. Thank you, Mr. Chairman. I have no further questions.

Mr. DINGELL. The Chair recognizes Mr. Hunt.

Mr. HUNT. Thank you, Mr. Chairman.

Mr. Penoyar, in the analysis of ERDA relative to cellulose insulation, they indicated cellulose now commands in the neighborhood of 30 to 40 percent of the new market. In contacts with members of that industry, the estimate that I have heard is that there are now some 200 manufacturers of cellulosic insulation. I wonder if indeed in your search or survey of the future productive capacity, you will take into account not only the trade groups that now represent these various manufacturers but also go beyond that. What we found, or at least what we were told, was that only a small percentage of the cellulosic manufacturers are now members of trade groups and that indeed the trade groups are poor representatives by virtue of numbers of the industry, itself.

Mr. PENOYAR. We will certainly take that in consideration in our survey; yes, sir.

Mr. HUNT. I would like to return, if at all possible, to your statement relative to the shortage of boric acid. Do you have any idea what percentage of the borate mined these days goes into cellulosic insulation, and indeed whether a slight increase in the price might shift the supplies from——

Mr. PENOYAR. It is in the neighborhood of 2-4 percent of total borate goes into fire-retardant material, so it is a small portion, really, of the total production.

Mr. HUNT. Are the contracts generally long-term for this material, or is there a constraint on mining ventures to increase that level?

Mr. PENOYAR. As I understand it, the companies that have been historically buying these products for fiber-retardant use in manufacturing of cellulosic insulation are on a restricted purchase basis at the present time. In other words, they can only buy up to their historic levels, and there is no additional supply available for either them or new entries into the market.

Mr. HUNT. In a 2- or 3-year time period do you have an estimate as to when the blockade or shortage for the cellulosic insulation field will be broken?

Mr. PENOYAR. I can't answer that right now, but I don't see any change in the situation at the present time. There is only one company that mines borax, which is the raw material, and there is something like a dozen or so companies that are converting that into the various elements that are required.

Mr. HUNT. Is the product involved in international commerce; are there international sources that might be tapped?

Mr. PENOYAR. I don't know, sir.

Mr. HUNT. Thank you very much.

Ms. Stolfa, let's discuss the training aspect. We have been told in previous hearings that in retrofitting existing buildings utilizing flue dampers or insulation we face a major obstacle or constraining element basically in the field of trained manpower.

In the programs in which you conducted training, did you utilize any existing schools, or was a license required for people who were theoretically qualified to install home insulation? Can you describe what the situation is in the field today? [See p. 413.]

Ms. STOLFA. The situation is variable because a large measure of control rests with our local projects. We do advise our projects at the outset to make sure that no licensing requirements are overlooked. However, in many instances the kind of work that is performed by our crews does not require licensing; it is not of a substantial home repair nature.

We have a variety of kinds of training groups. Generally, as funds are appropriated to us, CSA reserves a certain percentage to provide training. Those funds are then distributed through our regional offices which, in turn, select either one or several groups to serve the area. In many instances, the groups selected have been State economic opportunity offices, which have a responsibility to provide training to our local agencies, and there are some outstanding ones that I could mention. The State of Tennessee prepared a training package of hands-on training that has become a model and is likely to be used by agencies across the country. It begins by just explaining what infiltration is, what happens in a very graphic sense when you have holes and cracks and why there is no sense insulating before you correct infiltration.

We have some outstanding community action agencies, that in addition to carrying out local projects, because of their expertise, provide training to other community action agencies. The Fresno Community Action Agency in California is one that in fact has established itself as a school to train persons in practical energy conservation. The models vary.

Mr. HUNT. Are there any general costs associated with what's involved or the number of hours of schooling required to train a person for this insulation job or for these inspection jobs on the basis of your experience?

Ms. STOLFA. I do not have the information with me.

Mr. HUNT. We would appreciate it if you could provide the information for the record, and also give an indication of the relative productivity of that trained individual on an annual basis

so the tradeoff can be made between the social investment of training that person and the payback in terms of real wages.

Ms. STOLFA. I do believe the Fresno community action agency has analyzed such information, and I could provide it.

[The following information was received for the record:]

Since the inception of its Energy effort, CSA has taken the position that training and technical assistance to local project operators is a necessary prerequisite for high quality programs, and has focused effort and money on the goal of producing good training. The diversity of training methods and materials which have sprung from the effort is considerable. The training programs have utilized a variety of techniques for training, including Regional meetings (Energy Coordinators), Small cluster meetings (crew leaders), and On-the-site training (crew).

CSA grantees have coordinated this training with numerous other groups, including the National Bureau of Standards, HEW Office of Native American Programs, ERDA, FEA, USDA, FmHA, Labor unions, Universities and community colleges, Utilities, Private industry.

CSA has developed a guide to weatherization specific to climate areas which is a field reference document that details procedures and strategies in project design and work on individual houses. The trainers have also developed slide shows and films to reinforce the training; these include:

—Report on the energy program—Tennessee
—Workskills film strip—Tennessee
—There is an Energy Crisis . . . What to Do, Arizona
—South Dakota Energy Film
—Home Energy Management—South Dakota
—Weatherization Film Strip—North Carolina
—Farmers Home Repair Program—North Carolina
—Training the Policy Advisory Committee—Region VI
—Infra Red Techniques for Heat Loss—Region VIII
—Furnace Efficiency—Region VIII

These presentations were developed by experience training personnel to respond to the variety of needs that are out in the field.

The actual length of training varies in each program. Some projects are only correcting infiltration while others are using sophisticated infra red photography to spot heat loss so the needs of the workers will vary considerably. In general though it takes about six months in an average program to train a crew member (including classroom instruction) and about 12 months for the crew leader.

SAMPLE TRAINING PROGRAMS

*Pennsylvania*

With a new program, a technical assistant goes out to the project location for three days. The training begins in the warehouse covering purpose of project; tool use, and application techniques; familiarizing with materials. It also includes use of visual aids, such as the use of scale house to demonstrate "before and after" impacts. Each person in the crew is taught a specific skill—stopping infiltration, installing storm windows or installing insulation. Twice monthly there is an on-site training for each project where crew members are taught the skills of a different task. Crew members change jobs until everyone can do all jobs.

*California*

In California there are two coordinated training programs.

(1) The state funds $700,000 to the CAPs for labor in the program. The State has contracted with Chico State Engineering Dept. for training the crew members in the program and in the specific techniques of insulation.

The new crew leader attends a one week training session held at California State University, Chico. The session includes program design, heat loss, and provides hands-on use of equipment and materials. After this session is absorbed (about 30 days), there is a second series of cluster training sessions, working with all of the crew to resolve problems and reinforce the first training session.

At the local level many CAPs are undertaking special training efforts. For instance, the Fresno CAP has become a licensed vocational school (through the Bureau of School Approvals, California) and charges $600 tuition to train the students in a 14 week course. The licensed school utilizes two licensed contractors, the utility (P.G. & E), the university (CSUP), the labor unions (Local 132) and its own

staff as unpaid instructors. This fosters cooperation in the program and the contractors are always aware of potential employees.

BENEFITS OF TRAINING

*Increased Production*

The training of crews has meant an increased production of approximately 100%. An untrained crew can insulate about 1 house/day while a trained crew can insulate about 2 houses/day. This is a generalization because the programs are working on different services; some insulate the house to an R-40 while others are insulating to an R-19. However there is a significant post-training increase in production at all levels.

*Social Benefit*

The chart demonstrates the social return on investing in the labor of the weatherization crew in California. The first column is the average length of training, the second column is the hourly salary for the State CETA program in California. The total cost is the hourly rate times the training time + 15% fringe. Columns four and five are the cost of welfare recipients to the gov't. The AFDC cost is $402/month in LA. (for a family of four) and the food stamp bonus is $35. After the persons is trained the prevailing wage rate in San Joaquin Valley of California is $300/week for a crew leader and $200/week for a crew asst. The employee will then be paying into the gov't insurance programs and income tax to the Federal Gov't and the State. The pay back is calculated by taking the net cost to the government and divide by the payments to determine the weeks to pay back.

In summary, a former welfare crewleader pays back the gov't after only 8 weeks, and the former welfare crew asst. costs less to the gov't as a worker than he does as a welfare recipient. For nonwelfare persons it takes 61 weeks to pay back for the crew leader and 39 weeks to pay back for a crew assistant.

| | Training Time | Training Salary (1) | Total Cost | Welfare Persons Cost (2) | F.S. Cost (3) | Placement Wage (4) | Gov't Payments (5) | Pay Back Welf. (6) | Non Welf. (7) |
|---|---|---|---|---|---|---|---|---|---|
| Crew Leader | 12 mos | 3.00 hr. | 6,320 | 4,824 | 636 | 300 | 103.20 wk | 8 wks | 61 wks |
| Crew Asst. | 6 mos | 2.50 hr. | 2,645 | 2,412 | 318 | 200 | 68.35 wk | 8 | 39 wks |

(1) Wages paid by California State CETA + 15% fringe

(2) AFDC family of four, California, May 1977: $402/month

(3) Food Stamp purchase 166 for $113 (Bonus Value $53)

(4) Prevailing wage rate San Joaquin Valley, California, May 1977

(5) Gov't payments 11.7 - FICA; State Unemployment Insurance - 4.7;
Crew leader federal income tax - $93.50 biweekly;
California state income tax $14.50 biweekly
Crew Asst. federal income tax - $64.60 biweekly;
state income tax $6.50 biweekly

Mr. HUNT. From the standpoint of the programs you have had in the field, you have had more experience than other Federal agencies, I believe, in this area. What have been the hallmarks of successful programs and what have been the problems associated with less successful programs. Do you see any legislative changes that might be required to improve the efficiency of either your program or a Federal program?

Ms. STOLFA. That is a broad question.

Mr. HUNT. If you could supply it for the record, I think it would be very valuable to us rather than trying to answer here.

Ms. STOLFA. That would be fine. I would be happy to provide you an answer for the record.

[The following material was received for the record:]

CSA grantees, particularly community action agencies, are in a unique position to provide a comprehensive range of essential services to poor, near-poor and elderly families severely affected by the energy crisis. Grantees are charged with developing balanced projects which respond to both short and long-range needs of their constitutency, and integrating energy programs with other projects they operate in such diverse areas as manpower training, housing, transportation, nutrition and economic development.

A key element in the success of this multi-faceted approach is the requirement that each local administering agency have a Project Advisory Committee, at least 51% of whose members are poor and which also includes representatives of local governments and other resource agencies within the local community, as well as representatives of the local public utility and/or local fuel dealers. The PAC is the focal point of energy-related planning for the local administering agency. Representation of the poor on the PAC assures their participation in the decision-making processes which at all levels of society influence the policies governing the availability of increasingly scarce energy resources. PACs can also play a major leadership role in the larger community, educating and influencing the non-poor about the need for and benefits accruing to them from energy conservation.

CSA's energy programs fall into six major categories, of which weatherization projects have provided the broadest range of experience and consequently have enabled us to idenfify key problems which must be addressed for a program to operate successfully.

Most of these problems, assuming there is an active PAC committed to maintaining well-defined standards of program quality, revolve around the need to assure an adequate mix of grant funds for materials to provide a balanced combination of energy-conserving improvements in treating the homes of eligible families, and the ability to secure labor resources adequate in quantity to match the materials.

One of the problems associated with achieving and maintaining this adequate mix of resources is that projects rely chiefly on trainee labor. Projects need to be able to assure workforce continuity at least in crew leader positions to protect against the loss of skill training inherent in a workforce turnover which occurs every six months.

Locally-administered weatherization projects need to be of sufficient size to benefit from economies of scale in such activities as purchasing, having an energy coordinator, achieving the capability of weatherizing homes substantially to achieve significant savings to residents.

As more grant funds become available to support locally-administered projects, we are encouraging PACs to authorize spending more on materials per house to achieve closer to optimal weatherization improvements. This degree of services requires a corresponding upgrading in the skills needed by the labor resources in assessing the needs of a house, planning for an orderly accomplishment of the work and overseeing its timely completion. Adequate outreach capability must also be assured to make the range of energy-conserving programs available to the greatest n;umber of eligible families.

Mr. Hunt. All right.

There is a general request that was made this morning to all panel members, and I would like to repeat it now. We appreciated your reviewing existing legislation and constraints under which you

operate in light of sections 101 to 109. Please highlight any conflicts that may exist and propose legislative solutions that might be incorporated in this act in order to obviate the future conflict.

[The following material was received for the record:]

QUESTION FOR THE RECORD: DO ANY PROVISIONS OF CPSC'S EXISTING LEGISLATION CONFLICT WITH H.R. 6831?

Section 102 of the bill (H.R. 6831), entitled "National Energy Act", provides that the Administrator of the Federal Energy Administration must issue rules for the content and implementation of residential energy conservation plans within 120 days of enactment of the bill and after consultation with the Secretary of Housing and Urban Development and the heads of such other agencies as he deems appropriate. State regulatory authorities and non-regulated utilities are to develop such plans in accordance with the rules and submit them to the Administrator for approval.

Section 102(b) states that the rules the Administrator prescribes shall identify suggested energy conservation measures for residential buildings. Such measures, according to section 101(11) of the bill, include caulking and weatherstripping of exterior doors and windows, certain furnace efficiency modifications, clock thermostats, certain insulation, and storm windows. Section 102(b)(2) of the bill states that the rules may include

"(A) standards for general safety and enforcement of any suggested measure;

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

(C) such other requirements as the Administrator may determine to be necessary to carry out this subpart.

This authority to establish rules could overlap with the Consumer Product Safety Commission's authority, but there does not appear to be a conflict with the Commission's authority. Under the Consumer Product Safety Act, the Commission may issue consumer product safety standards to address unreasonable risks of injury associated with consumer products. The Commission believes it has the authority to issue standards regarding the safety of furnaces, insulation, windows and other consumer products that may be involved with energy conservation measures. In addition, the Commission believes it has the authority to regulate, at least indirectly, the installation of consumer products, for example by requiring that installation instructions accompany the product. Thus, the Commission has the authority to regulate products that would be subject to regulation by the Administrator under H.R. 6831. However, the Commission believes this provision of the bill would not necessarily create a conflict with its authority, but rather would create the possibility of dual regulation. In its experience, in instances of overlapping jurisdiction (for example, the Commission has some overlapping jurisdiction with EPA's authority under the Toxic Substances Act) the Commission has been able to successfully coordinate with the other federal agencies involved. However, to ensure there is no conflict the Congress may wish to include in the bill a requirement for consultation between the Administrator and the Commission regarding safety related or installation requirements. In addition a statement may be included to indicate that the bill does not divest the Commission of authority to establish consumer product safety standards for these products in accordance with the provisions of the Consumer Product Safety Act.

Mr. DINGELL. The Chair advises that there is a vote on the floor. We express our apologies.

The committee will stand in recess briefly, and I will return as quickly as I can.

[Brief recess.]

Mr. DINGELL. The subcommittee will come to order.

The Chair recognizes counsel, Mr. Hunt.

Mr. HUNT. Thank you, Mr. Chairman.

Mr. Brown, can the Consumer Product Safety Commission establish or review standards relative to the installation rather than the raw product of insulation?

Mr. M. BROWN. That is even further out than we were trying to go with aluminum wire and the decision I discussed earlier with Mrs. Harrison.

Mr. HUNT. I wondered if you saw a pathway where you might enter into that?

Mr. M. BROWN. There is a split among the Commissioners as to their own interpretation and their ability to cover installation. It is a highly controversial area under our legislation.

Mr. HUNT. Is there, in your opinion, an interest on the part of some of the Commissioners for clarifying legislation in this area to delineate the issue more closely?

Mr. M. BROWN. Installation in general, but not to the point where in their last legislative submission they brought it up to Congress.

Mr. HUNT. Would it be possible for you to suggest to the Commissioners the legislative changes that may be necessary or valuable relative to the implementation of this legislation?

Mr. M. BROWN. We brought this up in our last legislative submission. There is a tactical question such as the Federal Trade Commission and the ability to assign octane ratings and whether it is best to do it in Congress or in court and if you are going to court, you should not be before Congress saying it is unclear.

Mr. HUNT. When you brought it up the last time, what was the decision of Congress?

Mr. M. BROWN. It never got to Congress. I am talking about within the Commission.

Mr. HUNT. Do you think it would be well to bring it before Congress in this context?

Mr. M. BROWN. My lawyer background says it would be best brought before the courts, but I can discuss it with the Commission.

Mr. HUNT. Thank you.

[The following material was received for the record:]

QUESTION FOR THE RECORD: DOES CPSC NEED LEGISLATIVE CLARIFICATION OF ITS AUTHORITY OVER INSTALLATION?

It is the view of the Consumer Product Safety Commission that its authority to regulate the installation of consumer products should be clarified in order for the Commission to more effectively carry out its responsibilities under the Consumer Product Safety Act (CPSA). The Commission believes it is open to various interpretations whether the CPSA provides it with authority to directly regulate installation of consumer products.

Section 3(a)(1) of the CPSA, 15 U.S.C. 2052(a)(1), delineates the products over which the Commission with the authority to take regulatory and enforcement actions with regard to consumer products. As to setting safety requirements for consumer products, under section 7 of the CPSA, (15 U.S.C. 2056) the Commission has the authority to issue consumer product safety standards consisting of requirements as to performance, composition, contents, design, construction, finishing or packaging of a consumer product. In addition, the Commission can require that a consumer product be marked with or accompanied by clear and adequate warnings or instructions. Because section 7 and other sections of the Act that provide regulatory authority involve establishing requirements for the product itself, the Commission has not interpreted section 7 or other sections of the CPSA as giving it authority to directly regulate the installation of consumer products. Attached for the subcommittee's information are several memoranda prepared by the Commission's Office of the General Counsel that discuss the question of the Commission's authority to regulate installation practices under the CPSA and the Federal Hazardous Substances Act (FHSA).

The inability of the Commission to directly regulate installation of consumer products poses significant problems for the Commission in it regulatory activities. An example is public playground equipment, which the Commission could regulate under either the CPSA or the FHSA. The primary hazard associated with the product is falling from the equipment onto a hard surface. Because the Commission

does not have the authority to directly require that such equipment be installed over a particular surface, it is unable to fully deal with the primary hazard presented by this equipment. As another example, recently, a number of energy saving devices have come on the market. The Commission has been testing and studying the safety aspects of many of these devices. In several cases, we found that the device could be used safely if installed properly but could cause tragic injury if installed improperly. While the Commission can require warnings or instructions to accompany these products, the Commission believes it cannot presently require that these products be installed in a particular manner. Thus, the Commission's ability to protect the public against unreasonable risks of injury is not as broad as it could be.

Similarly, in the case of swimming pool slides, the Commission issued a consumer product safety standard to address among other things,the hazard of quadriplegia and paraplegia resulting from users sliding down the slide in a head first position and striking the bottom of the pool and leg fractures resulting from feet first entry (16 CFR 1207). However, it concluded that it was unable to require that a pool slide be installed over a particular depth of water. Instead, it required installation instructions and signs to accompany the products when sold.[1] The Commission believes the standard may have been more effective if it could directly regulate installation.

As another example, the Commission has been studying safety problems associated with the use of aluminum wire for some time, and has begun a standard development proceeding. It has become clear that workmanship and the manner of installation of that product plays a large role in the safety problems associated with it. However, it appears that the Commission may not be able to directly regulate the installation of aluminum wire in any final standard it may issue.

In addition to the need to clarify the Commission's ability to directly regulate the installation of consumer products, there may need to be clarification of the term "consumer product". The United States District Court for the District of Delaware in *Kaiser Aluminum and Chemical Corporation* v. *United States Consumer Product Safety Commission*, Civil Action No. 76-44 (D. Del. 1977) (*Kaiser*) concluded that aluminum wire is not a consumer product, and, therefore, not within the Commission's jurisdiction. The judge based his decision on his opinion that Congress did not intend the CPSC to regulate products used by consumers that become a part of a house. The Commission believes this decision is inconsistent with the clear language of the Act, its legislative history and the purpose of the Act. Accordingly, the Commission has authorized an appeal of the Court's decision. The Court's decision, however, has implications far broader than Commission jurisdiction over aluminum branch circuit wiring. The opinion calls into question Commission jurisdiction over any consumer product that becomes a part of a house. Already the *Kaiser* decision is having an adverse effect. In *Flat Glass Association of Japan, et al.* v. *Consumer Product Safety Commission*, No. 77-1238, C.A.D.C., a petition for review of the Commission's Standard for Architectural Glazing Materials, 16 CFR 1201 (42 Fed. Reg. 1428), the Commission's jurisdiction over architectural glazing materials has been challenged on the basis of the *Kaiser* decision.

The *Kaiser* decision throws into doubt Commission jurisdiction over virtually all products that are incorporated into a house even when these products are sold to consumers and used by consumers in or around a residence or household. Thus, there may be some question about the Commission's jurisdiction over such products as nails, flooring materials, cooking ranges, ovens, furnaces and floor furnaces, bathtubs, electric fixtures (light bulbs, light fixtures, electrical outlets, etc.), bricks, paints, non-glass doors, lumber, panelling pieces, pipes (hot water, steam), heating systems, heat pumps, panelling, baseboard electric radiant units, thermostats, home radiators, roofs and roofing materials, and handrails. All of these products are included in the Commission's hazard index (Annual Report, October 1976, pages 119-121). The Commission believes that Congress intended that it should have jurisdiction over such products and it actually does have such jurisdiction. However, clarifying language would be helpful and could expedite related projects significantly.

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[1] In *Aquaslide 'N' Dive Corporation* v. *Consumer Product Safety Commission*, No. 76-1713 (C.A. 5, 1976) a petition for review of the Commission to require instructions regarding installation to accompany a product was challenged. The Commission is awaiting the outcome of that litigation.

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UNITED STATES GOVERNMENT MEMORANDUM

U.S. CONSUMER PRODUCT SAFETY COMMISSION,
*Washington, D.C., Jan. 30, 1975.*

TO: Commissioners
THRU: Sadye E. Dunn, Secretary
THRU: Michael A. Brown, General Counsel
FROM: Alan H. Schoem, Office of the General Counsel
SUBJECT: Public Playground Equipment

In forwarding the public playground briefing package and FEDERAL REGISTER notice to you, I now realize that I should have included a discussion of the treatment of "surfaces." One of the hazards resulting in numerous injuries that has been identified as being associated with playground equipment is falling from playground equipment and striking non-energy absorbing surfaces.

The Commission has modified the definition of public playground equipment on page 3 of the FR notice to include "the surfaces upon which the apparatus is installed." We have no problem with this definition; and it should help to make it clear to potential offerors that they must take some action to eliminate the injuries resulting from children falling from playground equipment and striking non-energy absorbing surfaces. An offeror may be able to do this in a variety of ways including the use of performance criteria for playground apparatus, warning labels, instruction booklets, installation instructions and the like. An offeror could also develop requirements for the surfaces located under playground equipment. Legal, practical and enforcement problems could arise in the area of surfaces, in situations where a regulation attempts to incorporate requirements for surfaces into a standard or regulation. There has been some question of whether the risk of injury resulting from falling onto non-impact absorbing surfaces could be more adequately regulated under the CPSA. The purpose of this memorandum is to point out methods of regulating surfaces that could be used under the FHSA and the CPSA.

A. REGULATION OF PLAYGROUND EQUIPMENT UNDER THE FHSA.

The Commission could regulate surfaces under the FHSA if they could be determined to be a hazardous substance. Those surfaces, however, do not appear, at this time, to fall within the definition of the term "hazardous substance" as defined in the FHSA and thus could not be regulated separately from public playground apparatus. Further, concrete, asphalt, and other surfacing materials located under public playground equipment would not, by themselves, be considered a "toy or other article intended for use by children" under the FHSA. Playground apparatus, however, is included within the scope of the phrase "toy or other article intended for use by children."

Regulation of surfaces under playground equipment, could be accomplished in several ways through regulation of the playground equipment. For example, if the Commission determined that playground equipment sold without an artificial surface presented an ureasonable risk of injury, it could require that an artificial surface be provided with each piece of playground equipment sold. This could be accomplished, for example, by determining, in accordance with section 2(f)(1)(D) of the FHSA, that public playground equipment (or certain public playground equipment) is a hazardous substance and, therefore, banned under section 2(q)(1)(A) of the FHSA. An exemption could then be provided for public playground equipment sold with an accompanying artificial surface. Failure to include the artificial surface with the playground equipment when it is introduced or delivered for introduction into interstate commerce, for instance, would be a prohibited act under section 4(a) of the FHSA. However, it does not appear that the Commission could control or regulate the installation of playground apparatus over certain surfaces through this type of regulation.

The Commission may, in certain cases, be able to control the installation of playground equipment under the FHSA. You could do this, for example, by promulgating a regulation that bans public playground equipment that does not comply with specified safety related requirements and is not installed over a surface that meets certain performance requirements. However, it is likely that such a regulation would only be applicable to the manufacturer, distributor, or retailer of the product who also installs the product. It may not be practical or legally valid to enforce such a regulation against the ultimate purchaser of the product who installs it himself or hires someone to install it.

Surfaces could also be regulated indirectly through warning instruction, installation instructions and the like.

B. Regulation of Public Playground Equipment and Surfaces Under the CPSA.

Under the CPSA, the Commission, assuming there are no jurisdictional problems, could commence a proceeding for the development of a standard for "surfaces" if it is able to preliminarily determine that the "surfaces" are presenting an unreasonable risk of injury. However, under the CPSA, as under the FHSA, the Commission generally cannot control installation practices. By commencing separate standard development proceedings for surfaces and playground equipment it does not appear that the Commission could require that playground equipment be installed over a particular surface.

However, the Commission, under the CPSA, could commence a proceeding for the development of a standard for public playground equipment including the surface under the equipment.

The CPSA defines the term manufacture to include the assembly of a product. If surfaces are considered part of the public playground equipment and if the "assembly" of the product is considered to be the "manufacture" of the product, it is possible that a standard under the CPSA could be worded in such a way as to require playground equipment to be installed over a surface meeting certain performance criteria.

This might be done by wording the standard so that only those products which are placed over a surface meeting certain performance criteria could comply with the standard. Any person who failed to assemble the product over a complying surface would be in violation of the standard.

However, just as in the case of a regulation under FHSA, it may not be practical or legally valid to enforce such a standard against the ultimate purchaser of the product who installs it himself or hires someone to install it.

Surfaces could also be regulated indirectly through warning instructions, installation instructions and the like.

Conclusion

Regardless of the act under which playgroun equipment is regulated, a myriad of legal, practical and enforcement problems may arise in connection with the treatment of surfaces. However, until a regulation or standard is developed, we can only hypothesize as to these problems.

It is our view, at this time, that the risk of injury associated with public playground equipment could be eliminated or reduced to a sufficient extent by action under the FHSA. We, therefore, recommend that the FR notice, as modified by the Commission, be published in the Federal Register.

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United States Government Memorandum

U.S. Consumer Product Safety Commission,
*Washington, D.C., Feb. 12, 1975.*

TO: Commissioners
FROM: Sadye E. Dunn, Secretary
THRU: David Schmeltzer, Acting Deputy General Counsel
FROM: Alan H. Schoem, Office of the General Counsel

SUBJECT: Regulation of Public Playground Equipment and Surfaces Thereunder

We have set forth below a discussion of enforcement problems in regard to a regulation for playground equipment, including surfaces, under the FHSA and CPSA; and a discussion of section 30(d) of the CPSA.

Enforcement Problems Under FHSA

If a regulation is promulgated under the FHSA which, among other things, bans all public playground equipment except that installed over a particular surface, failure to install the equipment over that surface might be a violation of that portion of section 4(b) which prohibits in relevant part "the doing of any . . . act with respect to, a hazardous substance, *if such act is done while the substance is in interstate commerce*". (emphasis added)

Whether there would be a violation of that portion of section 4(b), however, would depend on whether the "substance" is in interstate commerce. Thus, in the case of a failure to install playground apparatus over a complying surface, a violation of section 4(b) would depend on whether the apparatus and surface would be considered to be in interstate commerce after it is delivered to the ultimate purchaser. In this instance, we believe that once the playground equipment is delivered to the ultimate purchaser, it is no longer "in interstate commerce" as that term is used in the FHSA.

Assuming the equipment is not in interstate commerce after it has been delivered to the ultimate purchaser, failure by the purchaser to install the equipment over a surface that met certain performance criteria would not be a prohibited act.

If the manufacturer, distributor or retailer of the product is the person who installs the equipment, there would appear to be a stronger case for considering the equipment and surface to be in interstate commerce until it has been installed at its destination. In this instance, it is possible that a failure to install the equipment over a proper surface would be a prohibited act.

It does not appear that a failure to install equipment apparatus over a particular surface would fall within any of the other prohibited acts in section 4(b).

It does not appear that a failure to install equipment apparatus over a particular surface would fall within any of the other prohibited acts in section 4(b).

### Enforcement Problems Under CPSA

Although the Commission's enforcement powers under the FHSA in the instances described above are limited, they are just as limited and perhaps even more so under the CPSA. The same problems that exist under the FHSA also exist under the CPSA. Section 19(a)(1) of the CPSA makes it unlawful to "manufacture for sale, offer for sale, distribute in commerce, or import into the United States any consumer product which is not in conformance with an applicable consumer product safety standard under [the CPSA]."

If a standard under the CPSA attempts to regulate placement of playground equipment over a particular type surface, failure to install the equipment over that type surface would not appear to be a prohibited act regardless of who installs the equipment. Further, failure to install playground equipment over a particular surface generally would not appear to be "manufacture [or assembly] for sale" or "offering for sale" or "distribution in commerce" [as that phrase is defined in section 3(a)(11) of the CPSA] of a product that does not comply with a consumer product safety standard.

### "30 (d) Determination"

In view of the foregoing, enforcement activities under both the CPSA and FHSA are limited in regard to regulation of playground equipment and surfaces. If the Commission concludes it wishes to make a "30 (d) determination" the Commission must be able to determine that a risk of injury associated with a consumer product could not be eliminated or reduced to a sufficient extent by action taken under the FHSA and, by implication,that action taken under the CPSA would adequately eliminate or reduce the risk of injury. In this regard the legislative history of section 30(d) states:

"In determining whether a risk of injury can be reduced to a sufficient extent under one of the [transferred] Acts . . . , it is anticipated that the Commission will consider all aspects of the risk, *together with the remedial powers available to it under both the bill and the other acts.* (emphasis added)

### Conclusion

In view of the fact that enforcement options under both the CPSA and FHSA are limited and no more can be done under CPSA than FHSA in regard to enforcement of a regulation or standard concerning playground equipment and surfaces, we do not believe the Commission can make a legally valid 30(d) determination; and, therefore, playground equipment including surfaces should, from a legal standpoint, be regulated under the FHSA.

Any challenge to the Commission's jurisdiction to proceed under either of the two acts would not, in all likelihood, be filed in court until the Commission attempts to enforce a regulation. Thus, it is unlikely that there would be a definitive court ruling on this particular matter for some time.

We note that the Chairman in his dissent from the Commission's regulation of bicycles under the FHSA contends that regulation of bicycles would be more effective under the CPSA than the FHSA. However, we do not believe that rationale would justify making a section 30(d) determination in the present instance.

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UNITED STATES GOVERNMENT MEMORANDUM

U.S. CONSUMER PRODUCT SAFETY COMMISSION,
*Washington, D.C., Dec. 2,1975.*

TO: Commission
THRU: Sadye E. Dunn, Secretary
THRU: Margaret A. Freeston, Assistant General Counsel
FROM: Alan H. Schoem, OGC

SUBJECT: Swimming Pool Slides—Authority to Regulate Directly the Place of Installation of Swimming Pool Slides Around a Pool.

One of the issues raised in the comments to the proposed swimming pool slide standard is whether the CPSC has the authority to regulate the place of installation of swimming pool slides in a mandatory standard issued under the Consumer Product Safety Act. Before discussing this issue we believe it is helpful to discuss how pool slides are marketed.

Generally, manufacturers of swimming pool slides sell the slides to swimming pool builders and dealers, who in turn sell the slides to consumers as part of a package plan for the construction of a swimming pool. In some cases, manufacturers supply the slides to pool builders or retailers. At least one above ground pool slide company has sold its slides directly to a retailer for sale to consumers through catalogues.

A pool slide generally is delivered in several parts and is assembled at a pool site. Most below ground pool slides are installed permanently by constructing the deck around the slide.

It is the view of the Office of the General Counsel that, in general, the Commission lacks the authority to directly regulate the installation of a consumer product as part of a mandatory standard. However, we believe that the Commisssion must decide on a case by case basis whether the installation of a particular consumer product is a part of the manufacture or assembly of the product and whether it is part of one or more of the types of requirements listed in section 7(a)(1) of the Act. If the installation of a particular product can be considered part of one of these other activities, we believe the Commission would have authority to regulate the installation of the particular product.

As to swimming pool slides, we believe the installation is not part of the manufacture or assembly and that installation is not part of any of the other types of requirements enumerated in section 7 of the Act. If this is correct, we believe that the Commission cannot directly regulate installation of swimming pool slides in the standard.

This memorandum sets out for your consideration the basis for this office's views on the Commission's authority to regulate directly the installation of swimming pool slides. The Bureau of Compliance and one commenter disagree with OGC's conclusion. These other views are attached at the end of this memorandum for your consideration.

DISCUSSION

In analyzing its authority under the CPSA, the Commission should construe the act as a whole and interpret each section in a manner that is harmonious with the intent and purport of the Act (section 46.05, Southerland, Statutory Construction, 4th ed.) The definition of the term "consumer product" in section 3 of the Act delimits the jurisdictional reach of the act; section 7 specifies the types of requirements the Commission must include in consumer product safety standards; and section 19 lists various prohibited acts.

In order for a product to be regulated by the Commission, it must be a product that is manufactured or distributed for sale to or for the personal use, consumption or enjoyment of a consumer in or around a household or residence, a school, in recreation or otherwise.

Section 7(a) of the Act sets forth the types of requirements of which consumer product safety standards issued under the Act must consist. These types of requirements are:

"(1) Requirements as to performance, composition, contents, design, construction, finish, or packaging . . . of a consumer product.

(2) Requirements that a consumer product be marked with or accompanied by clear and adequate warnings or instructions, or requirements respecting the form of warnings or instructions."

A safety standard issued under section 7 of the CPSA must be applicable to a consumer product and it must consist of one or more of the types of requirements indicated in section 7(a)(1) or (2). When the act is read as a whole it is also logical to conclude that standards issued under section 7 must be enforceable under section 19(a) of the Act which makes it unlawful to "manufacture for sale, offer for sale, distribute in commerce, or import into the United States any consumer product which is not in conformity with an applicable consumer product safety standard . . . ."

### A. Types of Requirements (Section 7(a))

It appears clear that installation of swimming pool slides is not part of the compositon, contents, design, finish or packaging of the product. It must then be determined by the Commission, whether authority to regulate installation of a pool slide could be included within a requirement under section 7 for "performance" or "construction" of the product.

#### 1. Performance Requirement

The Commission is authorized by section 7(a)(2) to include requirements in a standard as to "performance" of a consumer product. A performance standard is generally one that requires a product and/or its component parts to perform or behave in a particular manner once it is manufactured, regardless of its design or construction. The legislative history of the Act indicates that Congress expressed a preference for performance standards in the recognition that such standards permit industry to make the fullest use of its technological resources in meeting safety requirements.

While the manner or place of installation of a swimming pool slide may affect that product's performance, that fact alone does not provide the Commission with the authority to mandate installation requirements for a product.

The requirements of a standard apply to products that are manufactured or distributed. If the Commission determines that the installation of a slide is not part of the manufacture or distribution of the product, requirements for the installation of the slide, as part of a consumer product safety standard, would appear to be beyond the authority of the Commission. [1]

The Commission could, however, require that slides be installed in a particular manner or location for testing purposes to ensure that properly assembled and installed slide would comply with particular performance requirements included in a standard.

#### 2. Construction Requirements

Section 7(a)(2) of the Act also authorizes the Commission to establish requirements as to "construction" of consumer products. OGC believes installation of swimming pool slides is not part of their construction. The term construction is not defined in the Act or the legislative history of the Act. Black's Law Dictionary defines the term as meaning in relevant part: [2]

"The creation of something new, as distinguished from the repair or improvement of something already existing . . . . The act of fitting an object for use or occupation in the usual way, and for some distinct purpose . . . . See Construct. " (Black's Law Dictionary, 4th ed. 386)

Construct is defined as:

To build; erect; put together; make ready for use . . . . To adjust and join materials, or parts of, so as to form a permanent whole . . . . To put together constituent parts of something in their proper place and order . . . ." (Black's Law Dictionary, 4th ed. 386).

Installation is defined in relevant part, as:

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[1] This analysis is discussed in greater detail below under section B, Manufacture of The Product.

[2] These definitions are the same used by the Bureau of Compliance in its memo at Tab C of the Briefing Package.

"Installation of machinery means to place in position where it will reasonably accomplish purposes for which it is set up . . . ." (Black's Law Dictionary, 4th ed. at 939).

In view of the foregoing definitions, BCM concludes in Tab C of the Briefing Package, that the Commission has jurisdiction over the installation of pool slides. BCM states:

"Construction includes the building, the putting together, the making ready for use and the putting together of constituent parts of something in their proper place and order—the installation. Therefore, in the case of swimming pool slides "construction" includes "installation."

We believe that the definitions of "construction," "construct" and "installation" can be interpreted to support the conclusion that installation is not part of the construction of a swimming pool slide. The definition of "construction" and "construct" concern the building of the product—the act of fitting an object for use. We submit this means ensuring, for example, that Part A of the product is attached to Part B and B is connected to C. The installation of the product, however takes place subsequent to the construction of the product—the placing of the product in position to accomplish the purpose for which it is set up [(or constructed)]

B. Manufacture of the Product

Any consumer product safety standard issued under the CPSA is enforced in part through the provisions of section 19(a)(1) which makes it unlawful for any person to "manufacture for sale, offer for sale, distribute in commerce, or import into the United States any consumer product safety standard" under the Act.

The legislative history of section 19(a)(1) indicates that the language of that section is intended to insure that the act may apply to each stage of the process followed in the manufacture and distribution of consumer products. (H.R. Rep. No 92-1153, 92d. Cong. 2d Sess 45-46 (1972)) The term "manufacture" is defined in section 3(a)(8) of the Act as including "to manufacture, produce or assemble." OGC believes that installation of swimming pool slides is not part of the manufacture of such slides.

The terms "manufacture, " "produce" and " assemble" are not further defined in the Act. Black's Law Dictionary defines these terms as follows:

manufacture (v)—"the process of making products by hand or machinery." (n) "The process or operation of making wares or any material produced by hand, by machinery or by other agency; anything made from raw materials by the hand, by machinery or by art."

produce—"to bring forward; to show or exhibit."

assemble—"when applied to a machine, 'assemble' means to collect or gather together the parts and place them in their proper relation to each other to constitute the machine."

Webster's International Dictionary defines these terms similarly as:

manufacture—"something made from raw materials by hand or by machinery."

produce—"to give being, form or shape to : make often from raw materials."

assemble—"to bring together as (a) to put or join together . . . in an orderly way with logical selection or sequence (b) to fit together various parts of so as to make into an operative whole."

In view of the foregoing definitions, we believe the term manufacture does not include the installation of swimming pool slides. Further the term manufacture as defined in the CPSA and in dictionaries does not specifically include "to install" as part of the definition. Similarily, the term "distribute in commerce" as defined in the Act does not include the installation of a swimming pool slide. In addition, the offering for sale of a slide would not in our view, include the installation of swimming pool slide. Installation of the slide is in essence a service and the Commission does not appear to have the authority to regulate directly the sale of a service. Rather, the Commission's authority in the context of a consumer product safety standard, is restricted to the regulation of the swimming pool slide. Regulation of the installation of the slide is an area that has inherently been regulated by the states under their general police powers rather than by the Federal Government under its commerce clause powers. Nevertheless, the Commission should decide whether it believes the installation of swimming pool slides is part of the manufacture of the product or part of the construction or performance of the product.

In order for a product to be in violation of a safety standard under the CPSA it must be in violation of the standard when it is manufactured for sale, offered for sale, or distributed in commerce or imported into the United States. If the installation of a swimming pool slide occurs subsequent to its being manufactured for sale,

offered for sale, distributed in commerce or imported into the Untied States, failure to comply with an installation requirement would not appear to be a violation of section 19 of the Act.

If the Commission agrees that it has no authority to directly regulate the installation of swimming pool slides in this standard, we suggest the language in the Preamble, pages 4-8 discussing this issue be slightly changed. We believe the language is too broad in saying the Commission never has authority to regulate installation of consumer products in mandatory safety standards. There may be some cases in which CPSC is able to set requirements as to installation; for example, when the Commission finds that the installation of the product is a part of the manufacture of the product.

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UNITED STATES GOVERNMENT MEMORANDUM

U.S. CONSUMER PRODUCT SAFETY COMMISSION,
*Washington, D.C., January 7, 1977.*

TO: Bert G. Simson, TAD/OSCA
THRU: Charles R. Casper, Jr., Acting Director, OSDA
THRU: Margaret A. Freeston, Assistant General Counsel
FROM: Stephen Lemberg, OGC

SUBJECT: Issuance of Regulations for Public Playground Equipment

In your memorandum of December 8, 1976, you requested OGC comments on whether a regulation for public playground equipment could be issued in a piecemeal fashion and whether a regulation could be issued to address the surface upon which public playground equipment could be installed.

The Commission has preliminarily decided that any public playground equipment regulations will be issued under the Federal Hazardous Substances Act. The FHSA provides that any article intended for use by children may be declared to be a hazardous substance on the basis of a determination that it presents a mechanical hazard because its design or manufacture presents an unreasonable risk of injury. Thereafter, the article is considered a banned hazardous substance and may not legally be distributed in interstate commerce. This regulatory scheme, as you know, has generally been implemented by the issuance of a set of performance, design, construction, or labeling requirements for a particular product or class of products, with units not complying with these requirements being considered banned hazardous substances.

As far as a piecemeal approach is concerned, we are aware of no constitutional or administrative law principle that would render an agency's action invalid by the fact that only part of the problem has been addressed. In fact, the U.S. Supreme Court in *Williamson* v. *Lee Optical of Oklahoma*, 75 S. Ct. 461, 465 (1955), has stated that "[t]he reform may take one step at a time, addressing itself to the phase of the problem which seems most acute to the legislative mind. The legislature may select one phase of one field and apply a remedy there, neglecting the others." For example, the CPSC crib regulations could have been issued to ban cribs not meeting the slat-spacing requirements without addressing at that time other problems, such as crib-side height. Therefore, if the Commission can show that playground equipment not conforming to certain requirements, presents an unreasonable risk of injury from an aspect of its design or manufacture so as to cause it to present a mechanical hazard within the meaning of section 2(s) of the Act, the requirements and banning regulation would be valid even though not all of the identified risks have been taken into account. The complicating factor in this instance is that the decision to issue playground equipment regulations was the result of a petition requesting comprehensive regulations. Therefore, a decision to issue a narrow regulation and defer action on the broader aspects must have an expressed rational basis.

The question of regulating surfaces under playground equipment may also be addressed in terms of the provisions of the FHSA itself. A surface, produced for the use of children in conjunction with playground equipment can, as in the case of any other piece of playground equipment, be banned under the FHSA, if it presents a mechanical hazard. This hazard can be identified and regulated by setting forth certain requirements and banning those surfaces not meeting such requirements. Moreover, if it could be established as necessary, playground equipment not equipped with a surface meeting certain specifications could be banned. Regulations, however, cannot, in our view, directly address the location or type of surface upon which

playground equipment must be installed since the FHSA provides for the regulation of articles distributed in interstate commerce, but does not provide for the regulation of the installation or use of such articles once they have come to rest and interstate commerce has ended.

The Consumer Product Safety Act is very similar with respect to the regulaton of products. A standard can be issued covering any aspect of a product's design, construction, or performance. Once regulated, it may become a prohibited act to engage in the distribution of the product. The regulation of end use or installation of a product is not directly provided for in the CPSA.

Under the CPSA, however, some flexibility may be provided which is not present under the FHSA. The CPSA defines the term "manufacture, produce, or assemble" a product (section 3(a)(8)). Further, the Act declares it to be unlawful to manufacture a consumer product not in compliance with an applicable consumer product safety standard (section 19(a)(1)). Therefore, an argument could be made that a standard which included a requirement that playground equipment be assembled on a particular type of surface would be violated if a noncomplying surface was used. Such a regulation, however, assumes that in the case of playground equipment, installation is part of the assembly of the product. In our view such a regulatory approach would be difficult to defend in the courts unless the surface itself was actually part of the product, and not merely a grassy area or school yard where the equipment happened to be installed.

Our recommendation in the matter would depend upon the type of surface ultimately decided upon as being best able to eliminate or reduce the risk of injury. If it is found that only a manufactured, artificial type of surface is sufficient to reduce the risk of injury, the direct approach would be to include a requirement in the standard that public playground equipment come to the end purchaser (the municipality or school district, for e.g.) with a pad meeting certain specifications. Even in this case, however, it is doubtful whether we could actually require the purchaser to use the pad under the equipment since this would require a rather extreme interpretation of the term "assembly" as it is used in the definition of "manufacture". We would have to argue that "manufacture" includes a mere putting together by the end user of a product supplied in pieces for ease of shipment. It is very likely that a court would find that the term assemble in this context means an industrial assembly, such as in the production of a lawnmower where the manufacturer might buy various components to specification and assemble them into a lawnmower without actually fabricating any of the component parts. This would be contrasted with the ultimate consumer who may have to attach ("assemble") the wheels, handle, or grasscatcher, but who certainly could not be called a "manufacturer" under the CPSA.

Aside from actually mandating that playground equipment come supplied with a particular surface, which may not be a feasible approach, the most legally sound regulatory device under either the FHSA or CPSA that presently occurs to us would be to require that each piece of playground equipment come supplied with an instruction booklet on the method of installation and the types of surfaces (both natural and manufactured) on which the equipment should be installed. In this manner the Commission would only be regulating the product itself and the end user would be taking a known risk by not following the instructions.

Mr. DINGELL. The Chair recognizes the gentleman from Ohio, Mr. Brown.

Mr. C. BROWN. I have no questions at this time.

Mr. DINGELL. Well, we express our thanks to all of you for your assistance to us. You have been very kind.

Mr. Penoyar, our staff will be in touch with you regarding the surveys that we will need to be made in the area that we have discussed. We hope they can be completed with all speed so we can have some appreciation of what the circumstances will be in this area.

Mr. PLENOYAR. We need something for authorization to proceed.

Mr. DINGELL. If you have any problem, I suspect you can have the congressional liaison call either me or my staff. If a letter is needed from me to accomplish this, I would appreciate being advised so we can send it forthwith.

Our next witness is Mr. Martin Rogol of Congress Watch.

Mr. Rogol, we regret that we have kept you waiting. If you will take your seat, we will be most pleased to receive your statement.

STATEMENT OF MARTIN H. ROGOL, ATTORNEY, PUBLIC CITIZEN CONGRESS WATCH

Mr. ROGOL. My name is Martin Rogol. I am an attorney working with Public Citizen Congress Watch. Public Citizen and other Ralph Nader associated organizations have been intimately involved in questions of energy policy and welcome the opportunity to present our views to your committee.

Considering the hour and the fact that everybody has been here all day, I will try to summarize my written statement.

Basically we look at the program in three ways. One is the goal that the President has established appropriate, that is, bringing 90 percent of all residences and public buildings up to minimum standards by 1985?

Does the program as outlined attain those goals and are the means for implementation of the program adequate and appropriate? From an energy conservation perspective, it is clear that one should try to eliminate waste in buildings.

According to the national energy plan, 20 pecent of our energy is used in buildings. We waste, according to the same national energy plan, approximately half of what we use. So significant savings in energy can be attained by the weatherization program.

So the goal is clearly appropriate. The question is, does the program attain the goal? It is hard to determine whether a voluntary program based on financial incentives will in fact bring us to 90 percent penetration within the residential home market.

The various planners that must take these numbers into account will be left with a real dilemma. For example, if a utility comes to a State utility commission and says it is their analysis that growth in consumption will occur at 5 percent per year, there is almost no way they can compute conservation through weatherization or any other program.

We face the possibility with a voluntary program like this that the utility will continue to construct generating plants at the same time people are conserving. Therefore we will wind up in a situation where our reserve margin will be greater than they are today and far in excess of FPC recommendations.

There should be some way of developing this program so that the investment in conservation versus the investment in supply collide. We can then have the specific materials and numbers to determine which is the appropriate investment and allow the various planners and regulatory bodies to have accurate information.

The question of implementation is the most difficult in looking at this language. I think we are faced with at best an outline and we are asked to essentially take on faith that the Administrator will set the appropriate guidelines and that the State regulatory commissions will in fact be able to properly monitor and develop the programs which will then be overseen by the Administrator.

We included on page 2 of the testimony a table which is a little out of date, but indicative of the problem. Yesterday while writing this testimony it was difficult to call these commissions and get updates.

In Delaware there were seven full-time staff people. If this committee wants the State utility commissions to implement this weatherization program, there is going to have to be some effort to develop a staffing appropriations program to ensure that they will be in a position to properly monitor.

To ensure proper regulation, and it has been addressed in the bill submitted by Mr. Dingell regarding electric utility rate reform, is the question of when a local utility commission designs such a program, what is the best way to involve citizens in that decisionmaking process.

The suggestion in H.R. 5841 is funding of intervenors. In a program like this which has massive impact on residential homeowners, it is very important to have intervenor funding for citizens to participate in the rulemaking that will be necessary to properly design this program.

There are a couple of suggestions on language changes. I won't go into those in detail, but I would like to raise one question. I fear that due to the deadlines that were imposed by the administration on the energy planners that they only came up with an outline, and the deadlines imposed by the House on this committee to go through that outline are even tighter. So that there is a real question, if the kind of analysis that is necessary and the kind of specifics required to outline what the Administrator should do, whether the program will be properly designed.

We would also encourage serious consideration of a mandatory program. If the goal of the President is that we have 90 percent penetration into the insulation market, without a mandatory program it will be almost impossible to attain that level.

Mr. DINGELL. I read your statement with a great deal of interest earlier in the day. I was curious about how you would achieve that mandatory program?

Mr. ROGOL. There is a program that has been discussed in California. That is requiring at point of sale of the home, that the house can only be sold if it is properly weatherized and that there would be penalties assessed against the homeowner trying to sell the home if in fact the home was not properly insulated.

There is another component to that issue, that is, in terms of insuring in a voluntary program whether you will attain all the standards. If I as a homeowner go to the bank for the loan, there is no assurance that I will have five inches, eight inches, twelve inches of insulation on my home.

Mr. DINGELL. Are you suggesting this should be done as part of the inspection program of the assessment or appraisal of the home by VA, FHA, the bank, the savings and loan association, the State or Federal Government, or any of the different regulatory processes and build that into that regulatory structure? Is that what you are suggesting?

Mr. ROGOL. I don't know if you have to set up a bureaucracy to do it. I think you can require that the seller warrant that this has

occurred which would provide remedies for the purchaser if the standards had not been attained.

So you can do it through the normal courtroom procedure without establishing additional regulatory processes.

Mr. DINGELL. I think if we are going to get to questions with a vote on the floor, we had better insert the rest of your statement in the record.

Without objection, your full statement will appear in the record as if given and the Chair will accept questions at this time.

[Mr. Rogol's prepared statement follows:]

STATEMENT BY MARTIN H. ROGOL ON WEATHERIZATION POLICY

Mr. Chairman, Members of the Subcommittee, my name is Martin Rogol and I am an attorney working with Public Citizen Congress Watch. Public Citizen and other Ralph Nader associated organizations have been intimately involved in questions of energy policy and welcome the opportunity to present our views to your committee.

To properly analyze the efficacy of a program one must determine:

a. Is the goal appropriate?
b. Does the program attain the goal?
c. Are the means for implementing the program adequate and appropriate?

GOAL

The President's goal, according to the National Energy Plan prepared by the Executive Office of the President, Energy Policy and Planning, is to "bring 90 percent of all residences and many public and other buildings up to minimum Federal standards by 1985." The Plan points out that some of the buildings "needlessly waste as much as half of [that] energy" and that the "potential savings from improving the energy efficiency of the nation's stock of buildings is enormous."

There is almost no debate that we are energy wasters, that we waste around half of what we consume. A program to eliminate waste in 74 million residential units in the country is not only a proper goal, but a mandatory one.

DOES THE PROGRAM ATTAIN THE GOAL

The next question, however, is more difficult—does the program attain the goal? When designing the program, Administration planners made a decision to propose a voluntary rather than a mandatory program. Yet there is no evidence offered that 90% of the homes will be weatherized under a voluntary program.

We would prefer a mandatory approach, whereby the sale of an unweatherized house would be subject to some penalty. Without a mandatory approach long range supply planning is almost impossible. For example, assume an electric utility is analyzing whether they need to construct additional generating units. They look at traditional methods for determining load growth and arrive at their judgment as to the annual increase in energy consumption. However, if they attempt to inject data for additional "supply" from conservation, there are no hard numbers. Many, allegedly to avoid the possibility of brownouts, will urge construction assuming little, if any, conservation, since they cannot quantify it. If the voluntary program is successful, then the utility will be tremendously overbuilt, attaining far more than presently high reserve margin of 35-40% (the FPC recommends 15-20%).

IMPLEMENTATION

To implement either a mandatory or voluntary program will be difficult. The President's program asks Congress and the public to put their faith in the Administrator of FEA to develop a program with few specific statutory guidelines. Since everybody receives utility services, either electric or gas or both, the greatest penetration into the residential sector will occur through utility involvement. However, utilities are also local monopolies. They were granted monopoly status by either the local or state government because they are what are known as "natural monopolies." Utilities became "natural monopolies" because they are the most capital intensive industry in the country. Last year they accounted for a third of all capital raised in the financial markets. Because it would be so expensive and wasteful to duplicate, for example, local power line distribution systems, utilities

were granted monopoly status. The rationale for granting monopoly status dos not extend, however, to areas where competition already exists, where small businesspeople are providing important services, such as the local contractor building and repairing homes.

The Administrator is required under the proposed legislation to approve only those plans that "contain[s] an adequate program for preventing unfair, deceptive, or anticompetitive acts or practices affecting commerce." Are state public utilities equipped to undertake this additional task? The experience of the last fewyears would raise questions regarding the state regulators' ability to accept additional responsibilities. The following table provides some examples of regulatory staffing problems.

TABLE I

| State | Number of Employees [1] | Electric Co. revenues (as of 1974)[2] | Telephone Co. revenues (as of 12/31/74)[3] |
|---|---|---|---|
| ALABAMA | 57 | 489,454,686 | 335,500,000 |
| ARKANSAS | 47 | 300,517,639[4] | 151,000,000 |
| CALIFORNIA | 854.5 | 2,810,058,928 | 2,894,200,000 |
| COLORADO | 85 | 234,434,056 | 379,200,000 |
| DELAWARE | 7 | 172,315,571 | 49,696,000 |
| INDIANA | 80 | 1,100,000,000 | 365,000,000 |
| NEW MEXICO | 17 | 73,597,000 | 124,500,000 |
| RHODE ISLAND | 20 | 185,208,024 | 117,000,000 |

[1] Figures obtained from Proceedings Eighty-seventh Annual Convention and Regulatory Symposium, National Association of Regulatory Utility Commissioners, November 3-6, 1975.

[2] Statistics of Privately Owned Electric Utilities in the United States, 1974, prepared by Federal Power Commission.

[3] "Economic Data of Regulation--Telephones," prepared by the staff of the National Association of Regulatory Utility Commissioners, July 12, 1976.

[4] This does not include the Southwestern Electric Power Company, the Okalhoma Gas and Electric Company and the Arkansas-Missouri Power Company which services Arkansas and other jurisdictions.

### Citizen Participation

Funds for citizen participation should be provided at the state level to assure proper design of the weatherization program by the state regulatory agency.

In the utility legislation offered by Chairman Dingell, there are provisions for insuring citizen access to rate proceedings. That provision should also be included in the weatherization section for purpose of those local rulemaking proceedings on the weatherization programs.

### Suggested Language Changes

There are certain problems with statutory language, a few suggestions for improvement and some questions. If a homeowner uses the utility to finance the improvements, do they obtain the tax credit and the opportunity to write off the interest charged by the utility?

The definition for "residential consumer" may present problems for renters of one family homes. Under the definition, if the utility sells the renter directly, the renter would seem to be weatherizing the house for the owner.

There are appropriations for the Administrator to implement the program. Will there also be appropriations for the state regulatory authorities?

Under the procedures for providing the residential consumer with information, the utility provides a list of the local financial institutions providing weatherization loans. It would be most helpful to consumers to also receive the listing of the interest rates charged by each of those financial institutions.

### Conclusion

The goals are obviously laudatory. However, due to rigid deadlines imposed on Administration planners by the President and similar deadlines imposed on this committee by the Speaker, we are all forced to take the outline of a National Energy Plan, and assume the details will be acceptably worked out by the regulatory officials. Management efficiency is important and more is required in government. However, management efficiency should not mean that the details of the energy program receive only a cursory overview, especially since the Administration planners have not thoroughly thought out the details.

We would encourage more specific procedural and substantive standards to guide the FEA Administrator. Combined with funding for state regulatory authorities and improved public participation, the weatherization program may prove workable.

This Committee must also determine whether the voluntary program will attain the goal of 90% weatherization by 1985, and at the same time providing sufficient data to planners at construction facilities.

Thank you.

Mr. Dingell. Mr. Brown?

Mr. C. Brown. Mr. Chairman, I have no questions.

Mr. Dingell. Mrs. Harrison?

Mrs. Harrison. I have no questions.

Mr. Dingell. Mr. Hunt?

Mr. Hunt. I have no questions.

Mr. Dingell. If you have suggestions for the construction of the mandatory program, either using the warranty mechanism powers or using the financing mechanism powers, your submission of that to the committee will be very much appreciated.

Mr. Rogol. I will be happy to submit it.

[The material requested had not been received at the time the record was closed.]

Mr. Dingell. There is a vote on the floor. It is with considerable regret that it is necessary for us to be over there. If there is no further business to come before the committee at this time, the subcommittee will stand in adjournment until 10 a.m. tomorrow.

[Whereupon, at 4:10 p.m., the subcommittee adjourned, to reconvene at 10 a.m., Tuesday, May 10, 1977.]

# NATIONAL ENERGY ACT

TUESDAY, MAY 10, 1977

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY AND POWER,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
*Washington, D.C.*

The subcommittee met at 10 a.m., pursuant to notice, in room 2322, Rayburn House Office Building, Hon. John D. Dingell, chairman, presiding.

Mr. DINGELL. The subcommittee will come to order.

This is a continuation of the hearings of the subcommittee on H.R. 6831, with particular emphasis on title I, part A, subpart 1, the Utility Program.

Our first witness will be Mr. Robert McConnon, Deputy Assistant Secretary for Employment and Training, the Department of Labor.

Mr. McConnon, we are pleased that you are here. If you will identify yourself and your associate for the purposes of the record, we will be happy to receive your testimony.

I should indicate to you that we are particularly concerned about the impacts of this program with regard to insulation on employment, labor supplies, labor markets and things of that kind. There appear in the views of some members of the committee to be a possibility of market distortion, labor supply distortions and price distortions flowing from the program. We would like to have your comment on that.

## STATEMENT OF ROBERT McCONNON, DEPUTY ASSISTANT SECRETARY FOR EMPLOYMENT AND TRAINING, DEPARTMENT OF LABOR

Mr. MCCONNON. Mr. Chairman, I would like to apologize for the fact that we were not represented here yesterday. It was not because we were not interested in this problem. We did have a communications gap and we hope you will accept our apologies.

The program that we are associated with primarily in the weatherization and energy conservation program comes under the Comprehensive Employment and Training Act and as such is a decentralized delivery system of manpower services. The programs that we operate in this area are generally those that relate to low income housing, homes owned and rented by poor people who are not able, through lack of resources, to take care of their own problems in this area.

Most of the programs that are operated through the Comprehensive Employment and Training Act program are jointly operated through our own prime sponsors who are units of State and local government, and community action agencies funded through CETA, with the CETA funds being used for resources, supplies, equipment, et cetera, and with us providing through the CETA prime sponsors the labor force to carry out the projects.

In these areas we don't feel that there is any labor distortion because it is the type of work that would not be done by the normal contracting process.

Mr. DINGELL. With regard to programs under the jurisdiction of your agency or in general?

Mr. MCCONNON. No, under our programs. I can't respond to beyond that in terms of the CETA program. We are dealing with a part of the market that would not be reached by the normal contractor procedure.

So the people involved here, the workers, are all long-term unemployed and they are all unskilled in this area. We do have a minimal impact on the skilled craftsmen because we do use them for supervisory capability to run the projects. But I don't feel that we have any major impact on an area that in any way competes with the private sector.

Mr. DINGELL. Can you advise us as to whether or not you have in the Department of Labor the ability to make a statistical study of the impact of this program with regard to employment, referring not just to the CETA program but to the other portions of the program which would be included under title 1 of the legislation before us? You do have your Bureau of Labor Statistics?

Mr. MCCONNON. I would say that, yes, we could make an impact study on that part of the program both under CETA and outside of CETA.

Mr. DINGELL. I think it would be extremely helpful if you did so so we could get an appreciation of the impacts in terms of employment and the Chair would request you do so.

Can you give us an idea of how long it would take you to complete such a study?

Mr. MCCONNON. On the CETA side, most of the expansion in the Comprehensive Employment and Training Act side will occur during the next 18-month period. This is the time period for the allocation of resources and the gearing up of the new program which will expand public service jobs from 240,000 to 640,000 under title VI within the next 18-month period.

We are at the present time making a survey of all the prime sponsor activities to determine how many projects would be in the energy conservation or weatherization and insulation area.

Mr. DINGELL. When you referred to title VI, were you referring to title VI of the legislation before us or CETA?

Mr. MCCONNON. No, CETA.

Mr. DINGELL. Would you want to address yourself briefly to that and describe that legislation to us for the purposes of the record so we could have an appreciation of how that would function, please?

Mr. MCCONNON. Yes. Under the President's stimulus package there is a very marked expansion of activity under the Comprehen-

sive Employment and Training Act and almost all the titles will be expanded, including a new youth act which is coming in in a matter of a few weeks. The large portion of the expansion at the moment will be under title VI of the Comprehensive Employment and Training Act which will double the public service job opportunities.

In our past experience under CETA we had the problem of substitution of jobs, in other words, under title II there was a degree of substitution of existing jobs for public service jobs. Under title VI we went to a new project design which calls for units of State and local government to develop a project approach to any type of activity they wished to do for the long-term unemployed.

The energy projects seemed to fit very well in this area and we anticipate that a number of the prime sponsors will have energy projects here.

What we are talking about is providing job opportunities for the long-term unemployed, those that have 15 weeks or more of unemployment, and those whose income is not more than 70 percent of poverty levels that have been published by the Office of Management and Budget.

This program, we think, will definitely have a marked increase this year in the areas of winterization, weatherization, and energy conservation.

Our experience up to this time is that many of our prime sponsors have run individual pilot projects and they are now aware of how these can be structured. We have also delivered to them model programs of how they could construct such a program in their area. We have used three model designs that we have had in operation. The principal one that we like the best is the one that operated in the State of Pennsylvania where they used long-term unemployed and augmented the teams with supervisory staff or journeymen construction workers in the field. They were able to not only train but provide meaningful job opportunities for the long-term unemployed.

Mr. DINGELL. The Chair will recognize members of the staff for purposes of asking questions.

The Chair recognizes Mrs. Harrison.

Mrs. HARRISON. Thank you, Mr. Chairman.

With regard to the utility program in the bill before us, would training programs for the unemployed which you are speaking of here under title VI, could they be provided?

Mr. MCCONNON. Yes. It depends entirely on who is to be served. In other words, we are very careful that the projects are structured in such a way that they do not compete in the private sector but they try to serve a proportion of the need that is not covered by the private sector.

In other words, by changing our regulations under CETA, we are now able to serve poor people who are renting as opposed to owning their home. In doing this we are very careful that there is nothing that accrues to the owner of the property.

So a project of the kind that you are talking about could be done, but we would be very careful that there would be no profit involved here to the owner of the property.

Mrs. HARRISON. We are concerned with the quality of installation work done and possible inspection afterwards. That is the reason I inquired about training.

Mr. MCCONNON. Yes, we would be, too.

Mrs. HARRISON. With regard to the information which Chairman Dingell requested, I understand that the Department of Labor has been working on a computerization of manpower needs across the Nation.

Mr. MCCONNON. Yes.

Mrs. HARRISON. Would this be useful in implementing this public utility program for insulation? And perhaps pinpointing where there are job opportunities and where training is needed?

Mr. MCCONNON. I couldn't say that at this time, but I would check that out for you. I really couldn't say.

[The following statement was received for the record:]

We assume the staff counsel is referring to the computerized job bank/job matching systems operated by our State employment service network.

The program of computerization of manpower needs across the country was first established in 1968. At that time, a program using automated data processing technology to list job orders and match workers and jobs was set up in Baltimore, Maryland, and now comprises some 200 separate job banks in all States except Montana.

The job banks provide a daily computerized listing of all job openings on file with the employment service in a given area. The listings are made available to inteviewers and counselors in local Employment Service offices, as well as staff in cooperating community agencies, including prime sponsors. Through the job bank system, a single job order can be exposed to a much larger pool of potential applicants and, conversely, each applicant may have a broader range of job possibilities than was possible under the manual system. Many of these job banks also have access to regional and national updates of selected jobs in demand because local skills are unavailable.

Computerized job listing led to the development of the Job Information Service (JIS) which now operates in approximately 1,000 of the employment service offices. Under the JIS, applicants may consult job bank books or microfiche viewers to make their own initial choice of job openings.

For the past several years, we have experimented with a more sophisticated computerized job matching system. We are now moving into the operational phase. It is expected that about 100 offices in the larger Standard Metropolitan Statistical Areas will have such capabilities by the end of this fiscal year.

The Job Bank, JIS, and Job Matching Systems may be used by employers and employees in private sector insulation and weatherization activities, without cost, to match up jobs available with job applicants, on a daily basis. Public service employees who have acquired skills in weatherization techniques can be listed with the State Employment Service as available for hiring by private employers including utility companies.

Mr. DINGELL. Could you as a kindness to us do several things, sir?

One, check this out and ascertain the proper response to the question just raised by Mrs. Harrison.

The second thing would be to advise us of the capabilities of the system to which we are directing our attention in terms of providing us with information as to the labor impacts of the matter before us.

Three, to inquire into how that information can be utilized to enable us to have the sections of the bill on which this subcomittee works at this time better function and better mesh with the programs under your department.

Last of all, apprise us of any changes in the legislation which we have before us which in the view of the Labor Department would

better make the legislation before us mesh with the programs which you have under your administration with CETA and some of your other job training programs.

The Chair expressly requests that this information not be cleared through the Office of Management and Budget but be made directly available to the committee.

[The following information was received for the record:]

With regard to any suggested changes in the energy legislation which might facilitate meshing with our Comprehensive Employment and Training Act legislation and programs, we do not, at this time, have any specific suggestions to offer. As noted elsewhere, we believe that our CETA legislation has the flexibility to fit all with the proposed provisions of the energy legislation, especially in the energy conservation area. We fully expect the utility companies and others who may be involved in the energy conservation activities to take advantage of the recruitment, training and placement resources of our State employment services and State and local CETA prime sponsors.

The employment impact studies which we will undertake will not be able to provide information in time for the committee's deliberations. However, we do not anticipate any difficulty in meshing current legislation in that in the proposed energy bill.

Mrs. Harrison.

Mrs. HARRISON. Thank you, Mr. Chairman. That is all I have.

Mr. DINGELL. The Chair recognizes Mr. Hunt for questions.

Mr. HUNT. Thank you, Mr. Chairman.

You indicate that you have had three model programs running as far as weatherization, am I correct?

Mr. MCCONNON. We have had a number of programs operating. We picked out three where we thought the model was fairly good and supportable and we reproduced those and distributed copies of them to our 440 prime sponsors.

Mr. HUNT. Do you have any estimates at this point as to what the costs of training an individual for the installation of insulation would be?

Mr. MCCONNON. It is minimal, as near as we can tell at the moment.

[The following statement was received for the record:]

The State of Wisconsin used CETA funds to assist the West Central Wisconsin Community Action Agency in implementing an energy program that conserves fuel, reduces utility bills for low-income persons, and provides jobs for the unemployed. The program weatherizes homes and identifies rental homes needing better insulation. Funds from CETA made it possible to winterize 324 homes in a month at an average cost per home of $184, of which $77 was for materials and $107 for labor. It is estimated that the cost of fuel for each winterized home will be over $100 less each year. These cost figures seem modest when it is considered that Wisconsin experiences severe winters and quality of workmanship and materials must be of high levels. The costs of training individuals to perform this work are included in the average $107 per home, although it is not possible with the data available to make a determination of the ratio of training costs to performance costs; obviously the cost is modest.

Training time and costs vary with the tasks involved in the weatherization job. Where relatively simple tasks in insulation installation, calking, weatherstripping, and storm window installation are involved, training time and costs are minimal. If you consider additional tasks such as crew supervision or diagnostic analysis of the structure to determine specific needs and costs for accomplishing the retrofitting job, then skill levels are higher and will require more training time.

The possibility of recapturing costs exists in the fact that a proportion of those trained under public sector auspices will move into similar work in the private sector, some, undoubtedly, at the supervisory level. Title VI of CETA (Public Service Employment) requires that enrollees be fitted for private sector work and aided in

securing such work at the earliest opportunity. The return to the Federal Government of tax revenues from those moving to the private sector will help offset the cost of future enrollees in the weatherization program.

Mr. HUNT. There is the possibility that over a 6-year period with roughly 49 million homes to be reviewed, inspected and perhaps half of them to require retrofitting. We are talking in the neighborhood of perhaps 200,000 jobs for a 6-year period over the entire Nation. These are very, very loose figures and accept them as they are.

But even at that, if one is to train 200,000 people or even a portion of that number, the minimal expense could have a major impact on your budget relative to training, I would believe.

Mr. MCCONNON. The budget we have in terms of CETA is public service employment resources. Therefore, the wages are paid by the government. We find that this is by far the major portion of the action.

In terms of the actual training, the skills involved here are relatively minimal. However, you do have to have qualified people as supervisors in order to see that the work is installed properly and can pass any inspections.

So we will use skilled craftsmen as supervisory personnel.

Mr. HUNT. All right, but there is some expense involved in the training.

Mr. MCCONNON. It is on-the-job training. It is not done prior to it. You form a team and you go out and you start the action. It is not a long-term training period. It might be three or four days or a week, depending on what you are doing. This, of course, would vary with what you are installing. If you are caulking windows or putting in storm windows or insulation, the training is minimal. If it was a matter of retrofitting furnaces or whatever, this would be different.

Mr. HUNT. That is one of the points I was driving at. We were told that the skill requirements relative to retrofitting furnaces may require the capability to not only be licensed as far as handling the furnaces, but also to know electric wiring.

Mr. MCCONNON. We have had very little experience in that area. It has mostly been in storm windows and caulking windows.

Mr. HUNT. The retrofitting of residential homes as described in 101 and 109 is only one aspect of the insulation program associated with the entire bill. So the manpower requirements for that on a national basis have to be supplemented with the manpower requirements associated with hospitals, schools and eleemosynary institutions.

Mr. MCCONNON. We will have much more experience than we have now in about six months. We have limited experience at this time.

Mr. HUNT. Would it be possible for you to supply the committee with a range or envelope of incremental budgets that are required to implement this program on the schedule indicated by the President?

I would also appreciate it if you would also supply an estimate of the productivity per man-day or some figure of merit so we can make the trade-off on a cost-benefit basis of this training. I would greatly appreciate that.

Mr. McCONNON. Yes.

[The following statement was received for the record:]

The proposed program of weatherization of homes for low income and elderly persons to be conducted as part of the public service provisions of the Comprehensive Employment and Training Act (CETA) will be funded from regular CETA appropriations and funds provided in the Economic Stimulus Appropriations Act signed by the President on May 13. A total of approximately $6 billion will be available for public service employment in FY 1978.

The ratio of PSE funds to be allocated to weatherization projects will depend upon several variables. These include: (1) local sponsor receptivity; (2) how soon the program can be moved into operation; (3) the availability of supervisory personnel for work crews and as trainers; (4) availability of materials and supplies; and (5) the development of information on the market for weatherization services. The Employment and Training Administration is moving rapidly to tie in the weatherization program with the expansion of PSE. We are now developing materials and guidelines for use by prime sponsors in setting up weatherization projects and are encouraging them to give this priority attention.

Additionally, the CETA system has great flexibility to respond to the increased training demands caused by title I of H.R. 6831, the National Energy Act. Specifically, local on-the-job training programs can be established through CETA to assist public utilities in fulfilling new responsibilities in the weatherization area as well as programs to meet the labor demands arising in the manufacture of the supplies and equipment needed for these programs. At this time, it is not possible to project with any degree of accuracy potential on-the-job training costs. These will depend heavily on the types of training which may be undertaken.

As to the estimate of productivity per man-day, our limited experience has been that for an average house requiring some calking, weatherstripping, storm window installation and/or roof insulation, approximately one to one and a half houses can be done per day by a four person crew, including a skilled supervisor.

Mr. DINGELL. Mr. McConnon, we thank you and your associate.

Mr. McCONNON. This is Melvin Goldberg on the Department's energy staff.

Mr. DINGELL. Mr. Goldberg, we are pleased that you are with us. The Chair would appreciate if the information requested could be made available for the record within seven days because we are functioning under enormously constricted time as you probably are aware.

Could you please, Mr. McConnon, also give us, if you find it possible, the particular statement of H.R. 6831 on the labor market? You have indicated that you did not think it would have much impact on the CETA program, but I am curious about the impacts on the labor market. I am also concerned about its impact in particular areas of industry, in particular geographical areas of the country and in particular segments of the labor market such as unskilled labor, supervisory labor, employment and perhaps the impact of this legislation on other programs.

If you can, give us some appreciation of increase, for example, in Social Security costs or Social Security benefits and payments and that sort of thing. I think this would be very helpful to us. In addition, I am interested in whether it will have an impact on welfare or something of that sort.

Mr. McConnon, we have laid much upon you. We thank you for your assistance to the committee. If you will be in touch with Mrs. Harrison with regard to the information, we will appreciate it.

[The following material was received for the record:]

As requested earlier, we are now developing specifications for a study of the potential employment impact steeming from the proposed energy legislation. One consideration will be the impacts, both plus and minus, on specific industries. Such a study will take a considerable period of time to complete, about a year. In the interim, the Subcommittee may find of some value the attached data on the size, distribution, employment, and production trends of industries which manufacture some type of insulating materials (either fiberglass, woods, glass or other materials). A majority of the establishments are located in the Northeast and North Central States.

With respect to the Subcommittee question on Social Security costs and benefits, we are not in a position to respond with any specific projections. With regard to possible impact on our welfare rolls, we can anticipate that some of the unemployed now receiving welfare benefits will be enrolled in those PSE and OJT programs designed to provide skills and jobs in the weatherization and general energy conservation areas.

# Pressed and Blown Glass

SIC - 3229

Industry Distribution

| | Level | Percentage Distribution | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Establishments by Size | | | | | | | | |
| | Total | Total | 1-19 | 20-99 | 100 or more | | | | | |
| Number | 252 | 100.0 | 56 | 12 | 32 | | | | | |
| Jobs (Thousands) | 45.9 | 100.0 | 1 | 3 | 96 | | | | | |
| Shipments (Millions) | 1267.3 | 100.0 | 1 | 2 | 97 | | | | | |
| | | Establishments by Region | | | | | | | | |
| | Total | Total | No. East | No. Cent. | South | West | | | | |
| Number | 252 | 100.0 | 29 | 27 | 33 | 11 | | | | |
| Jobs (Thousands) | 45.9 | 100.0 | 29 | 34 | 36 | 1 | | | | |
| Shipments (Millions) | 1267.3 | 100.0 | 30 | 33 | 35 | 2 | | | | |
| | | Purchased Fuels and Electric Energy | | | | | | | | |
| | Total | Total | Natl. Gas | Dist. Ate | Residual | Other | | | | |
| Fuels (Dollars) | 94.9 | 100.0 | 46 | 10 | 4 | 40 | | | | |
| Industry Trends | | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | | | |
| Employment (Thousands) | | 57.0 | 61.2 | 61.1 | 52.9 | 54.7 | | | | |
| Product Shipments (Millions) | | 1972 | 1973 | 1974 | | | | | | |
| | | 1262.4 | 1422.6 | 1444.0 | | | | | | |

Foot note: manufacturing glass ..., N/A % of shipments

# Narrow Fabric Mills
## SIC - 2241

| Industry Distribution | Level | | Percentage Distribution | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Establishments by Size | | | | | | | |
| | Total | | Total | 1-19 | 20-99 | 100 or more | | | | |
| Number | 376 | | 100.0 | 43 | 37 | 20 | | | | |
| Jobs (Thousands) | 27.1 | | 100.0 | 5 | 26 | 69 | | | | |
| Shipments (Millions) | 566.2 | | 100.0 | 6 | 26 | 68 | | | | |
| | | | Establishments by Region | | | | | | | |
| | Total | | Total | No. East | No. Cent. | South | West | | | |
| Number | 376 | | 100.0 | 62 | 5 | 30 | 3 | | | |
| Jobs (Thousands) | 27.1 | | 100.0 | 58 | 3 | 37 | 1 | | | |
| Shipments (Millions) | 566.2 | | 100.0 | 62 | 4 | 33 | 1 | | | |
| | | | Purchased Fuels and Electric Energy | | | | | | | |
| | Total | | Total | Natl. Gas | Distillate | Residual | Other | | | |
| Fuels (Dollars) | 10.4 | | 100.0 | 7 | 11 | 7 | 76 | | | |
| Industry Trends | | | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | | |
| Employment (Thousands) | | | 29.1 | 30.2 | 29.3 | 22.7 | 26.3 | | | |
| Product Shipments (Millions) | | | 1972 | 1973 | 1974 | | | | | |
| | | | 521.5 | 596.7 | 551.9 | | | | | |
| Footnote: | Insulating | | Electric | tapes | and | bands | | N/A | % of | Shipments |

# Asphalt Felts and Coatings

SIC - 2952

Industry Distribution

| | Level | | Percentage Distribution | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Establishments by Size | | | | | |
| | Total | | Total | 1-19 | 20-99 | 100 or more | | |
| Number | 236 | | 100.0 | 40 | 35 | 25 | | |
| Jobs (Thousands) | 15.6 | | 100.0 | 5 | 26 | 69 | | |
| Shipments (Millions) | 1011.4 | | 100.0 | 6 | 25 | 69 | | |
| | | | Establishments by Region | | | | | |
| | Total | | Total | No. East | No. Cent. | South | West | |
| Number | 236 | | 100.0 | 17 | 29 | 34 | 20 | |
| Jobs (Thousands) | 15.6 | | 100.0 | 16 | 36 | 36 | 12 | |
| Shipments (Millions) | 1011.4 | | 100.0 | 17 | 34 | 34 | 13 | |
| | | | Purchased Fuels and Electric Energy | | | | | |
| | Total | | Total | Natl. Gas | Distillate | Residual | Other | |
| Fuels (Dollars) | 37.6 | | 100.0 | 33 | * | 17 | 50 | |

| Industry Trends * | | | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|---|---|
| Employment (Thousands) | | | 42.1 | 43.5 | 41.9 | 43.6 | 45.8 | |
| Product Shipments (Millions) | | | 1972 | 1973 | 1974 | | | |
| | | | 902.2 | 1058.5 | 1357.0 | | | |

Footnote: Total value of shipments less cost of purchased fuels and electric energy.

# Miscellaneous Plastic Products

SIC - 3079

## Industry Distribution

| | Level | Percentage Distribution | | | | | |
|---|---|---|---|---|---|---|---|
| | | Establishments by Size | | | | | |
| | Total | Total | 1-19 | 20-99 | 100 or more | | |
| Number | 7698 | 100.0 | 51 | 31 | 12 | | |
| Jobs (Thousands) | 341.0 | 100.0 | 8 | 32 | 60 | | |
| Shipments (Millions) | 10703.6 | 100.0 | 8 | 30 | 62 | | |
| | | Establishments by Region | | | | | |
| | Total | Total | No. East | No. Cent. | South | West | |
| Number | 7698 | 100.0 | 31 | 31 | 19 | 19 | |
| Jobs (Thousands) | 341.0 | 100.0 | 32 | 38 | 18 | 12 | |
| Shipments (Millions) | 10703.6 | 100.0 | 30 | 37 | 22 | 11 | |
| | | Purchased Fuels and Electric Energy | | | | | |
| | Total | Total | Natl. Gas | Distillate | Residual | Other | |
| Fuels (Dollars) | 364.3 | 100.0 | 19 | 6 | 8 | 76 | |
| Industry Trends | * | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
| Employment (Thousands) | | 326.9 | 342.1 | 361.2 | 378.7 | 397.2 | |
| Product Shipments (Millions) | | 1972 | 1973 | 1974 | | | |
| | | 11084.4 | 13374.2 | 15819.3 | | | |

Foot Note: Insulating formed plastic cushioning materials, N/A 9.4

# CORDAGE AND TWINE

## SIC - 2298

### Industry Distribution

| | Level | Percentage Distribution | | | |
|---|---|---|---|---|---|
| | | Establishments by Size | | | |
| | Total | Total | 1-19 | 20-99 | 100 or more |
| Number | 15.6 | 100.0 | 48 | 35 | 17 |
| Jobs (Thousands) | 9.0 | 100.0 | 7 | 26 | 67 |
| Shipments (Millions) | 191.0 | 100.0 | 7 | 29 | 64 |
| | | Establishments by Region | | | |
| | Total | Total | No. East | No. Cent. | South | West |
| Number | 15.6 | 100.0 | 40 | 14 | 36 | 10 |
| Jobs (Thousands) | 9.0 | 100.0 | 36 | 14 | 47 | 3 |
| Shipments (Millions) | 191.0 | 100.0 | 39 | 15 | 42 | 4 |
| | | Purchased Fuels and Electric Energy | | | | |
| | Total | Total | Natl. Gas | Distillate | Residual | Other |
| Fuels (Dollars) | 4.7 | 100.0 | * | 15 | 2 | 83 |

| Industry Trends | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|
| Employment (Thousands) | 9.9 | 10.1 | 10.9 | 8.9 | 8.7 | |
| Product Shipments (Millions) | 1972 | 1973 | 1974 | | | |
| | 174.7 | 209.1 | 273.4 | | | |

Foot Note: Insulating Pads, Cordage, N/A % of Shipments

MILLWORK

SIC - 2431

Industry Distribution

| | Level | Percentage Distribution | | | | | |
|---|---|---|---|---|---|---|---|
| | | Establishments by Size | | | | | |
| | Total | Total | 1-19 | 20-99 | 100 or more | | |
| Number | 2434 | 100.0 | 70 | 24 | 6 | | |
| Jobs (Thousands) | 70.5 | 100.0 | 15 | 35 | 50 | | |
| Shipments (Millions) | 2426.8 | 100.0 | 13 | 39 | 48 | | |
| | | Establishments by Region | | | | | |
| | Total | Total | No. East | No. Cent. | South | West | |
| Number | 2434 | 100.0 | 20 | 22 | 32 | 26 | |
| Jobs (Thousands) | 70.5 | 100.0 | 13 | 31 | 29 | 27 | |
| Shipments (Millions) | 2426.8 | 100.0 | 12 | 30 | 27 | 31 | |
| | | Purchased Fuels and Electric Energy | | | | | |
| | Total | Total | Natl. Gas | Dist. Lute | Residual | Other | |
| Fuels (Dollars) | 30.3 | 100.0 | 13 | 3 | 1 | 83 | |

| Industry Trends | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|
| Employment (Thousands) | 86.2 | 81.1 | 82.5 | 78.0 | 91.6 | |
| Product Shipments (Millions) | 1972 | 1973 | 1974 | | | |
| | 2229.7 | 2566.8 | 2777.0 | | | |

Foot note: wooden storm cornices and doors, 2% of total shipments

# Wood Products, N.E.C.

SIC - 2499

| Industry Distribution | Level | Percentage Distribution | | | | | |
|---|---|---|---|---|---|---|---|
| | | Establishments by Size | | | | | |
| | Total | Total | 1-19 | 20-99 | 100 or more | | |
| Number | 3132 | 100.0 | 77 | 17 | 4 | | |
| Jobs (Thousands) | 63.0 | 100.0 | 20 | 36 | 44 | | |
| Shipments (Millions) | 1517.4 | 100.0 | 20 | 32 | 48 | | |
| | | Establishments by Region | | | | | |
| | Total | Total | No. East | No. Cent. | South | West | |
| Number | 3132 | 100.0 | 29 | 28 | 26 | 17 | |
| Jobs (Thousands) | 63.0 | 100.0 | 27 | 29 | 30 | 14 | |
| Shipments (Millions) | 1517.4 | 100.0 | 24 | 30 | 39 | 7 | |
| | | Purchased Fuels and Electric Energy | | | | | |
| | Total | Total | Natl. Gas | Dist. Iate | Residual | Other | |
| Fuels (Dollars) | 62.3 | 100.0 | * | 16 | 6 | 78 | |
| Industry Trends | x | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
| Employment (Thousands) | | 93.4 | 99.3 | 101.3 | 88.4 | 95.1 | |
| Product Shipments (Millions) | | 1972 | 1973 | 1974 | | | |
| | | 321.9 | 343.4 | 412.7 | | | |

Foot note: manufacturing materials, costs, 1% of shipments

# PRESSED AND MOLDED PULP GOODS

## SIC - 2646

| Industry Distribution | Level | Percentage Distribution | | | | | |
|---|---|---|---|---|---|---|---|
| | | Establishments by Size | | | | | |
| | Total | Total | 1-19 | 20-99 | 100 or more | | |
| Number | 49 | 100.0 | 22 | 45 | 33 | | |
| Jobs (Thousands) | 6.1 | 100.0 | * | 18 | 82 | | |
| Shipments (Millions) | 162.8 | 100.0 | * | 20 | 80 | | |
| | | Establishments by Region | | | | | |
| | Total | Total | No. East | No. Cent. | South | West | |
| Number | 49 | 100.0 | 31 | 27 | 22 | 20 | |
| Jobs (Thousands) | 6.1 | 100.0 | 24 | 26 | 14 | 16 | |
| Shipments (Millions) | 162.8 | 100.0 | 45 | 21 | 14 | 20 | |
| | | Purchased Fuels and Electric Energy | | | | | |
| | Total | Total | Natl. Gas | Distillate | Residual | Other | |
| Fuels (Dollars) | 16.0 | 100.0 | 14 | 5 | * | 81 | |
| Industry Trends | | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
| Employment (Thousands) | | N/A | N/A | N/A | 41.5 | 51.1 | Z |
| Product Shipments (Millions) | | 1972 | 1973 | 1974 | | | |
| | | 161.6 | 184.6 | 216.2 | | | |

Foot note: Fiber Pipe and Fittings, N/A % of shipments

# Converted Paper Products, N.E.C.

SIC - 2649

| Industry Distribution | Level | Percentage Distribution | | | | | |
|---|---|---|---|---|---|---|---|
| | | Establishments by Size | | | | | |
| | Total | Total | 1-19 | 20-99 | 100 or more | | |
| Number | 305 | 100.0 | 41 | 47 | 12 | | |
| Jobs (Thousands) | 18.0 | 100.0 | 7 | 36 | 51 | | |
| Shipments (Millions) | 626.7 | 100.0 | 8 | 32 | 60 | | |
| | | Establishments by Region | | | | | |
| | Total | Total | No. East | No. Cent. | South | West | |
| Number | 305 | 100.0 | 52 | 24 | 12 | 12 | |
| Jobs (Thousands) | 18.0 | 100.0 | 43 | 25 | 25 | 7 | |
| Shipments (Millions) | 626.7 | 100.0 | 41 | 23 | 28 | 8 | |
| | | Purchased Fuels and Electric Energy | | | | | |
| | Total | Total | Natl. Gas | Dist. Iate | Residual | Other | |
| Fuels (Dollars) | 11.2 | 100.0 | 14 | 7 | * | 79 | |
| Industry Trends * | | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
| Employment (Thousands) | | N/A | N/A | N/A | 415 | 511 | |
| Product Shipments (Millions) | | 1972 | 1973 | 1974 | | | |
| | | 661.8 | 938.2 | 1071.3 | | | |

Foot note: Insulating batts, fills and blankets (1972), N/A % of shipments to

# Adhesives and Sealants

SIC - 2891

| Industry Distribution | Level | Percentage Distribution | | | | | |
|---|---|---|---|---|---|---|---|
| | | Establishments by Size | | | | | |
| | Total | Total | 1-19 | 20-99 | 100 and over | | |
| Number | 463 | 100.0 | 60 | 33 | 7 | | |
| Jobs (Thousands) | 14.9 | 100.0 | 13 | 47 | 40 | | |
| Shipments (Millions) | 928.0 | 100.0 | 17 | 48 | 35 | | |
| | | Establishments by Region | | | | | |
| | Total | Total | No. East | No. Cent. | South | West | |
| Number | 463 | 100.0 | 33 | 32 | 17 | 16 | |
| Jobs (Thousands) | 14.9 | 100.0 | 35 | 38 | 15 | 12 | |
| Shipments (Millions) | 928.0 | 100.0 | 21 | 35 | 19 | 17 | |
| | | Purchased Fuels and Electric Energy | | | | | |
| | Total | Total | Nat'l Gas | Distillate | Residual | Other | |
| Fuels (Dollars) | 16.1 | 100.0 | * | * | * | 100 | |
| Industry Trends | xx | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
| Employment (Thousands) | | 61.9 | 62.4 | 64.2 | 59.7 | 622 | |
| Product Shipments (Millions) | | 1972 | 1973 | 1974 | | | |
| | | 954.2 | 1161.8 | 1493.9 | | | |

Foot note: Pipe sealing compounds, 13% of shipments

# Building Paper and Board Mills

## SIC - 2661

| Industry Distribution | Level | | Percentage Distribution | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Establishments by Size | | | | | |
| | Total | | Total | 1-19 | 20-99 | 100 or more | | |
| Number | 92 | | 100.0 | 20 | 52 | 28 | | |
| Jobs (Thousands) | 11.6 | | 100.0 | 1 | 20 | 79 | | |
| Shipments (Millions) | 456.2 | | 100.0 | 1 | 15 | 84 | | |
| | | | Establishments by Region | | | | | |
| | Total | | Total | No. East | No. Cent. | South | West | |
| Number | 92 | | 100.0 | 20 | 32 | 30 | 18 | |
| Jobs (Thousands) | 11.6 | | 100.0 | 22 | 31 | 40 | 7 | |
| Shipments (Millions) | 456.2 | | 100.0 | 22 | 32 | 38 | 8 | |
| | | | Purchased Fuels and Electric Energy | | | | | |
| | Total | | Total | Natl. Gas | Distillate | Residual | Other | |
| Fuels (Dollars) | 59.5 | | 100.0 | 26 | 6 | 18 | 50 | |
| Industry Trends | | | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
| Employment (Thousands) | | | 207.0 | 207.2 | 206.4 | 191.8 | 199.4 | |
| Product Shipments (Millions) | | | 1972 | 1973 | 1974 | | | |
| | | | 491.9 | 444.1 | 468.1 | | | |

Foot note: Insulating board, 55% of shipments

Felt Goods, (except woven Felts and Hats)

SIC - 2291

Industry Distribution

| | Level | Percentage Distribution | | | | | |
|---|---|---|---|---|---|---|---|
| | | Establishments by Size | | | | | |
| | Total | Total | 1-19 | 20-99 | 100 or more | | |
| Number | 47 | 100.0 | 36 | 24 | 39 | | |
| Jobs (Thousands) | 5.0 | 100.0 | 2 | 18 | 80 | | |
| Shipments (Millions) | 146.5 | 100.0 | 3 | 17 | 80 | | |
| | | Establishments by Region | | | | | |
| | Total | Total | No. East | No. Cent. | South | West | |
| Number | 47 | 100.0 | 51 | 15 | 26 | | |
| Jobs (Thousands) | 5.0 | 100.0 | 54 | * | * | | |
| Shipments (Millions) | 146.5 | 100.0 | 57 | * | * | | |
| | | Purchased Fuels and Electric Energy | | | | | |
| | Total | Total | Natl. Gas | Distillate | Residual | Other | |
| Fuels (Dollars) | 2.2 | 100.0 | * | * | * | 100 | |
| Industry Trends * | | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
| Employment (Thousands) | | N/A | N/A | N/A | 12.8 | 15.7 | ← |
| Product Shipments (Millions) | | 1972 | 1973 | 1974 | | | |
| | | 130.8 | 148.4 | 146.9 | | | |

Foot note: Insulating Felts, N/A % of Shipments

# FLAT GLASS

SIC - 3211

| Industry Distribution | Level | Percentage Distribution | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Establishments by Size | | | | | | | | |
| | Total | Total | 1-19 | 20-99 | 100 or more | | | | | |
| Number | 31 | 100.0 | 3 | 13 | 84 | | | | | |
| Jobs (Thousands) | 20.9 | 100.0 | 1 | 16 | 83 | | | | | |
| Shipments (Millions) | 937.2 | 100.0 | 1 | 15 | 84 | | | | | |
| | | Establishments by Region | | | | | | | | |
| | Total | Total | No. East | No. Cent. | South | West | | | | |
| Number | 31 | 100.0 | 13 | 35 | 42 | 10 | | | | |
| Jobs (Thousands) | 20.9 | 100.0 | * | 38 | 44 | * | | | | |
| Shipments (Millions) | 937.2 | 100.0 | * | 42 | 40 | * | | | | |
| | | Purchased Fuels and Electric Energy | | | | | | | | |
| | Total | Total | Natl. Gas | Distillate | Residual | Other | | | | |
| Fuels (Dollars) | 64.7 | 100.0 | 51 | 12 | * | 37 | | | | |
| Industry Trends | | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | | | |
| Employment (Thousands) | | 18.2 | 18.2 | 15.6 | 15.8 | 16.4 | | | | |
| Product Shipments (Millions) | | 1972 | 1973 | 1974 | | | | | | |
| | | 1247.1 | 1405.5 | 1302.3 | | | | | | |

Foot note: insulating glass, sealed units, N/A % of shipments

# PRODUCTS OF PURCHASED GLASS

## SIC - 3231

| Industry Distribution | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Level | Percentage Distribution | | | | | |
| | | Establishments by Size | | | | | |
| | Total | Total | 1-19 | 20-99 | 100 or more | | |
| Number | 912 | 100.0 | 69 | 23 | 8 | | |
| Jobs (Thousands) | 33.5 | 100.0 | 9 | 26 | 65 | | |
| Shipments (Millions) | 1327.6 | 100.0 | 8 | 20 | 72 | | |
| | | Establishments by Region | | | | | |
| | Total | Total | No. East | No. Cent. | South | West | |
| Number | 912 | 100.0 | 40 | 25 | 18 | 17 | |
| Jobs (Thousands) | 33.5 | 100.0 | 39 | 36 | 18 | 7 | |
| Shipments (Millions) | 1327.6 | 100.0 | 36 | 42 | 16 | 6 | |
| | | Purchased Fuels and Electric Energy | | | | | |
| | Total | Total | Natl. Gas | Dist. Nat. | Residual | Other | |
| Fuels (Dollars) | 22.6 | 100.0 | 26 | 3 | * | 71 | |
| Industry Trends | | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
| Employment (Thousands) | | 30.6 | 34.3 | 35.3 | 33.6 | 36.5 | |
| Product Shipments (Millions) | | 1972 | 1973 | 1974 | | | |
| | | 977.1 | 1120.3 | 1101.3 | | | |

Foot note: insulating glass made from purchased glass, 8% of shipments

# CLAY REFRACTORIES

SIC - 3255

| Industry Distribution | Level | Percentage Distribution | | | | | |
|---|---|---|---|---|---|---|---|
| | | Establishments by Size | | | | | |
| | Total | Total | 1-19 | 20-99 | 100 or more | | |
| Number | 157 | 100.0 | 35 | 47 | 18 | | |
| Jobs (Thousands) | 11.3 | 100.0 | 4 | 22 | 74 | | |
| Shipments (Millions) | 337.4 | 100.0 | 4 | 34 | 62 | | |
| | | Establishments by Region | | | | | |
| | Total | Total | No. East | No. Cent. | South | West | |
| Number | 157 | 100.0 | 29 | 36 | 23 | 12 | |
| Jobs (Thousands) | 11.3 | 100.0 | 26 | 46 | 25 | 3 | |
| Shipments (Millions) | 337.4 | 100.0 | 25 | 46 | 24 | 5 | |
| | | Purchased Fuels and Electric Energy | | | | | |
| | Total | Total | Nath. Gas | Distillate | Residual | Other | |
| Fuels (Dollars) | 28.1 | 100.0 | 47 | 23 | * | 30 | |
| Industry Trends | | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
| Employment (Thousands) | | 12.0 | 12.8 | 12.5 | 12.8 | 12.2 | |
| Product Shipments (Millions) | | 1972 | 1973 | 1974 | | | |
| | | 302.2 | 364.1 | 456.4 | | | |

Foot note: * Amounts for fire brick and clay shapes, 3% of shipments



91-931 O - 77 - 30

# Gypsum Products

SIC - 3275

| Industry Distribution | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Level | | Percentage Distribution | | | | | |
| | | | Establishments by Size | | | | | |
| | Total | | Total | 1-19 | 20-99 | 100 or more | | |
| Number | 114 | | 100.0 | 26 | 21 | 53 | | |
| Jobs (Thousands) | 11.2 | | 100.0 | 1 | 13 | 86 | | |
| Shipments (Millions) | 640.3 | | 100.0 | 1 | 16 | 83 | | |
| | | | Establishments by Region | | | | | |
| | Total | | Total | No. East | No. Cent. | South | West | |
| Number | 114 | | 100.0 | 20 | 20 | 33 | 27 | |
| Jobs (Thousands) | 11.2 | | 100.0 | 21 | 24 | 36 | 19 | |
| Shipments (Millions) | 640.3 | | 100.0 | 18 | 25 | 36 | 21 | |
| | | | Purchased Fuels and Electric Energy | | | | | |
| | Total | | Total | Natl. Gas | Distillate | Residual | Other | |
| Fuels (Dollars) | 56.6 | | 100.0 | 38 | 21 | 5 | 36 | |
| Industry Trends * | | | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
| Employment (Thousands) | | | 202.4 | 212.0 | 210.9 | 187.8 | 188.4 | |
| Product Shipments (Millions) | | | 1972 | 1973 | 1974 | | | |
| | | | 583.1 | 654.2 | 643.1 | | | |

Foot Note: Calculating plaster, N/A % of shipments

# Asbestos Products

SIC - 3292

| Industry Distribution | Level | | Percentage Distribution | | | |
|---|---|---|---|---|---|---|
| | | Establishments by Size | | | | |
| | Total | Total | 1-19 | 20-99 | 100 or more | |
| Number | 142 | 100.0 | 32 | 22 | 46 | |
| Jobs (Thousands) | 21.0 | 100.0 | 1 | 8 | 91 | |
| Shipments (Millions) | 763.4 | 100.0 | 2 | 6 | 92 | |
| | | Establishments by Region | | | | |
| | Total | Total | No. East | No. Cent. | South | West |
| Number | 142 | 100.0 | 38 | 23 | 23 | 16 |
| Jobs (Thousands) | 21.0 | 100.0 | 41 | 22 | 27 | 10 |
| Shipments (Millions) | 763.4 | 100.0 | 37 | 24 | 25 | 14 |
| | | Purchased Fuels and Electric Energy | | | | |
| | Total | Total | Natl. Gas | Distillate | Residual | Other |
| Fuels (Dollars) | 29.0 | 100.0 | 18 | 11 | 16 | 55 |

| Industry Trends | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|
| Employment (Thousands) | 23.8 | 24.5 | 24.1 | 22.6 | 22.4 | |

| Product Shipments (Millions) | 1972 | 1973 | 1974 |
|---|---|---|---|
| | 742.6 | 798.6 | 911.2 |

Foot Note: Insulating boiler and pipe covers, 10% of shipments

# Mineral Wool

SIC - 3296

| Industry Distribution | Level | Percentage Distribution | | | | | |
|---|---|---|---|---|---|---|---|
| | | Establishments by Size | | | | | |
| | Total | Total | 1-19 | 20-99 | 100 or more | | |
| Number | 108 | 100.0 | 31 | 31 | 38 | | |
| Jobs (Thousands) | 18.0 | 100.0 | * | 9 | 91 | | |
| Shipments (Millions) | 755.4 | 100.0 | 1 | 8 | 91 | | |
| | | Establishments by Region | | | | | |
| | Total | Total | No. East | No. Cent. | South | West | |
| Number | 108 | 100.0 | 21 | 39 | 24 | 16 | |
| Jobs (Thousands) | 16.0 | 100.0 | 19 | 53 | 19 | 9 | |
| Shipments (Millions) | 755.4 | 100.0 | 20 | 48 | 22 | 10 | |
| | | Purchased Fuels and Electric Energy | | | | | |
| | Total | Total | Natl. Gas | Distillate | Residual | Other | |
| Fuels (Dollars) | 74.0 | 100.0 | 31 | 5 | 4 | 60 | |

| Industry Trends * | | | | | | |
|---|---|---|---|---|---|---|
| | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
| Employment (Thousands) | 60 | 72.5 | 73.7 | 70.3 | 73.3 | |
| Product Shipments (Millions) | 1972 | 1973 | 1974 | | | |
| | 738.7 | 849.5 | 1014.1 | | | |

Footnote: Insulating rock, slag and silica mineral wool, 11% of shipments

# Metal Doors, Sash and Trim

SIC - 3442

| Industry Distribution | Level | Percentage Distribution | | | | |
|---|---|---|---|---|---|---|
| | | Establishments by Size | | | | |
| | Total | Total | 1-19 | 20-99 | 100 or more | |
| Number | 1558 | 100.0 | 59 | 29 | 12 | |
| Jobs (Thousands) | 70.7 | 100.0 | 8 | 30 | 62 | |
| Shipments (Millions) | 2077.6 | 100.0 | 8 | 30 | 62 | |
| | | Establishments by Region | | | | |
| | Total | Total | No. East | No. Cent. | South | West |
| Number | 1558 | 100.0 | 24 | 29 | 28 | 19 |
| Jobs (Thousands) | 70.7 | 100.0 | 21 | 31 | 35 | 13 |
| Shipments (Millions) | 2077.6 | 100.0 | 18 | 34 | 33 | 15 |
| | | Purchased Fuels and Electric Energy | | | | |
| | Total | Total | Natl. Gas | Dist. Nate | Residual | Other |
| Fuels (Dollars) | 19.9 | 100.0 | 20 | 4 | 2 | 74 |

| Industry Trends | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
|---|---|---|---|---|---|---|
| Employment (Thousands) | 727 | 809 | 764 | 662 | 702 | |
| Product Shipments (Millions) | 1902.9 | 2119.4 | 2100.9 | | | |

Foot note: Metal storm windows and doors, 12% of shipments

# VALVES AND PIPE FITINGS

## SIC - 3494

INDUSTRY DISTRIBUTION

| | LEVEL | PERCENTAGE DISTRIBUTION | | | | |
|---|---|---|---|---|---|---|
| | | ESTABLISHMENTS by SIZE | | | | |
| | TOTAL | TOTAL | 1-19 | 20-99 | 100 OR MORE | |
| NUMBER | 179 | 100.0 | 41 | 30 | 29 | |
| JOBS (THOUSANDS) | 93.9 | 100.0 | 2 | 12 | 86 | |
| SHIPMENTS (MILLIONS) | 2941.3 | 100.0 | 3 | 11 | 86 | |
| | | ESTABLISHMENTS by REGION | | | | |
| | TOTAL | TOTAL | No. East | No. Cent. | South | West |
| NUMBER | 179 | 100.0 | 31 | 33 | 20 | 16 |
| JOBS (THOUSANDS) | 93.9 | 100.0 | 28 | 41 | 23 | 2 |
| SHIPMENTS (MILLIONS) | 2941.3 | 100.0 | 27 | 41 | 23 | 9 |
| | | PURCHASED FUELS AND ELECTRIC ENERGY | | | | |
| | TOTAL | TOTAL | Nat'l Gas | Distillate | Residual | OTHER |
| FUELS (DOLLARS) | 41.2 | 100.0 | 19 | 3 | 1 | 77 |

| INDUSTRY TRENDS | | | | | | |
|---|---|---|---|---|---|---|
| | | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
| EMPLOYMENT (THOUSANDS) | | 96.0 | 104.3 | 112.9 | 107.1 | 106.7 | |
| PRODUCT SHIPMENTS (MILLIONS) | | 1972 | 1973 | 1974 | | | |
| | | 2891.6 | 3350.4 | 4162.4 | | | |

FOOT NOTE: EXPANSION metal pipe joints for base bedrock heating, 1/4% of shipments

## Noncurrent Carrying Wiring Devices

SIC - 3644

Industry Distribution

| | Level | | Percentage Distribution | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Establishments by Size | | | | | |
| | Total | | Total | 1-19 | 20-99 | 100 or more | | |
| Number | 179 | | 100.0 | 35 | 31 | 34 | | |
| Jobs (Thousands) | 25.1 | | 100.0 | 2 | 11 | 87 | | |
| Shipments (Millions) | 886.4 | | 100.0 | 2 | 14 | 84 | | |
| | | | Establishments by Region | | | | | |
| | Total | | Total | No. East | No. Cent. | South | West | |
| Number | 179 | | 100.0 | 34 | 28 | 19 | 19 | |
| Jobs (Thousands) | 25.1 | | 100.0 | 35 | 42 | 15 | 8 | |
| Shipments (Millions) | 886.4 | | 100.0 | 33 | 41 | 17 | 9 | |
| | | | Purchased Fuels and Electric Energy | | | | | |
| | Total | | Total | Nat. Gas | Distillate | Residual | Other | |
| Fuels (Dollars) | 16.0 | | 100.0 | 13 | 13 | * | 74 | |
| Industry Trends * | | | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
| Employment (Thousands) | | | 98.4 | 110.1 | 102.2 | 86.5 | 94.7 | |
| Product Shipments (Millions) | | | 1972 | 1973 | 1974 | | | |
| | | | 832.1 | 958.6 | 1252.2 | | | |

Foot note: Insulating, electrical, NA % of shipments

Mr. DINGLE. The gentleman from Ohio.

Mr. BROWN. Mr. McConnon, could you or someone in the Commerce Department provide for us an answer to the question about who actually has done most of the installing of insulation, historically? Is it a do-it-yourself project, talking about retrofit installation, is it do-it-yourself where the homeowner buys the material and installs it or is it done by professionals and if so, what kind of a professional? Is it a guy just in the insulation business or is he in the insulation or other kinds of businesses?

Do you think that is a question to which you can get an answer?

Mr. MCCONNON. I think so.

Mr. BROWN. Maybe even a sample of a few.

Mr. MCCONNON. I am reasonably sure we can get some kind of an answer for that.

[The following material was received for the record:]

Historically, some insulation, particularly roof and wall insulation, has been done by homeowners as do-it-yourself projects. In the majority of cases, the job is accomplished by contractors utilizing workers trained in the handling of asbestos and other types of insulation. Such workers insulate pipes, boilers, furnaces, and related equipment as well as walls and ceilings in homes and other structures so as to reduce fuel costs. About 30,000 asbestos and insulation workers were employed in 1974, the last full year for which data is available. Most worked for contractors. Others were employed to alter and maintain insulated pipework in chemical factories, petroleum refineries, atomic energy plants and similar plants with extensive steam installations.

Almost all asbestos and insulation workers learn their trade through either informal on-the-job training or formal training programs lasting as long as 4 years. Graduates of such programs are sufficiently skilled to handle all types of insulation work including those requiring detailed measuring and fitting. Simple roof and wall insulation does not require such skills.

For entry jobs in the private sector, employers prefer high school graduates who are in good physical condition and licensed to drive. High school courses in blueprint reading, shop math, and general construction provide a helpful background.

Even before the current legislative initiative, employment of asbestos and insulation workers was expected to grow much faster than the average for all occupations through the mid-1980's.

Employment opportunities will be best in metropolitan areas where most insulation contractors are located. In small towns, much of the insulation work is done by persons in other trades, such as carpenters, and bricklayers, rather than asbestos and insulation workers. A large proportion of the workers in this trade are members of the International Association of Heat and Frost Insulators and Asbestos Workers.

Mr. BROWN. All right.

I want a picture of the nature of the business. Is it a small business? In my neck of the woods, for the most part, that which is installed by someone other than the homeowner is done by people who are in other businesses. It is not an insulation kind of business, but I am not sure that my area is typical in this regard. I am trying to figure out whether a plumber or heating contractor or somebody else is going to be the one that gets on the approved list that is envisioned in this legislation.

Thank you, Mr. Chairman.

Mr. DINGELL. The Chair apologizes to the gentleman. The Chair recognizes the gentleman from Michigan, Mr. Stockman.

Mr. STOCKMAN. I think the Chair has requested most of the relevant information we need in the area of manpower supply, but I would like to focus on the question of retrofitting furnace devices. We have had a lot of discussion with possible safety problems, et cetera.

I am wondering specifically if most States require personnel who perform that function to be licensed and if they do have licensing laws and if there are going to be any problems in terms of increasing the number of contractors fast enough?

In my State we have pretty strict licensing laws for almost every kind of contractor, particularly specialty contractors. If you don't have information right here, can you supply it for us?

Mr. McCONNON. I can get that for you. I don't have the information right here.

[The following statement was received for the record:]

We do not have any State-by-State distribution of licensing requirements for those engaged in insulating work. We do recognize, however, that such licensing might well present obstacles to any major expansion of energy conservation efforts involving insulation programs. The subcommittee might be interested in knowing that in 1967 the Educational Testing Service, under contract to the Department of Labor, studied the feasibility of investigating nationally the impact of licensing practices on the availability of nonprofessional manpower in occupations where skill shortages existed. Five States, New York, Illinois, California, Texas and Florida, were selected for study.

The report raised many more questions than it answered. For example, some of the usual requirements for licensing, such as age, sex, education, and citizenship, were often found to be quite arbitrary, bearing little or no relationship to the declared purposes of licensing. Information about licensing was often couched in obscure, legalistic language. Examination procedures were judged to be inadequate in terms of currently acceptable professional practices and standards. Especially significant from the viewpoint of manpower utilization were the formidable barriers to mobility that licensing regulations were found to pose for skilled workers. There were obstacles to the movement of skilled workers not only from one State to another but also within a single State. This reflected sharp differences not only between States, but among municipalities and other government jurisdictions within a single State.

In order to understand the significance of various licenses, three terms should be clarified:

1. Journeyman—An individual who has completed a specified period of on-the-job training and is considered competent to carry out all the routine functions of a given trade is called a journeyman. In practice, the term is often applied to anyone who has enough experience to be able to work at a given trade with minimum of supervision. A journeyman works for a contractor and is not eligible to apply for building permits under his own name. Although he may function with a high degree of autonomy and even supervise the work of others, he does so under the supervision of a master.

2. Master—To be licensed as a master in a skilled trade, the individual usually acquires a specified amount of experience working as a journeyman and then demonstrates his competence on an examination. As a rule, only masters are allowed to contract for work or to apply for the necessary building permits. The master is responsible for the work of the journeymen under his supervision and for the overall quality of the jobs he performs.

3. Contractor—A licensed contractor is an individual who has satisfied certain legal requirements that entitle him to do business in a given field of specialization. Bonding and insurance provisions, a character investigation, and proof of competence are usually required. In situations where the contractor is not himself a master in the licensed occupation, his license may be issued contingent upon his being able to employ as his on-the-job supervisor someone who holds a valid master's license. Should the employee holding the master's license leave, the contractor's license would be suspended until he found and hired a qualified replacement.

Of the many specialties and subspecialties in the construction field, plumbing and electrical work are by far the most frequently licensed. But to appreciate the tremendous diversity in licensing practices that exists across the Nation, one must look at special situations. California, for instance, requires 61 varieties of contractors to hold State licenses, including 500 insulation and acoustical contractors; Dade County, Florida, requires apprentices, journeymen, and masters to be licensed in some 80 different categories.

Two points of particular interest:

1. What if one should move? The question of mobility is of crucial importance to those engaged in the construction trades. A craftsman seeking work in another location may find that his ability to take a job or obtain a building permit is limited by licensing requirements imposed by the State or community to which he plans to go. An individual who moves to another State must usually meet that State's licensing requirements.

2. What happens to minority group members? In many sections of the country, minority group members find it very difficult to obtain the training and experience necessary to qualify for a license. This may prove to be a serious obstacle if and when utilities companies seek qualified minority contractors to work on various insulation jobs.

Mr. DINGELL. The Chair recognizes the gentleman from Indiana, Mr. Sharp.

Mr. SHARP. I have no questions.

Mr. DINGELL. Gentlemen, again we thank you for your assistance to us and we will look forward to the information we requested.

The Chair now calls our first panel of the day, Mr. Charles Richman, Acting Administrator, New Jersey State Energy Office, Thomas A. Griffin, Jr., Orange and Rockland Utilities, Inc., Mr. Rudolf A. Brynolfson, Minnesota Energy Agency and I understand Mr. Millhone may be in his place, Mr. A. O. Daniels, Director of Power Utilization, Tennessee Valley Authority, and Mr. Arthur L. Howard, Manager of Public Affairs, Washington Gas Light Company.

We thank you all for being here. We will recognize you commencing with Mr. Daniels.

**STATEMENTS OF ALBERT O. DANIELS, DIRECTOR OF POWER UTILIZATION, TENNESSEE VALLEY AUTHORITY; CHARLES RICHMAN, ACTING ADMINISTRATOR, NEW JERSEY STATE ENERGY OFFICE; RUDOLF A. BRYNOLFSON, ASSISTANT DIRECTOR, MINNESOTA ENERGY AGENCY; ARTHUR L. HOWARD, MANAGER OF PUBLIC AFFAIRS, WASHINGTON GAS LIGHT COMPANY; AND THOMAS A. GRIFFIN, JR., EXECUTIVE VICE PRESIDENT, ORANGE AND ROCKLAND UTILITIES, INC.**

Mr. DANIELS. Thank you, Mr. Chairman and members of the committee. I have with me but not at the table Mr. Lewis E. Wallace who is Deputy General Counsel of the Tennessee Valley Authority. We have not had time to consider the full legislative package, but we understand that our detailed comments may be submitted at a later time.

We are pleased to be here today to express our views on so vital a topic as energy conservation. Most people are now beginning to realize that we are in the midst of an energy crisis. This is not a crisis caused by some external force that will go away if we can only bear with it a few more months—this is an energy crisis that is caused by our own consumption patterns. Different people have proposed different solutions to this problem. But we believe one important step that must be taken is the development of sound energy conservation practices.

Home insulation is a critical part of the energy conservation practices now needed. In TVA's various programs we have found that adequate home insulation can cut electric energy use as much as 30 to 70 percent. It is a foolproof energy saver. It lasts a lifetime

and continues to save energy regardless of the indifference of the individual homeowner.

TVA has been promoting home insulation for some time. We are now beginning our third home insulation program with a kick-off scheduled for June of this year, which will cover 2 million homes in the Tennessee Valley region. Under the program we plan to provide for the insulation of a half million electrically-heated homes in the Tennessee Valley region which we served with electric power.

Our first home insulation research program was completed last summer. In that program some 200 homes of low-income consumers were either completely or partially winterized. By carefully monitoring electricity usage in these homes this past winter and comparing it with the usage the winter before, we have been able to learn more about the cost effectiveness of various insulating and weatherproofing plans. For instance, one widow living alone in the Chattanooga area with an income of less than $200 per month used 2,160 kilowatt-hours of electricity in December 1975. This year, after the installation of floor and ceiling insulation, weatherstripping and storm windows, her use dropped nearly 40 percent to 1,316 kilowatt-hours, despite a 17 percent increase in the severity of the weather.

In order to find more about the cost effectiveness of various kinds of home insulation, last fall TVA extended this research and demonstration program to an additional 1,100 homes of low-income families.

Now we are beginning our full-scale program in which we expect to insulate half a million electrically heated homes in the TVA area. Working both directly and through our local retail power distributors, we will make home energy audits for all consumers who request them and will recommend appropriate conservation measures.

Under the program, TVA will provide from its power system funds the capital to be used in bringing attic insulation in existing electrically heated homes up to the standard R-19 level. This is 6-1/2 inches of rockwool or its equivalent. The insulation work will be done by local contractors.

We anticipate that the costs will average about $300 per home and will be recovered over a 36-month period through monthly payments with the electric bill. There will be no interest or other charges. When possible, the amounts provided for each consumer will be recovered under a levelized billing plan. In this way, consumers should be able to repay most of these amounts through their savings in monthly electric bills during the recovery period. The program will be available to homeowners, renters, and rental property owners.

We believe this program will cause a reduction in energy use in excess of one billion kilowatt-hours annually. The resulting reduced need for generation from high-cost resources during the heating season will produce annual cost savings of approximately $20 million based on present costs—a substantial benefit to the TVA system.

In addition, we anticipate the reduced generation needs at the time of the winter peak load will lower TVA system capacity

requirements by 400,000 to 500,000 kilowatts. Consequently, the savings in generating capacity and fuel costs will be substantially greater than the cost of the program, and these savings will be shared by all of the region's electric power consumers through lower rates than would otherwise be required.

The TVA plan provides for up to five years to complete the work of the program. The scope of the coordination and work to be done with power distributors, consumers, and insulation contractors may require as long as five years to make home energy audits for all consumers that request them and to insulate the attics of the half million electrically heated homes. Additional energy conservation educational activities will be conducted with all participants, and they will be provided information on all the measures needed to fully weatherize their homes.

The average annual operating cost of our program is expected to be about $2.5 million. The average annual cost (at 8 percent) of TVA funds utilized in the program is expected to be a little over $2 million.

TVA has also been active in promoting better energy saving construction in new homes through its $uper $aver program, which specifies particular building standards to save energy. These include R-30 insulation over ceilings and R-19 under floors and in outside walls. The homes are heated and cooled with electric heat pumps, and the windows are double or triple insulated and do not exceed 10 percent of the floor space. More than 300 of these super-insulated homes have now been built or are planned across the Tennessee Valley region, and this past winter gave them a real test.

From the special meters that are on 40 of these homes, we found out that a $uper $aver home can reduce heating and cooling requirements by as much as 70 percent below amounts needed in a conventionally built home of the same size. Although the extra cost of these homes runs about $1,000, this investment pays substantial dividends both to the homeowner by reducing his power bill and to the electric system by rounding off sharp peaks in power demand.

TVA has also actively promoted the effective use of electric heat pumps in its area. Heat pumps alone can cut heating costs in half when compared with electric resistance heating. In order to make better use of this energy-saving form of heating, TVA and its distributors run training sessions in proper sizing, installation, and maintenance; and TVA distributors conduct programs to certify competent, experienced heat pump dealers.

TVA has other energy conservation programs, but they are too numerous to discuss in detail in the short time permitted. They range from printing and distributing cards to consumers with simple do's and don'ts for heating, cooking, refrigeration, and water heating to conducting literally hundreds of workshops and demonstrations on efficient electricity use before school and parent groups, elderly citizens, and persons on public assistance. In fact, the special problems of low-income families have been a major focus of these programs.

We are also conducting several studies of new electric rate structures, such as peak-load pricing and load management techniques, to determine their feasibility, consumer acceptance, and the

extent to which they result in real advantages to consumers and to the entire electric system. We also support elimination of master metering.

Again, we appreciate the opportunity to testify here today and will be glad to answer any questions you may have.

Mr. DINGELL. Mr. Daniels, you have given us a very helpful statement. We will have a number of questions about the TVA program.

Mr. Richman.

## STATEMENT OF CHARLES RICHMAN

Mr. RICHMAN. Thank you, Mr. Chairman.

Energy conservation has manifest benefits which extend throughout our entire society. To date, a full understanding of this abundant but relatively untapped energy source has not been realized.

We have learned the hard way that fragmented energy planning can lead to difficulties and severe economic burdens to all or to parts of the Nation. We have learned that an adequate and safe supply of energy is vital to the attainment of our economic goals, to our social goals and to our environmental goals.

Residents of New Jersey are acutely aware of the need for energy conservation. A report issued by the Princeton University Center for Environmental Studies, on the natural gas shortage stated, "No State in the nation, in fact, has a gas shortage greater than New Jersey in terms of both volume and percentage of curtailment. Some (states) have lost a greater volume of gas; others have faced larger percentage curtailments—but none rank higher in both categories."

The growing natural gas supply shortage has revitalized national interest in and reemphasized the immediate need for energy conservation and efficiency.

Title I, part A, subpart 1, Utility Program of the National Energy Act represents an attempt to bridge the information gap which exist on energy conservation. The Utility Program required by this act would identify for the consumer a source for information which is readily obtainable and can be trusted. The continued supervision of the State program by a public utility commission would, further, help to reinforce the confidence of the consumer. Also, a consumer moving from one State to another would always have a readily accessible means of obtaining conservation information.

We recently undertook a social psychology study of why people are not insulating. We have found a gap in the "how-to", the final bridge in what a person has to do. People seem to know they are supposed to insulate and conserve, but they have not been able to overcome that gap of how to do it. I am hopeful and feel the detailed analysis necessary for people to make the rational decisions on conservation will come out of this program.

The State of New Jersey has already taken steps to implement a utility information program.

In July, 1975, the New Jersey Public Utility Commission began hearings to amend the New Jersey Administrative Code by adding a new chapter designated the Residential Insulation Program. As an

outgrowth of the hearings the Commission has already adopted regulations regarding advertising and customer information promoting energy conservation.

Further, it is expected that within the next two weeks the Commission will adopt regulations on financing, energy audits, and procedures for insuring that energy conservation equipment is installed properly. While the program developed by the New Jersey Public Utility Commission is not as extensive as that proposed in the National Energy Act, I feel we are making a strong effort toward mobilizing public opinion in support of our energy conservation goals and will motivate people into taking actions which help to conserve energy.

A survey taken by Public Service Electric and Gas Company found that between 1973 and 1976 only 8.3 percent of its residential consumers added some insulation to their homes. However, in the final year of the survey nearly 50 percent of the insulation was installed. This seems to indicate a growing awareness of the need for conservation. It also coincided with an increased public information campaign. As I have stated, we must develop a high level of motivation and understanding for homeowners to accept the need for making conservation improvements.

Earlier this year, the New Jersey State Energy Office undertook an analysis of what energy conservation savings would occur as the result of several programs, including a program to promote the installation of insulation, a retrofitting for gas heated homes with electric igniters, the installation of automatic set-back thermostats and increased maintenance programs for residential heating furnaces.

Legislation has been approved by the New Jersey State Senate and is presently before the New Jersey Assembly which would authorize the New Jersey State Energy Office to promulgate regulations implementing these conservation measures. It is our intention upon enactment of the New Jersey Energy Act to require utilities to disseminate information related to these measures.

Based on our analysis, the energy savings relating to increased insulation, retrofitting of gas furnaces with electric igniters, installation of set-back thermostats and annual maintenance of furnaces would amount to the equivalent of nearly 19,000 barrels of oil per day. By 1980 the annual savings to the consumer should amount to approximately $100.9 million annually with a capital investment of approximaely $125.7 million. Other than the annual furnace inspection, the capital investment obviously represents a one-time expenditure.

I view the dissemination of energy conservation information as absolutely vital to our attempts to reduce our dependence on foreign oil. Further, this program would not only provide information but would also insure that any capital expenditures the consumer chooses to make will be protected by a system of inspection and verification.

The government will thereby help to provide the reinforcement necessary for homeowners to make reasonable decisions. With regard to the specific proposals under title I, part A, subpart I, I generally feel the program as outlined in the National Energy Act

to be a good one. However, it is apparent that all the positive motivation in the world will not stimulate some people to take action. Therefore, I believe that certain mandatory provisions should be provided for in the development of a residential energy conservation plan.

I have proposed as part of the New Jersey Energy Conservation Plan that at the time of sale of a home the deed cannot be transferred or recorded unless a certificate of energy efficiency is attached. Simply this would require homeowners of the State to properly insulate their homes and install other thermal efficient equipment at some time prior to the sale of the home. I believe that the homeowner recognizing that at some point he is required to meet an energy efficiency standard would attempt to make the necessary changes as early as possible to insure a return on his investment.

I understand due to capital constraints a need to restrict the definition of residential buildings to dwellings of "two dwelling units," may be appropriate, however, it would seem inappropriate to limit the information functions of the utility program to owners of one or two dwelling units. I believe that the utilities can play a prominent role in assisting the industrial sector and the commercial sector in providing them with information.

I envision the utility program as an ongoing program. New energy conservation technologies are being developed almost daily. We may find in the near future that a new technology should be applied to all existing housing through this utility program. Therefore, I suggest that the program require periodic updating on the part of State utility commissions and nonregulated utilities, and that the residential building definition be changed to require new construction to meet updated standards as that are required under the plan.

I also suggest that the term "residential energy conservation measure" be expanded to include the metering devices consumers may purchase in order to avail themselves of peak load pricing of electricity. Section 513(a)(2)(A) requires each electric utility to offer the consumer a time of day rate. It seems only reasonable to me that as part of the energy conservation that financing for the cost of the meter be provided.

In summary, I believe the utility program must be developed as part of a comprehensive national energy conservation program. I have made several recommendations which I believe are necessary to strengthen the program, the most important of which I believe is that the program requires periodic reevaluation and updating. However, the dissemination of energy conservation information is an absolute necessary tool in our campaign against energy waste.

I would like to submit for the record a copy of the Hearing Examiner's report and recommendations to the New Jersey Public Utility Commission and a copy of the New Jersey conservaton plan.

Mr. DINGELL. I think those will be entirely appropriate.

Without objection, they will be received. I notice one is rather voluminous. It may be necessary to have staff review to see if we can get it all in the record.

Subject to the Chair's comments, without objection it is so ordered.

[The documents referred to may be found in the subcommittee files.]

Mr. DINGELL. The Chair does commend you for a most helpful statement. You have a good program up there in New Jersey.

Our next witness is Mr. Brynolfson.

## STATEMENT OF RUDOLF A. BRYNOLFSON

Mr. BRYNOLFSON. Mr. Chairman, we use a large portion of our energy for heating and cooling our homes. In Minnesota it's about 13 percent, nationally about 11 percent. This is clearly a major target for energy conservation.

President Carter has wisely recognized this fact in developing his proposed energy program. Between tax credits, utility financing programs, expanded bank loans for energy improvements and weatherization assistance, many homeowners can be induced to insulate in the next few years. Whether these largely voluntary programs will reach enough homes quickly enough to achieve the President's goal of insulating 90 percent of all homes by 1985 is doubtful, however.

As the White House fact sheet on the President's program indicates, mandatory measures may need to be considered. In light of this, I would like to tell you about Minnesota's experience in this area, which points up some of the problems which may need to be resolved at the Federal level.

The Minnesota legislature, in the 1974 Act which created the State Energy Agency, directed the State building codes division to develop an energy code for new buildings. This code has been in effect since early 1976. It is currently being revised and strengthened. Other States that have not already done so will be adopting similar energy codes in the near future under the Energy Policy and Conservation Act. However, as Minnesota Governor Rudy Perpich said in his energy meassage to the 1976 Minnesota Legislature: "This is not enough. Sixty percent of the homes that will be standing in the year 2000 have been built already. We must winterproof our existing homes."

The question is how to bring about the upgrading of all existing homes as quickly as possible at minimum cost and without overstraining the insulation industry. With no government action, many homeowners will retrofit just to save money on fuel bills. However, many will not. They may have so much money that fuel bills are of no concern or so little that they have neither the cash nor credit to pay for energy improvements. They may simply pay no attention to fuel economics and energy improvements, as in the case where a landlord owns the building but the tenant pays the utilities.

Clearly there is a need for assistance to those who do not have the money to retrofit their homes. Minnesota already has a $24 million State home improvement loan and grant program for low and moderate income people. Energy improvements, along with assistance to the elderly, are given priority for funding. This program, together with the federally funded CAP weatherization program, provides significant assistance to low income Minnesotans who want to upgrade their homes.

Tax incentives are another possible way to get people to retrofit, but they have some problems. The estimated $6 million annual cost of a 20 percent credit for home insulation in Minnesota is five times the amount appropriated to the Energy Agency. An estimated 75 to 80 percent of this money would go to people who would insulate anyway. To minimize such costs and to reach those who are not motivated by tax credits, a universal approach is needed, such as a mandate that all homes meet certain energy standards within a reasonable time. The standards could require attic insulation, storm windows, weatherstripping, furnace efficiency modifications, clock thermostats, and other energy conservation measures. The emphasis would be on those with the highest energy saving per dollar invested.

To phase in inspection and minimize costs, compliance with the standards would be verified at the time a home is sold. This is a time when the home is likely to be inspected anyway; when funds can easily be made available either from the seller's equity or the buyer's loan proceeds, and when there is already legal or governmental intervention as part of the sale transaction and deed recording process.

In addition, tougher standards can be put into effect as time goes on and new techniques prove cost effective.

The bill now before the Minnesota legislature directs the State Building Codes Division to develop a set of energy conservation measures for residential buildings, which will pay for themselves in fuel savings within five years. The intent was to require that upon sale, either a home would already meet the standards or there would be money placed in escrow to bring it up to the standards.

Different approaches were suggested as to who would do the inspection, who would pay for the improvements, and how compliance would be ensured. The goal was to find a mechanism that would be essentialy self-enforcing and would minimize the cost to both the State and the individual.

Under one approach, considered in the Senate, no deed would be registered by the county recorder unless the certificate of value contained a statement by the seller that all residential buildings on the property were in compliance with the energy standards.

Who would inspect buildings was not specified in the bill, but it was assumed that the homeowner either could use a government-furnished checklist to do the inspection himself, or could hire someone to do it for him, just as many taxpayers hire someone to fill out their tax forms.

Who would pay to bring the house up to standard was also not stated explicitly in the Senate bill. Obviously the primary burden would be on the seller, but, as with other required improvements, some of the cost could be shifted to the buyer as part of the purchase price.

This approach is in line with the tradition of making the seller responsible for needed repairs, and recognizes that the seller usually has greater ability to pay than the buyer. It has the further advantage of encouraging the work to be done sooner. As Governor Perpich put it, "Most homeowners realize a financial gain when they sell their homes. Insulating should not be difficult. If they're

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smart, though, they will insulate ahead of time and enjoy the energy and dollar savings."

One disadvantage of this approach is that if the seller failed to bring his home up to the standards ahead of time he might be tempted to do a shoddy job prior to sale, leaving the buyer holding the bag. There were two other main difficulties with this approach. One was that realtors considered the burden on the seller, on top of a number of existing requirements, to be unfair. The other was that some lawyers considered tying compliance to the recording of the deed unworkable, since many people would simply find ways to avoid having their deed registered. Non-registration of contracts for deed is already a problem. In addition, the chairman of the State Senate Judiciary Committee called the proposal a move counter to the centuries-long development of property transfer rights.

The State House of Representatives took another approach in their bill. It called for a lender making a mortgage loan on a residential building to have the property inspected, determine what energy improvements, if any, needed to be made, and loan the buyer the money needed to complete the work. This money would be placed in escrow until the work was done.

This approach avoided deed registration problems, made it clear who was responsible for the inspection (the mortgage lender), and who paid for the work (the home buyer). In addition, it would tend to insure better quality work, since the homeowner would be retrofitting for himself and not for the next owner.

One disadvantage was that it might delay progress toward energy conservation, since some present homeowners might avoid making retrofit investments on the assumption that the next buyer would end up paying. In addition, lending institutions opposed this approach, citing restrictions on loan-to-value ratios, the lack of qualified people to carry out the inspections, the burden of administering escrow accounts, and, most crucially, the State's legal inability to mandate compliance by federally chartered lending institutions, who make most of the home loans.

Both mandatory approaches were generally opposed by those who advocated a tax credit as the best way to get people to insulate, those who simply opposed government regulation on principle, and those who wanted to see the standards developed before committing themselves.

Because of the problems encountered and the lack of clear solutions, both houses have now deleted the enforcement of retrofit standards at time of sale from their energy bills. The House has substituted a directive to the Energy Agency to study possible compliance mechanisms and report back next year. Meanwhile, the required energy conservation measures will be developed so that next year's action can be taken in light of the actual standards proposed.

The Minnesota experience, which has been paralleled in other States, including New York and California, indicates a need for Federal action in several areas:

1. Federal home loan guarantee agencies should require existing homes to meet energy standards as they do other property standards. At present, not only does FHA have no insulation standards

for existing homes, but Jack Gilbertson, director of FHA's single family branch in Minneapolis-St. Paul, told the Energy and Housing Committee of the Minnesota Senate that it would not be feasible to develop any.

Mr. DINGELL. I think he is going to have reason to re-think that statement.

Mr. BRYNOLFSON. Nevertheless, the Farmers Home Administration has proposed such standards. I attached a copy to my statement. I think VA and FHA should do the same.

2. The President's program would remove the barriers to opening a secondary market for residential energy conservation loans. Congress should seriously consider going beyond this to require that mortgage loans made by federally chartered building lending institutions include funds for mandatory energy improvements.

3. Finally, to achieve a truly universal home retrofit program, Congress could direct the States to establish their own programs and provide funding to assist them in this effort.

Without strong measures of this kind, I do not believe President Carter's goal of insulating 90 percent of American homes by 1985 can be met.

To my statement I have attached the original proposed language on the home retrofit section in our two legislative bills and a summary of the provisions of the rest of the bill.

[The documents referred to may be found in the subcommittee files.]

Mr. DINGELL. Thank you, Mr. Brynolfson. That was an excellent statement.

Mr. Howard.

## STATEMENT OF ARTHUR L. HOWARD

Mr. HOWARD. Thank you, Mr. Chairman. With me today are Mr. Whitt and Mr. Ford and Mr. Reckeweg from my company.

At this time rather than read my formal statement which I will submit to the committee, I would like to summarize my statement to you.

Mr. DINGELL. Without objection your full statement will appear in the record and you are recognized for the summary.

Mr. HOWARD. What I would like to do today is briefly outline to the members of the subcommittee the Washington Gas insulation program which we presently have in operation.

Our company is unique in that many Members of Congress are our customers. The Washington Gas insulation program has been in operation now for about 1-1/2 years. It was implemented in October of 1975. Of the 495,000 residential customers that Washington Gas serves in the Metropolitan Washington area, we have received approximately 13,000 prospects for home insulation since our program has begun. Of these 13,000 prospects, approximately 3,700 sales have resulted.

In other words, this represents approximately 2.6 percent of our total residential customers who have taken advantage of our residential reinsulation service.

Washington Gas advertises its insulation program by means of providing bill inserts with monthly billing statements to all of our customers.

Mr. Chairman, with your permission, if members of the committee would like to see some samples of the types of things we mail to our customers, we will be glad to distribute those to you.

Mr. DINGELL. That will be helpful and without objection it will be received and reviewed for possible insertion in the record.

Mr. HOWARD. Thank you.

Mr. HOWARD. Thank you.

While the samples are being passed out, I think it's also appropriate to mention we also do avail our reinsulation service to non-Washington gas customers. These are people that live within our franchise area, that do not use our natural gas service.

Generally speaking, our company insulation program works as follows: Once we receive a prospect for someone desiring to have a home insulation survey, one of our company representatives goes to the individual's home and determines the adequacy of insulation in the ceilings, in the walls and in the floors.

Our company, by the way, uses paper cellulous insulating materials for walls and ceilings, and glass fiber for insulation in the floors.

Washington Gas offers three methods of payments for the insulation program.

The first method is the payment can be made within 30 days after the insulation has been completed with no finance charges.

The second is that three equal payments for the isulation can be made within 90 days after insulation with no finance charge, and the third is 36 equal payments can be made over three years at an 8 percent finance charge, which is 13.55 percent actual interest.

I think it might be interesting to members of the committee to just cite a couple of averages as to what our company's experience has been as to the average cost of an insulation or reinsulation jobs.

Since our program began one and a half years ago, the average insulation job has been running approximately $490, which equates, if you finance that insulation over a year's period, that equates to approximately $17 per month.

In addition to the insulation program, our company is also considering the possibility of expanding our consumer services to the customer, our insulation to the customer by providing storm windows and storm doors. We are still examining that program and will probably have an announcement to that effect within the next few months if we decide to enter that particular line.

In addition to insulation, our company is about to finance a test program which will address some of the other issues as called for in President Carter's legislation.

Specifically, our company is getting ready to test modification of gas burners, gas furnace burners by providing smaller orifices in the actual burner itself. What this effectively will do is derate the burner input, and, therefore, reduce the quantity of gas going to the furnace.

In addition, our company is considering testing putting in of baffling devices inside the internal flue passages over existing furnaces to see what effect that has on reducing fuel consumption.

Also, our company is studying electronic ignition devices to determine two things; one, the life expectancy of the electronic ignition devices, and two, the fuel savings that might be expected from the device.

Our program is going to begin in full this summer; we have 20 test homes that we are going to check these devices on, and we expect the results to be available within a year's time.

Washington Gas believes that all utilities should not be required by Federal law to offer an insulation program. I think many questions can be raised about mandating such a program.

Probably first and foremost is the adequacy of insulation materials on a national basis, and our question is, quite simply, is the insulation industry capable of producing insulation in the quantities needed to be responsive to a mandated insulation program.

I think our second concern is that with many more installers of insulation entering the insulation market, our company is concerned about what happens to the overall quality of the overall insulation programs, and perhaps in this regard some type of Federal training program could be made available to potential installers of insulation to get their program in line with the proper and rcommended procedures.

Mr. Chairman, that concludes my summary.

Mr. DINGELL. The subcommittee thanks you for a most helpful statement.

The Chair recognizes Mr. Griffin.

## STATEMENT OF THOMAS A. GRIFFIN, JR.

Mr. GRIFFIN. Mr.Chairman, before I deliver my statement, I realized sitting here that the statement I have written probably sounds quite negative.

Orange County and Rockland County is for square, conservation measures. I have chosen to take this opportunity to review this bill that is proposed mainly from those areas which I think it needs work and is troublesome, but almost all of our promotional efforts for the last four years have been directed toward educating our customers toward how to properly conserve in their homes.

My name is Thomas A. Griffin, Jr. I am Executive Vice President and Chief Operating Officer of Orange and Rockland Utilities, Inc, and its subsidiaries, Rockland Electric Company and Pike County Light & Power Company.

The area served by Orange and Rockland Utilities and its subsidiaries is shown on the map attached to the outline of my comments. This area represents the Company's entire franchise territory for the service of electricity. However, within this area we are not the exclusive distributors of gas. Several other utilities serve gas in our electric franchise area and in some parts gas is not available.

Our residential customer distribution as of 3/31/77 was as follows:

Electric: New York, 126,076 customers; New Jersey, 44,078; Pennsylvania, 2,369;

Gas: New York, 75,998 customers; New Jersey, zero; Pennsylvania, 838.

We serve a very small residential electric space heating load, 3,284 customers in New York; 571 customers in New Jersey, and 82 customers in Pennsylvania.

The residential areas that we serve received a great impetus to grow when the access to metropolitan New York was improved by the completion of the Tappan Zee Bridge and part of the Throughway system, and the Palisades Interstate Parkway, both of which I believe were completed around 1956.

The following is an example of the rate of growth of our territory since 1960. In 1960 we served 104,590 residential homes. As shown above, we now serve 172,523 residential homes. I have learned from those in our company who were dealing with builders during this period of time that most builders were offering at least 2 inches of insulation in the wall and 3-1/2 inches in the cap, ceiling or attic.

During this period we did have a force of men who were familiar with the method of calculating heat losses, but since the price of gas was relatively low very little promotion of gas heat was required and the force was reduced to a few men.

In addition, we have a small force of service men, 23, who are at present able to service and make minor repairs on gas furnaces, for example, installation of new thermostat for pilot control, but I do not believe I could fairly say that these men are qualified to advise our customers with regard to the furnace efficiency modifications indicated in section 101(11)(B)(i) and (ii).

Orange and Rockland stopped selling gas to new residential homes at the end of March 1975, pursuant to direction of the New York State Public Service Commission.

I would like to comment briefly on the conservation measures outlined under section 191(11)(A)-(F). I believe that to do an adequate job for cusomers in this area it will require the development of a fairly substantial cadre of men proficient in calculating heat losses. Further, I believe that in order to do this job properly it may require as much as one man day per customer to properly determine and advise him of the suggested measures which may be appropriate for his building. This can be accomplished either by developing a small cadre of utility employees which would train a rather large group of contractors' employees or by the utility itself.

In order to accomplish the task outlined in the proposed bill under section 103(1)(A)-(F), it is our estimate that it would require approximately 350 men in the field to adequately cover our 173,000 customers. If our efforts were only directed toward our gas space heating customers, this cadre could probably be reduced to approximately 150 people.

With respect to section 101(11)(B)(iii), while it is true that the installation of an electrical or mechanical furnace ignition system would save gas and assuming such safe devices are presently available, I believe that the customer should also be informed as to the cost and trouble-free life expectancy of this device.

With respect to item (C) in this same section, the relative savings to be derived by using clock thermostats are questionable or, at best, depend upon the habits of the particular homeowners. In my case, in all probability, it would result in increased usage since I unfailingly turn all thermostats in the house down each night and

do not raise the setting of any until after I have gotten up in the morning. Clock thermostats are usually set to permit the heat to come on sometime before the homeowner normally awakes.

With respect to the savings available under part (D) of this section, there is probably great advantage in adding insulation to the cap of the building. On the other hand, I know of no safe way of assuring, short of taking out wall panels, that an extra inch of insulation can be safely "blown in" to a wall space that already has two inches of insulation in place. The benefits, in terms of gas conserved, in excess of the cost of installation, even if there were a good method, would probably be marginal.

With respect to section (E), the amount of energy to be saved would, of course, depend upon the temperature level at which the customer chooses to heat the water. This can vary with the size of the family which influences the amount of water usage.

With respect to part (F), I believe that the installation of storm windows would make a significant contribution toward conservation. However, some are much better than others and the customer ought to be made aware of the types available, their strong points and their weak points.

Perhaps my concern here can be readily taken care of by a mailer to all customers as to what to look for in storm window features.

With respect to section 103, part (1)(B), this section requires that each customer be informed of "the savings in costs of home heating and cooling that are likely to result from installation of the suggested measures in typical residential buildings in such category." While some may take comfort in the words "that are likely to result", the actual savings that any customer may achieve will be affected by so many variables that I think this section must include considerably more caveats to prevent the customer from believing that he is being informed of guaranteed savings.

Among the things that can affect these savings are: The changing price of fuel; the customer's personal habits; variations in the quality of two insulation jobs even though both are acceptable; changes in the average daytime and nighttime temperatures from year to year; and, of course, adequate maintenance of the additions over the life of the home.

I am concerned with the necessity for making the utility the financier of such a program where adequate alternative sources of funds exist. In addition, even where the utility is not the financier this law seems to indicate that it will be the collection agent.

Our Nation is quite used to installment buying at this stage in its history and I see no reason why the financing of these home improvements cannot be accomplished in the conventional banker-customer-contractor relationship. In fact, any liabilities or additional costs of running such a program by the utility would tend to increase the cost of service to all consumers, many of whom have already installed many of these suggested conservation devices on their own initiative.

Section 103, part 2(D) calls for the minimum financing period to be three years. I would suggest that the minimum financing period be scaled to the size of the loan and that the maximum financing period also be established.

Although homeowners are generally good credit risks, provisions would have to be made to protect the utility in the event a man decided to default at the time of selling his home.

My closing comments are general in nature. If this program successfully achieves its conservation goals there may be good reason for involving the utility company in the information and education portions of the program because the net result would be to save gas.

However, I believe that the most promising place where the Nation can look to keep this gas would be in the ground where it is right now. In order for this to be accomplished many utilities, whose contractual arrangements with pipeline companies have been classically "take or pay"contracts for a specific annual quantity, would have to change these contracts in order that the customers, and the Nation, can, in fact, realize the ultimate fruits of their conservation efforts.

In the case of the fuel oil or other fuels which may be saved by such a program, I see no reason for the electric utilities to become involved at all except to the extent that insulation will also result in reducing the cooling load. The burden of this program should be placed on the organization of fuel oil dealers throughout the country.

In this particular area, even though we are a combination electric and gas company, we would have to develop expertise in home heating fuel oil burning equipment.

Perhaps if the entire program of educating, financing, et cetera, were done by an agency in each State it would improve the credibility of the program and eliminate many of the features that I feel place an inordinate burden upon the utility companies.

Lastly, let me state that my company, along with all other New York State electric utilities, under the auspices of the New York State Energy Office and with the collaboration of the New York State Public Service Commission is taking part in a survey which will hopefully be finished by June 1, 1977, and which is directed toward determining among other things the quantities of insulation already in place and the existence of storm windows, et cetera, in the residential homes throughout the State.

I believe that a program which recognizes that the cost/benefits of a conservation program may be different from one area to another even within a State will have to place heavy reliance on such a survey.

I am sure you ladies and gentlemen all know that with respect to new homes, the New York State Public Service Commission has required that modern insulation standards be met before an electric utility can provide service.

Thank you, Mr. Chairman.

Mr. SHARP [presiding]. Thank you very much to the panel.

The Members of Congress will now ask questions under the five minute rule in order of their appearance.

Mr. Brown of Ohio?

Mr. BROWN. Thank you, gentlemen.

I am interested in the testimony each one of you has given but I particularly would like to ask Mr. Richman and Mr. Griffin what

your programs do to encourage the individual entrepreneur who may be turned on by the energy crisis, and the opportunities it affords for public service to help people insulate their homes and move to solar energy and a lot of other things.

How do you help him get the information he needs?

I happen to have in mind one such individual in my own part of the country and we are having a devil of a time trying to get information out of the Federal Government for this guy who does not have in his company a lawyer, a scientist, a research man, and so forth. As a matter of fact, what he has got is a box of tools and two other people working for him in a little shop he works out of, and his wife keeps the books.

Now, what helps him in this operation?

I am going to get to you with the Washington Gas Light Company, because I understand you have two contractors that you work with, and I want to know if those are the only two that exist in your service area?

Mr. RICHMAN. Congressman, we are in the process of developing an institution.

Mr. BROWN. In the process of developing, but what have you done over the last two years to help this individual guy who wants to get information on how he can help homeowners improve their fuel efficiency?

Mr. RICHMAN. In the last two years we have primarily relied on what Federal programs were available.

Mr. BROWN. So mostly this is talk. How about you?.

Mr. RICHMAN. Congressman, if I may——

Mr. BROWN. Sure, but let me get an answer from him. The answers have to be short too, and just be honest.

Mr. RICHMAN. I will be very short.

Mr. BROWN. You don't have to defend yourself.

Mr. GRIFFIN. Very little, except we, through our mailing program to our customers, made our customers aware.

Mr. BROWN. Your customers, but I am not talking about customers; I am talking about the guys who will do the work, the guys that get down there and put in the insulation and do the grungy work of trying to put in the solar heating stuff and things like that.

Mr. GRIFFIN. We have lined up several makes and several contractors.

Mr. BROWN. How many bankers do that work?

Mr. GRIFFIN. The bankers don't do the work, but we have lined up several contractors.

Mr. BROWN. What does lined up mean?

Mr. GRIFFIN. Had them prepared to enter ito the program if we could produce the leads.

Mr. BROWN. Do you provide them any information about training on the importance of insulation or anything like that ?

Mr. GRIFFIN. No, sir, we do not.

Mr. BROWN. Washington Gas Light Company testifies that after a sales agreement has been signed and a customer's credit has been checked, the company makes arrangements with one of the two contractors we use to arrange for actual insulation. How many insulation contractors are there in your service area?

Mr. HOWARD. I do not know the answer to that question.

Mr. BROWN. More than two?

Mr. HOWARD. There certainly are, yes. Back when our program began——

Mr. BROWN. We have to sign a contract at our house to get people to do that kind of work, so maybe there are only two, but the question I am asking is why do you limit yourself to two?

Mr. HOWARD. Back when we developed our program we discussed the possibility of having many, many contractors in this area do our insulation work, and after consulting with all of these potential installers, others could not or would not agree to do all of the types of installation that we wanted them to do.

Mr. BROWN. Let me ask the question this way: You want a guy who will do a wide variety of things. Could you estimate the annual volume of business of the two contractors you do business with? Are they small, big? How do they relate to the spectrum of potential contractors in your area?

Mr. HOWARD. I am advised that one of the contractors is the largest in the metropolitan area and the other is quite small.

Mr. BROWN. Could you give me a volume of business? I don't want to violate any professional situation.

Mr. HOWARD. You mean volume of business our company does or the contractors?

Mr. BROWN. No, the contractors. You see what concerns me about this, if I haven't made it clear with the line of questioning, is there is going to be an approved list with the help of governmental agencies like yours, who are involved in this kind of thing, and that approved list is going to be the biggest guy in the area, and then the other fellow who wants to put in insulation is not going to get on the approved list because he is a little guy and he is not even going to be able to get the information from some of the Government agencies.

Mr. HOWARD. Mr. Brown, I think maybe perhaps the question you just asked could be better answered by one of the members of the second panel, Mr. Davenport, who is one of our installers.

Mr. BROWN. Is he the biggest or the smallest?

Mr. HOWARD. He is the largest.

Mr. SHARP. The time of the gentleman has expired.

The gentleman from Michigan, Mr. Stockman?

Mr. STOCKMAN. A number of the members of the panel indicated a very strong affinity for mandatory standards, insulation standards, or efficiency standards on resale, and I imagine the assumption behind that is we have to have some kind of selective program for the existing housing.

Mr. STOCKMAN. Simply because of the problem politically and logistically it is not feasible to put an attic inspector in every home in the country. What I am wondering is if you are going to have a targeting program. In other words, take existing stock of housing, and if you are going to target on certain portions or shares of that, why use only that portion which turns over in the retail market every year?

It seems to me a far more logical targeting principle or selection principle would be worst first. In other words, take that portion of

the existing housing stock which is worst in terms of energy efficiency and deal with that first.

If you did that, obviously you would be talking about the rental stock for mostly middle and lower income units where the renter pays the utility bill, because in that particular instance the landlord or owner has no incentive to insulate, and the renter is probably reluctant to because he doesn't stay there very long and he doesn't want to leave a nice capital gain or improvement to the landlord when he moves.

What is your rationale for arbitrarily picking out that limited portion of the existing housing stock which may be 2 percent or 3 percent a year that turns over and say since we can't do it all or it's not politically possible, we are going to target to that portion. So there are some specific questions I would like to put to you.

One, what is the housing turnover rate; what proportion of the housing stock will we be dealing with on the average? Have you thought about that?

Two, what are some of the secondary repercussions in terms of changes in sales patterns, changes in tenure patterns that might create stronger incentive for converting owner housing into rental housing and so forth?

I wonder if we have really thought about some of those aspects or secondary repercussions of targeting on the stock of resale housing?

Mr. RICHMAN. If I may, in my statement I talked about resale, because I think that is the largest market. In the energy conservation plan we have submitted to FEA from New Jersey, we include a mandatory program for the rental market, and, in fact, that market is inspected on a five year periodic turnover, so that rental buildings would have to meet energy efficiency standards much, much quicker than the housing market within a five year period after promulgation of regulations as they come up for normal inspection.

The housing turnover, the figures vary greatly, depending upon whom you want to believe, but it's between 6 percent and 10 percent a year.

Mr. STOCKMAN. So you are talking about a ten-year ceiling at the minimum.

Mr. RICHMAN. In which a person has to do it; this is the final gun, if you will. What we hope to do is encourage people that they know at some point they are going to have to meet a standard, that they do it as early as possible in order to receive a return on their investment. That would be part of our educational process.

Mr. Chairman, if you will indulge me a minute, I didn't get back to answering Mr. Brown's question.

Mr. SHARP. The time belongs to the gentleman from Michigan.

Mr. STOCKMAN. I would like the other gentleman interested in mandatory standards for resale housing to answer.

Mr. BRYNOLFSON. I tried to indicate in my statement at the time a home is turned over, you have to have appraisals as part of the loan process, and there is extensive intervention where people are inspecting the house, making agreements, signing papers, and it seems like a time when you can do something like this with minimum impact on the people involved.

The other thing is that even if you don't have a separate special requirement for rental property, tax considerations tend to make rental property turn over faster, and you tend to get them with this kind of requirement.

Mr. STOCKMAN. Let me follow up on that a little bit. It would depend on the stringency of your standard. If they were very minimal insulations, it might be $300 per house, and I don't see you would get much disturbance in the market patterns, but what if you went the full shot and said you would cover insulation, storm windows, stripping, furnaces retrofit, all of the other items we have been talking about?

It seems to me there you may be talking about a couple of thousand in required improvements. Do you feel there would be any problem, not necessarily a problem, but just any change or disturbance or unexpected patterns?

This always happens when we mandate something governmentally in the housing market.

Mr. BRYNOLFSON. Clearly if the cost gets too large, you will cause dislocations of that type. I think I mentioned that Minnesota's proposal would restrict it to things that would pay back within five years. This would tend to keep the cost in the area of $500 or less. It would generally rule out wall insulation, but cover most other things.

Mr. RICHMAN. Our program is restricted in the same sense to a three or four year payback period.

Mr. STOCKMAN. The best criteria would be a limited payback period; in other words, standards would embody only costs which could be recovered in a short period of time.

Mr. RICHMAN. Yes, sir. We also in New Jersey will be through the New Jersey Mortgage Finance Agency providing low cost, low interest loans to people. We envision between 6-1/2 and 7 percent to do this work, which is far below the average homeowner or improvement loan, to make it a little more palatable.

Mr. STOCKMAN. Thank you.

Mr. SHARP. The time of the gentleman has expired.

As I am sure everybody knows, we have an enormous witness list for several weeks, and I am sorry, we have to keep to the schedule.

Mr. BROWN. Would the chairman yield just at that point?

I want to state as I did yesterday, I have no desire to be rude to any of the witnesses, but we do have a timeframe problem, and what I need to elicit is a very quick answer to some quick questions.

Sometimes my questions are not as good as the answers.

Mr. SHARP. Mr. Brown is always very quick.

The gentleman from Tennessee, Mr. Gore, is recognized for five minutes.

Mr. GORE. Thank you, Mr. Chairman.

I commend all of you for your testimony this morning, and I would like to direct my questions specifically to Mr. Daniels, who represents TVA serving the customers in the district that I represent, and throughout Tennessee and the Middle South.

I would like to ask permission, Mr. Chairman, to submit additional questions in writing for responses in writing in the event that my time runs out during this five minute period.

I think we can point to a success story in the TVA region, Mr. Chairman, with our winterization program.

We have had a great deal of success in insulating homes. I think that the President's proposal to use TVA as a demonstration area in this field is an excellent idea.

I have some very serious questions about the manner in which TVA is proceeding with its loan program.

You have 2-1/2 million electricity customers roughly—correct me if I am wrong—yet you only have 900,000 customers who heat with electricity. That excludes a large number of people, about 120,000 people in my district, from your isolation program, those who use electricity for everything besides heating, including air-conditioning in the summer.

I was looking over this insulation booklet that was passed out about how much energy can be saved in the summer on your cooling bill. What about a person who cooks or who uses electricity for various purposes in their home, cools with electric air-conditioning, yet uses gas heat during the winter? Isn't that person subsidizing the interest free loan to his neighbor who also uses electricity, also uses it in the summer, but happens to use it for a specific purpose in the winter, that this person doesn't use it for?

Mr. DANIELS. We considered this very carefully, Mr. Gore.

It does not subsidize a particular class of customer or a particular group of customers in a class at the expense of other customers. As I said in my prepared statement, by insulating only electrically heated residences, we will effect a net savings to the power system, a savings that will be shared by all customers in the form of lower electricity rates than would otherwise be required. However, we are now looking into the feasibility of extending the program to electric air-conditioning customers as well as electric heat customers. As a matter of fact, the major portion of our program work will be accomplished through the audit and the analysis of the energy needs, and the discussion and information provided the customers. That will be done for every customer, regardless of the type heat used by the customer.

Mr. GORE. The audit is fine, but that does not insulate the home, and your testimony indicates that revenues from the power system, power revenues, are going to be used as a source of funds for the interest free loans.

It seems to me that it ought to be extended if TVA is going to be the chosen instrument of the Government for a demonstration in this area, and if TVA is going to be the chosen instrument within the region it serves to be the main thrust of the insulation program, and it ought to include your other customers in some way, and I realize there are delicate questions of equity involved here, but I don't thik they have been resolved satisfactorily.

I had one other area of questioning I wanted to pursue, if you could respond briefly to that first one.

Mr. DANIELS. Yes, I will. I certainly don't disagree with you. Every customer is important.

I believe there have been some discussions by Chairman Wagner with the White House regarding funding arrangements for non-electric heated homes.

Mr. GORE. I hope there are successful.

Now, our levelized billing proposal to allow the customer to pay back the interest free loan in the form of electricity bill like that would otherwise be saved gives me some problems because somebody who insulates his home is going to continue to get the same electric bill regardless. Word of mouth is going to have to play a part in the insulation program across this country, and you reduce some of the incentive there.

Perhaps you could solve this problem if you could clearly identify on the subsequent bills what portion of the bill is allocated to the repayment of the loan to insulate. If it's not indicated, if it's just a continuing high electric bill with a continuing incremental increase, then that really reduces the incentive to insulate a great deal, it seems to me.

Have you considered clearly indicating on the bill what portion is allocated to the repayment of the loan?

Mr. DANIELS. Yes. That levelized billing plan is optional. We do encourage it, but whatever the billing arrangements, the portion of the electric bill that represents the repayment of the insulation loan will be identified separately in every case.

Mr. GORE. Thank you.

Mr. SHARP. The time of the gentleman has expired.

The gentleman from Massachusetts, Mr. Markey?

Mr. MARKEY. Thank you, Mr. Chairman.

Mr. Richman, Mr. Stockman earlier made reference to a subject matter covered in your statement in which you said: "At the time of the sale of a home a deed cannot be transferred or recorded until a certificate of energy efficiency is attached."

What I am wondering about is your sense of the problems involved in implementing such a program, enforcing it, having it be effectively administered and show some degree of substantial gains in weatherization.

Mr. RICHMAN. We think it would be fairly easy. The deeds have to be recorded in the county seat in New Jersey, and we have 21 counties. If the certificate is not attached, it can't be recorded, and therefore, obviously, the attorney for the buyer would never want to let that sale go through. There is no protection for the new owner of the home.

New Jersey has now passed a new statewide building code implementing the ASHRAE 1975 code, and we are in the process of training the local building inspectors as to what is available and what building codes are and what is to be done, and it's very easy for them to sign off a certificate which requires just cap insulation, very minor changes, and attach that to the back of the deed.

Mr. MARKEY. Could you submit to the committee the language which you propose in New Jersey or which you are now operating under?

Mr. RICHMAN. I will, sir, submit that.

Mr. MARKEY. Thank you.

[The information referred to had not been received by the committee at the time the record closed.]

Mr. MARKEY. I would also like to ask the gentlemen from Washington Gas and from the Tennessee Valley Authority as to the

problems that you envision in giving loans that extended to the people who pay the fuel bill in the case of renters. What are the problems in effectively implementing the program in the case of renters who have a more transient interest in the real estate at the time the improvements would be made?

Can you give me your thoughts on the practicality of the program in this regard.

Mr. HOWARD. I don't know that our company has ever looked at that particular aspect, but if we have we will be glad to provide that back to you in writing.

Mr. MARKEY. Do you have a sense of whether that would be a proper way of proceeding or whether the loans should be extended to the owner?

Mr. HOWARD. Mr. Reckeweg will speak to that.

Mr. RECKEWEG. My name is Frederick Reckeweg, and I am with Washington Gas.

We have dealt with this problem in the entire city of Washington, D.C., and we have discussed this with those who are looking for solutions in the city government.

We know of no solution whereby we can interest renters to invest their money in insulation nor do we feel we can interest homeowners who are renting their properties out to do it, because they are not paying the utility bills.

Our suggestion to the city government was that through their funds that they might offer low interest loans and force the homeowner to do this work. Otherwise, there is no answer, to my knowledge.

Mr. MARKEY. You see no benefit then of these funds flowing to renters. You think ultimately the low interest loans, or in effect, subsidy, would have to flow to the landlord himself?

Mr. RECKEWEG. I think so.

Mr. MARKEY. In TVA have you had any experience in that area?

Mr. DANIELS. Having responsibilities for generating the power supply, we are in a little different position, and we look at the benefits that accrue to all electric consumers from the savings in fuel costs from not having to use as much of the higher cost fuels, as well as the savings in reduced need for new generating capacity.

We think that these benefits accruing to all electric consumers—

Mr. MARKEY. Including renters?

Mr. DANIELS. All of them, yes, renters as well as owners. The benefits are ample and far outweigh the cost of the TVA program.

Mr. MARKEY. Have you had experience in a program of this nature, offering the loans to renters?

Mr. DANIELS. Renters are included in the program that we are getting under way next month. In the two previous insulation programs we did not insulate any rental property. We have had extensive discussions with rental property owners and have had surprising acceptance; not complete agreement, but they were not negative about participating in the program.

Mr. MARKEY. Thank you.

Mr. SHARP. The time of the gentleman has expired.

I would like to ask a couple of questions.

Of course, the experience the TVA and Washington Gas has had has been fairly short term, but in the event that someone wishes to sell his home in the process of paying off one of these loans over two or three years, do you require payment of the loan then, or do you allow that just to be carried in the utility bill of the next homeowner?

Mr. DANIELS Our agreement with the homeowner would provide that if he sells the property he settles up the balance of the loan at the time of the sale.

Mr. SHARP. I see.

Mr. HOWARD. In Washington Gas it can be carried over to the new owner also.

Mr. SHARP. The new owner obviously arranges with the old owners and learns of this billing practice?

Mr. HOWARD That is correct.

Mr. SHARP. How about in terms of default? One of the things FTC raised as an issue was the question of whether or not you find people who actually would pay the utility bill, but default on the loan, therefore putting you in the position of perhaps cutting them off.

Do you run into that experience where they will pay one but not the other?

Mr. DANIELS. We haven't had the actual experience yet. We do anticipate that with as many as half a million loans involved, there will be some, very few, who will be dissatisfied with what they feel is the performance that they have been told they would get from the job, and would not pay the loan amount.

The local power distributors who resell TVA electric power at retail have standard collection policies they follow now and have been doing for some 40 years. They will carry out their normal policy of collections.

In one or two of the States in which TVA service is provided, I understand that State law may not permit discontinuing electric service for anything except nonpayment for the service itself.

Mr. SHARP. Mr. Howard?

Mr. HOWARD. Our company has been very fortunate. We have never had any instance of a default of payment, so it's difficult to say what we would do. Of course, normally if we have a default of payment on a gas bill, of course, we terminate service within a reasonable period of time, but we have been very fortunate thus far not to have any problems with the insulation payments.

Mr. SHARP. I wanted to ask Mr. Griffin, do I understand you have a subsidiary who does this for you?

Mr. GRIFFIN. No. I just happen to have said that Orange and Rockland had two wholly owned subsidiaries supplying electricity in one case and electricity and gas in another where we cross State lines.

Mr. SHARP. I see. Washington Gas Light, you just contract, the contractors do the work, and they are not subsidiaries?

Mr. HOWARD. No; the contractors do the work, yes.

Mr. SHARP. That is the same with TVA?

Mr. DANIELS. TVA will not do it directly. We use contractors.

Mr. SHARP My time has expired.

Mr. DINGELL. The Chair recognizes Mrs. Harrison.

Mrs. HARRISON. Mr. Daniels, in considering the TVA program, what is the number of residential homes within your area?

Mr. DANIELS. The total number of ultimate residential customers is between 2 and 2½ million.

Mrs. HARRISON. So far, with your pilot programs, you have reached approximately 1,300, and you would expect this third phase to hit half a million. It seems to me from what we are hearing this morning that on a voluntary basis we can hope for at best perhaps a limited response from homeowners.

In other words, to achieve the objectives of this bill and insulate 90 percent of the residences by a given date, it's going to be extremely difficult on a voluntary basis.

Mr. DANIELS. That may be. Our estimate of 500,000 homes is based on the experience we gained in the two demonstration programs we did. The 500,000 is the number of existing homes which we estimate need additional attic insulation.

In other words, the rest of the electrically heated homes—and we are talking about a total number in excess of 900,000, a million to make it easy—are adequately insulated as far as the attic space is concerned. That doesn't mean there are not a number of other energy savings or weatherization measures that could be beneficial to these homes.

Mrs. HARRISON. Right. Another interesting point in your testimony was that you see savings outweighing costs for TVA with this program. We have been concerned with the possibiity of this program on a nationwide basis causing rising prices, perhaps materials costs, wage costs, et cetera. Are there special things in the TVA program that would be helpful to put in the record that give reasons why you can make this statement and what we can draw from it?

Mr. DANIELS. Insofar as rising costs, of course, we have considered that and expect where the supply and demand relationship reaches the proportions it will in this program, that there will be some cost increases. Our program does not envision a hard line cost figure, one that would reduce to an unfair level the amount of profit that a contractor could make from the work.

What we are doing is the personal job. We are going to the manufacturers and talking with them about availability of insulation material and about costs, and we are in touch with approximately 200 insulation contractors, in the entire region. We have discussed with them the purposes of the program and the fact we do have hard data developed in our two past programs that give us a good handle on the cost of doing the work.

We have received cooperation to this point. We have yet to have the first contractor do the work. Contractors did the work in the research programs, and we paid them directly.

Incidentally, one of the provisions for protection is that each insulation job will be inspected before the contractor is paid. He will have a list of the specifications that he must meet for that job and after the inspection shows he did that work, he will get paid.

Mrs. HARRISON. Who does the energy audit and the inspection?

Mr. DANIELS. We will have a crew of energy auditors, probably 150 or so. The 160 local power distributors will be participants in

the program and most of them already have some capability of performing the audit and inspection of completed insulation work.

Mrs. HARRISON. You estimate your costs average $300 per home. We heard figures yesterday of roughly $1,000 to $1,200 per home.

Mr. DANIELS It is likely that includes measures other than the attic insulation.

Mrs. HARRISON. It does, and that would be the difference, yours is solely the attic, as I understand.

Mr. DANIELS. Correct. As I said, we will provide the homeowner with full information on all of the additional measures needed to completely weatherize his home and encourage him to have it done. We will give him a range of costs for each of those measures.

Mrs. HARRISON Thank you.

Mr. Richman, I have the same concern with the New Jersey program as far as the extent to which cooperation can be achieved on a voluntary basis. I would like to understand more fully how your program operates compared with the way the program would operate in this bill.

Mr. RICHMAN. I think the main difference is that in our program at some point the homeowner knows he has to make an investment. In that way we ensure we are going to capture a certain percentage of the market each year in terms of a turnover. I don't think there has been a great success on a voluntary basis to motivate people to put insulation in. The numbers don't seem to work out well.

Mr. BROWN. Here we have a program that says at some point you are going to have to do it. Based on the volume of mail my office has been getting about what has to be done, and asking for additional information for building construction which commenced prior to one year after enactment.

Mr. HARRISON. Could you explain your concern more?

Mr. RICHMAN. Yes. I guess it's a broader concept of what this program should be. Under the legislation, a utility commission submits a plan, and the plan is approved and goes into effect. What I would like to see in the program is a requirement that that program be updated to a three-year or five-year or seven-year basis, because I think new technologies will become available and there should be new things included in the program.

If you couple that with a capturing of the market on a sequential basis as the homes are turned over, these new technologies can be applied to the new programs. That is why restricting it to houses that are built prior to the first year, in effect, will leave these homes out in the future.

I would like to see it expanded.

Mrs. HARRISON. That is a good point.

You estimate your cost, Mr. Howard, at a total of a little under $500, and this has covered which types of insulation?

Mr. HOWARD It covers essentially three types of insulation; attic insulation; reinsulation in the walls, and insulation in the floor.

Mrs. HARRISON. You raise the problem of adequacy of materials on a national basis if this program becomes nationwide. We raised that issue yesterday ourselves because it is one that concerns us.

Speaking for the area your company services, do you see a problem with material availability?

Mr. HOWARD. I don't think we have any particular problem in this area. My concern is more on a national basis, but I don't have anything in particular on which to found that concern.

In this particular area I think we are in good shape as far as the availability of supplies.

As I mentioned in response to earlier questions, perhaps Mr. Davenport on the next panel would have some further comments, but I believe in our franchise area here we shouldn't.

Mrs. HARRISON. That is all, Mr. Chairman.

Mr. DINGELL. Mr. Hunt?

Mr. HUNT. Thank you, Mr. Chairman.

Mr. Griffin, it's my understanding that your public utility did an experiment with some sort of an entitlement program relative to natural gas within the last two years.

Mr. GRIFFIN. Yes. Let me explain what the program was exactly, and let me tell you it was a pilot program and it was a dismal failure.

Mr. HUNT. I hope you can tell us why it was a dismal failure.

Mr. GRIFFIN. Yes. We were getting a number of requests, even after we had closed down the gas market; we closed it down residentially in 1975, in March, and we closed it by order of the Public Service Commission in 1971 to the commercial market, except upon writing a letter to the Commission and getting an exception to the rule.

The Commission asked us if there were other ways of maybe not having to say no all of the time. So we decided that we would try a program, and we included three churches in the first six groups because we felt that they had an area to appeal to that other customers might not. We said, look, if you can cause cap insulation to be put in in any homes and have those people sign over the gas they will save to you, we will give you the equivalent gas, and when you have enough to cover your job we will do it.

In the first six that were on the list, they turned us down as it became too much trouble for them, even though they had written rather long and pleading letters for gas to the Commission.

Mr. HUNT. The purpose was that some commercial party would purchase the insulation for these homes or residences, and by so buying that insulation gain access to the natural gas that was saved.

Mr. GRIFFIN. Or in the case of a church, a person could do it on his own, and donate the savings in gas, not the savings in money, but the savings in gas to the church. If the church then accumulated enough to do its new school building or what have you with gas, we would just transfer that. It was a dismal failure because it was apparently not thought worth the effort.

Mr. HUNT Fine.

Thank you very much.

You mentioned in your testimony, Mr. Griffin, that the New Jersey State Public Service Commission has established certain insulation standards associated with new electrical home heating attachments; am I correct?

Mr. GRIFFIN. No. They prohibit any electric company from supplying any service whatsoever to a new home, unless the home

is insulated to modern standards, 6 inches in the cap, 3-1/2 inches in the wall and I believe it's 3 inches in the floor, which I think is the latest ASHRAE standard.

Mr. HUNT. It has to be up to ASHRAE standards for New Jersey State or that geographical area.

Mr. GRIFFIN. Yes.

Mr. HUNT. Thank you very much.

Mr. DINGELL. The Chair has several questions I would like to ask Mr. Daniels on behalf of the TVA.

You indicated that your TVA program ivolves neither payment of interest nor inclusion in the rate base; is that correct?

Mr. DANIELS. That is correct.

Mr. DINGELL. Do you regard that as an adequate mechanism or do you think it's necessary for this kind of financing program to go into the rate base?

Mr. DANIELS. I am not certain that it would be nationally necessary to do that. We feel that it's appealing, it gets the interest of the consumer, it helps the job to be done on a voluntary basis, and with the benefits that accrue to all electric consumers, it's certainly worth the effort.

Mr. DINGELL. The legislation lists a series of mechanisms which would be available. Nowhere in that legislation does the term "heat pumps" appear. Should that be included.

Mr. DANIELS. Very much so, in our opinion.

Mr. DINGELL. Nowhere in that specific designation does "furnace efficiency modifications" appear. Should we specify that phrase or should we make sure that the definition is sufficiently broad to include mechanisms that might benefit us in saving energy?

Mr. DANIELS. We recommend heat pumps be identified separately.

Mr. DINGELL. Our panel member from Minnesota, Mr. Brynolfson, and our panel member from New Jersey, gentlemen, do you agree with each other generally with regard to the comments you made on the legislation and its desirability?

I read your statements, and they are somewhat different, but I don't think they are so different that I found any differences in your comments on these matters. Do you feel that having heard the statement of each other has placed you in general agreement?

Mr. BRYNOLFSON. Mr. Chairman, I believe my statement pointed out a few problems we had run into in Minnesota which would be needed to be resolved, but that doesn't mean we are in disagreement.

Mr. DINGELL. I have the feeling you both specifically indicated a strong feeling that it was necessary that we have Federal support through utilization of the Federal financing mechanism, TVA, FHA, and I would suspect you would include banks, savings and loans, and things of that kind which are Federally regulated through different Federal regulatory mechanisms.

Am I correct in inferring that you both would ask that they be involved in the system to procure cooperation of homeowners and home sellers at the time of the sale?

Mr. RICHMAN. Absolutely. I think you were away when I mentioned that New Jersey is going to establish a low-interest loan

program through the New Jersey Mortgage Finance Agency and expect to have 7 percent loans for these types of improvements.

Mr. DINGELL. You are both in agreement?

Mr. BRYNOLFSON. Yes, sir.

Mr. DINGELL. Gentlemen, this subcommittee has had rather substantial trouble in terms of achieving cooperation by the independent voluntary standard-making organizations in terms of putting on the market devices like burner-type constrictions, flue dampers, constrictions that would go into the chimney and into the exits from the furnace.

Are you finding that those voluntary standards and standard-making mechanisms are serving as an inhibitory factor in terms of moving forward a program of retrofitting homes for additional efficiency in terms of the heating plant, and so forth?

Mr. RICHMAN. Mr. Chairman, I feel they definitely have inhibited the program of promoting energy conservation, especially in the two areas you mentioned. I did not conduct scientific experiments in my office, but I played with those units in my office, and I tried to blow my office up.

Mr. DINGELL. You didn't blow your office up?

Mr. RICHMAN. I didn't; I am here today. I think definitely that the standard making organization has inhibited the promotion of these conservation materials.

Mr. DINGELL. I wonder if Mr. Howard and Mr. Griffin and Mr. Daniels would like to make a comment?

Mr. DANIELS. A brief comment; those are foreign terms to me, Mr. Chairman. We have no responsibility in the gas energy field.

Mr. DINGELL. Mr. Brynolfson.

Mr. BRYNOLFSON. I guess I would agree substantially with Mr. Richman's statement. We get a lot of questions about this at the State level, and, as a State government, we have no capacity to do our own testing, so if the industry is dragging its feet, that slows down the production.

Mr. DINGELL. Mr. Howard.

Mr. HOWARD. Our company had the opportunity several years ago to test some of those so-called fuel savings devices, specifically the manufacturers Vent-o-matic device, the one that received the most publicity. In this area, the Washington, D.C., area, on the 3 tests that we made on the device, we found fuel savings of 1, 2 and 6 percent, respectively, on the 3 test installations that we did.

Our company's concern is that the device not be allowed to be installed by the homeowner and in that light are very encouraged by recent progress made by gas furnace manufacturers and specifically I am referring to both the Carrier and Bryant Corporations, both of whom now include the so-called automatic flue damper device with their furnaces.

Mr. DINGELL. Bryant and Carrier are one company, I am advised; they merged.

Mr. HOWARD. I think that is correct.

Mr. DINGELL. So really you only have one manufacturer who is doing this kind of work?

Mr. HOWARD. The only one that has a product on the market right now. I am sure the others do have something in test.

Mr. DINGELL. You have been addressing yourself to products, not to retrofitting. There is no retrofitting, of which you are aware, of these devices on the market, is there?

Mr. HOWARD. Within our area?

Mr. DINGELL. Yes.

Mr. HOWARD. No, sir; not that I am aware.

Mr. DINGELL. Michigan Consolidated has had rather substantial problems in this area, as you are no doubt aware. You indicate apprehension with regard to retrofitting by the homeowners. Do you have apprehension about retrofitting with a properly qualified device by properly qualified installers?

Mr. HOWARD. I don't believe our company would, assuming we would have assurance that the installations could be done properly.

Mr. DINGELL. In that we share a common concern.

Mr. Griffin?

Mr. GRIFFIN. The New York gas group, which is comprised of all the gas companies in New York State, along with Public Service Commission and New York State ERDA is involved in pilot programs throughout the State. I personally don't have the number on how many will be installed this year to test safety under actual field conditions. The only thing we have concern with is improper installation leading to accident.

Mr. DINGELL. A qualified installer, using a proper device, should not constitute any kind of a safety peril, should he?

Mr. GRIFFIN. That is providing nothing can interfere with that device after he properly installs it.

Mr. DINGELL. I would assume the device would be properly engineered toward that end.

Mr. GRIFFIN. Yes, and once we have that assurance, we would be for them, not against them.

Mr. DINGELL. You are aware none of these mechanisms are on the market because of the voluntary standards.

Mr. GRIFFIN. That is correct, and, unfortunately, I don't know of any way of speeding up the standard groups. I am frustrated myself by them.

Mr. DINGELL. This committee does not intend to allow you to be more frustrated if we can help it.

Minority counsel has questions.

Mr. DAVIS. Thank you, Mr. Chairman.

Mr. Howard, in your testimony you indicate Washington Gas Light's program would probably be in compliance with proposed legislation that we have before us. On page 3 of your testimony, you say Washington Gas is in compliance with the proposed legislation.

Do you have any estimate of how much that is costing Washington Gas Light, this program you now have?

Mr. HOWARD. How much it is costing the ratepayers?

Mr. DAVIS. If you would break it down in total cost and then costs for each ratepayer.

Mr. HOWARD. It is costing the ratepayer nothing.

Mr. DAVIS. It is not included in the rate.

Mr. HOWARD. No, we do not.

Mr. DAVIS. Have you made any estimates about how much savings in new capacity will result from your energy conservation

program? In other words, is it going to save you a few years in time in bringing a new generating station on line by having these measures installed?

Mr. HOWARD. No, sir; our company hasn't taken on any new customers since April of 1972. Admittedly, however, as more and more conservation techniques are implemented, more and more gas would become available, and presumably at that time our company would want to restudy the whole situation to see if we could possibly take on some new business.

Mr. DAVIS. I don't believe you have answered as to the total cost of the program.

Mr. HOWARD. I think if I understood your question correctly, you asked what types of savings.

Mr. DAVIS. No, the total cost of your program; in other words, the cost of training these individuals to go out and audit homes, making arrangements with contractors to install, the overhead cost involved with the program.

Mr. HOWARD. I don't think we are prepared to answer that question specifically at this time. We would be glad to submit that in writing to you.

Mr. DAVIS. Do you have any figures for the amount of savings there are in the average home?

Mr. HOWARD. Fuel savings, we estimate that the average fuel savings with that program is approximately 16 percent for the metropolitan area.

Mr. DAVIS. And dollars?

Mr. HOWARD. I don't have that translated into dollars.

Mr. DAVIS. Could you supply that for the record?

Mr. HOWARD. Be glad to

Mr. BROWN. Mr. Chairman, we may have some other questions along this line.

Mr. DINGELL. The Chair will see to it that the questions are presented to the witnesses and they will respond in a timely fashion.

Gentlemen, we thank you all for your assistance to the committee and for your appearance today.

The Chair advises in view of the fact we have a vote on the floor now, probably we should break for lunch and reconvene at 1:30 and persist through the afternoon. I anticipate Panel 2 on our witness list will be heard promptly at 1:30, and Panel 3 will be heard around 2:30 or 2:45, and Panel 4 probably an hour later.

The Chair thanks our witnesses for their patience and assistance to us, and we will be in recess until 1:30 p.m.

[Whereupon, at 12:07 p.m., the subcommittee recessed, to reconvene at 1:30 p.m. the same day.]

AFTER RECESS

[The subcommittee convened at 1:30 p.m., Hon. John D. Dingell presiding.]

Mr. DINGELL. The subcommittee will come to order. The subcommittee will hear now our second panel of the day, Mr. Carroll V. Davenport, Davenport Insulation, Inc.; James C. Haney, Assistant Director of Production, Primary Glass, PPG Industries, Inc.; Herbert Swinburne, Architectural Consultant; Nile Bucher, President,

Incel Corporation; and Guy Mabry, Vice President of Insulation Operating Division, Owens-Corning Fiberglas Corporation.

STATEMENTS OF JAMES C. HANEY, ASSISTANT DIRECTOR OF PRODUCTION, PRIMARY GLASS, PPG INDUSTRIES, INC.; HERBERT H. SWINBURNE, ARCHITECTURAL CONSULTANT; GUY O. MABRY, VICE PRESIDENT, INSULATION OPERATING DIVISION, OWENS-CORNING FIBERGLAS CORPORATION; NILE V. BUCHER, PRESIDENT, INCEL CORPORATION; AND CARROLL V. DAVENPORT, DAVENPORT INSULATION, INC.

Mr. DINGELL. Gentlemen, if you will all come forward and identify yourselves for purposes of assisting our reporter, we will then recognize you in that order.

Mr. HANEY. I am James Haney, Assistant Director of Production, Primary Glass, PPG Industries, Inc.

Mr. SWINBURNE. I am Herbert Swinburne, Architectural Consultant in Philadelphia.

Mr. MABRY. I am Guy Mabry, Vice President of Insulation Operating Division, Owens-Corning Fiberglas Corporation.

Mr. BUCHER. I am Nile Bucher, president, Incel Corporation.

Mr. DAVENPORT. I am Carroll Davenport, Davenport Insulation, Springfield, Virginia.

Mr. DINGELL. Gentlemen, we appreciate your presence. If you will now proceed with your statements, we will be glad to hear you.

STATEMENT OF JAMES C. HANEY

Mr. HANEY. Thank you.

My name is Jim Haney. I am Assistant Director of Production, Primary Glass, for the Glass Division of PPG Industries, Inc. With me today, although not at the table, is John Malarky, presently Manager, State Government Affairs, formerly Marketing Manager, Residential Construction for the Glass Division.

PPG Industries is a major U.S. corporation. Our principal businesses are flat glass, fiber glass, chemicals, paints, and plastics, among others.

I am here today to address the implications of the National Energy Act on the glass industry. The National Energy Act presents an ambitious and difficult challenge for the flat glass and glazing industry as it relates to building products. However, at this time, we believe the industry has sufficient capability to supply flat glass and related products to meet the demands of this program during the next several years providing (1) sufficient supplies of fuel are available, and (2) environmental regulations are administered reasonably.

Mr. DINGELL. Gentlemen, I am sorry, but we have to answer a vote. I do apologize, but we will recess and return here at 2:20 p.m.

[Brief recess.]

Mr. DINGELL. The subcommittee will come to order.

Gentlemen, the Chair apologizes again, but voting is at an end, and we can address ourselves to business, so we will recognize again Mr. Haney.

Mr. HANEY. Thank you.

Over the past decade, the flat glass industry has made several major transitions which have improved efficiency and capacity, and provided a wide array of products designed to conserve fossil fuels and collect free solar energy.

The efficiency and capacity of the industry has improved substantially through massive conversion of glass production technologies to the float glass process—a process which consumes less fuel per unit of production but one which increases productivity. This efficient process now makes up approximately over 80 percent of production capability and is the principal reason I am confident we can supply any demands the National Energy Act creates for flat glass products. Of course, I am assuming sufficient fuel supplies and reasonable environmental regulations. At this moment, these two conditions are the only conditions I place on our production capabilities. In addition to improving production capability, the flat glass industry has pioneered the development of fuel-conserving flat glass products for the home and business. These products include regular glass for double and triple glazed windows; environmental glass for heat and glare resistance; sealed insulating glass for windows and doors; fully tempered safety glass for storm doors, sliding patio doors and solar collector panels; retrofit systems for existing commercial and public buildings; and solar collector units and systems for hot water, space heating and cooling for residential, industrial, and commercial applications.

Gentlemen, in summary, I believe we can say with confidence that the flat glass industry can continue to furnish these products in quantities and qualities required to effectively meet most demands anticipated with the national energy program. Thank you for inviting us to appear here today. We will be glad to respond to any questions.

Mr. DINGELL. Mr. Haney, we thank you for your testimony.

Next witness, Mr. Swinburne.

## STATEMENT OF HERBERT H. SWINBURNE

Mr. SWINBURNE. I will read only extracts from my prepared statement, a copy of which you have.

Mr. DINGELL. Without objection, your entire statement will appear in the record.

Mr. SWINBURNE. Except for later comments I am in favor of the energy conservation utility program for existing residential buildings outlined in the National Energy Act.

Today we have over 75 million housing units in existence consuming about 20% of the nation's energy. A massive effort at retrofitting this stock is needed in order to save appreciable amounts of fuel.

There is more immediate energy gain in attacking waste and inefficiencies in existing housing than in regulating the construction of new housing.

I have these comments for your consideration:

In section 2, mention is made that industrial firms and utilities should convert from oil and natural gas to coal and other fuels. I

suggest that existing residential buildings be added to that list, and they should be converting to heat pumps, coal, and solar heat.

In section 101 the term "residential building" as defined, excludes existing residential buildings. Redefine. Add to the list of items included in "residential energy conservation measures," the following: G. Insulating glass H. Hot water piping and hot air ducts for heating systems. I suggest that Puerto Rico, and other southern regions in the United States, be excluded from this energy program. The Administrator should be directed to immediately define a climatic borderline south of which all utilities would not be required to follow the provisions of this legislation.

In section 102, with the several States each submitting a proposed residential energy conservation plan for approval, I suggest the Administrator be directed to develop a model plan or a set of general guidelines for such a plan, that would serve as a consistent framework for all the variables that will be received.

This would help speed up the review process as well as generate constancy in decisions relating to approvals.

I am concerned now with procedures more than with insulation and other energy measures, and let me say that the procedures set forth in section 103 require that the utility or one or more of its contractors do the following, and you have there this list that I would like to repeat: Inspect the residential units, recommend corrective energy conservation measures, estimate the energy cost savings, make or arrange for a loan, establish a price and install the corrective work or arrange with one or more contractors to do so.

Except for the loan, the legislation permits all of this to be done by one or more contractors other than the utility, as I read the legislation. If the corrective measures include items other than insulation, there could be far too many players in this act, in my judgment, with no one having overall responsibilities to the particular homeowner, and the owner can become very confused. He can also be victimized by the rip-off artists who have always flourished well in the home-remodeling and repair field.

With multiple activities and multiple contracts there is no one out there protecting the consumer.

The homeowner should be able to have one contractor who would be responsible for coordinating and installing the energy corrective measures. When the work is finished, it should be inspected by a competent individual. The work should then be guaranteed for a period of 3 years, which is the minimum time period for the repayment of the loan.

Your legislation requires that a contractor be credit-worthy, but is silent on his technical capabilities.

Your legislation calls for a lump-sum payment of outstanding principal and interest if a homeowner defaults on his loan, but is silent on the performance of a defaulting contractor.

In summary, if it is intended that conservation measures go beyond insulation only, I believe the procedures will prove to be unwieldy in practice and afford little protection to the homeowner who is inexperienced in energy conservation techniques. He wouldn't know much about how to handle all this.

I recommend that the utilities require their contractors to stand behind their cost analyses and energy recommendations. When retrofitting a home, I recommend that the owner be required to deal with one contractor only, and that the latter must guarantee his work. End of testimony.

Mr. DINGELL. Mr. Swinburne, the committee thanks you.

Mr. Mabry?

## STATEMENT OF GUY O. MABRY

Mr. MABRY. Thank you. With me here today is my associate, Mr. Oelman, who is manager of Owens-Corning National Affairs Office in Washington.

I have been employed by Owens-Corning for over 26 years and have served as Chairman of the National Council for the Housing Industry, of the National Association of Home Builders, and currently I am on the Policy Advisory Board of the Harvard-MIT Joint Center for Urban Affairs.

Owens-Corning, since it was incorporated in 1938, has been a leader in the development and manufacture of insulation and insulation systems.

The proposed utility program represents a constructive proposal. We would like to offer a few observations that may be helpful in refining certain of the specific elements.

My comments will deal with two areas: one, the level of insulation, and, two, the installation of that insulation in the home.

First, the level of insulation: A critical factor in either new construction or in a retrofit program involves setting the proper minimum standard for the product's insulation value and installation. Projecting energy costs and establishing correct insulation levels will eliminate the necessity of re-doing a retrofit program in the future.

Insulation standards must incorporate thermal effectiveness, product safety and quality. The type of insulation is important. The thermal efficiency of an insulation batt or blanket is produced and controlled at the manufacturing plant. Pneumatically blown insulation depends entirely upon the quality of the installation at the job site.

The amount of insulation is equally critical. Using computer analyses of insulation costs, weather data, and projected heating and cooling costs, we have developed a six zone geographical recommendation of insulation levels for attics, sidewalls and floors or crawl spaces. Many utilities—Georgia Power and Arkansas Power & Light are two examples—understand the importance of proper standards and have metering programs underway which measure energy savings of various insulation levels, as well as other energy conserving systems or products.

Next, I'd like to comment on installation. A conservation program must address itself to how that insulation will be installed in the home. The proposed legislation only deals with one method, namely contractors. The do-it-yourself market must also be included.

Owens-Corning's research has shown that during the past three years, when no legislative or tax incentive existed, over 8 million

homes added attic insulation. The major portion of that reflects the do-it-yourself movement. It is important that any proposed legislation sustain this momentum and allow the homeowner to choose between purchasing his own materials or using a contractor. A contractor-only program would affect the present building material dealers' distribution system. Extending the proposed financing provisions to the cost of materials for the do-it-yourselfer might offer one alternative.

One additional point should be made. Because the do-it-yourselfer represents a sizeable portion of those who will reinsulate, they are important to a utility in holding down the administrative costs—and the rate base—of any programs such as we are discussing.

The legislation, as proposed, addresses itself only to existing homes. However, we believe that utilities are in a very good position to encourage proper standards for new home construction. Energy efficiency measures can be most easily and economically added at the time of construction. Many utilities and some financial institutions have already put standards into effect to insure that when new homes are built, they are not simply adding to the Nation's inventory of energy inefficient homes.

Whether it is the insulation of existing homes or new construction, approval of products and installation companies must assure the consumer that he will receive the benefits of energy-saving measures as advertised. He must not be the victim of misleading claims of performance that do not meet claims of the manufacturer or the contractor.

It is Owens-Corning's feeling that we can provide material to handle the new construction market, including increased standards, and the retrofit market, providing this task is projected to take 7 to 10 years for completion. Our company has doubled its capacity during the past 5 years and has a continuing plan for increasing output at our existing facilities. We are also in a position to expand rapidly to meet any further demands that might be created due to increased market demands.

Mr. Chairman, we appreciate this opportunity to place our comments before you, and we hope that Owens-Corning can be of further assistance to your committee as the deliberations proceed.

I am available to answer any questions you may have.

Mr. DINGELL. We thank you for a very helpful statement.

Our next witness, Mr. Bucher.

## STATEMENT OF NILE V. BUCHER

Mr. BUCHER. Thank you, Mr. Chairman. I am glad to have this opportunity to express my views, and I trust those of other cellulosic manufacturers, concerning the effect of the energy conservation proposals on our industry. I know your hearings today are specifically on the utility program section of the proposed bill. A very important consideration, however, has to be whether or not industry can respond to the demands for insulation which such a program would create.

I will qualify my comments by stating I do not speak to the capability capacities or problems associated with insulation other

than those of a cellulosic wide base nature. A brief history of our product and industry might be helpful. Cellulosic insulation is not new; it has been around for many years. The manufacturers of this type of insulation are mostly small companies. The product is made from select recycled paper stock which is defibered and treated with chemicals to make it fire-retardant, non-corrosive and in compliance with other physical characteristics called out in GSA specification HHI-515C, ASTMC-739, and our industry specification NCIMA N101, all of which are comparable.

For years, a major portion of our market has been the reinsulation field, so it is an area not new to our industry.

Applicators cannot be trained overnight to install cellulosic insulation and do the job properly. Certain precautions must be taken. Many existing homes require proper ventilation, and this ventilation has to be added at the time the insulation is installed. Most reputable manufacturers have training programs for dealers and applicators.

Because of the increased emphasis on insulation, existing manufacturers are running plants near capacity. Most are considering expansion plans, but are frustrated with the present shortage of the primary fire-retardant chemical used in the manufacture of this insulation. No substitute appears immediately available.

Mr. DINGELL. What is that substance, please?

Mr. BUCHER. The primary fire retardant chemical is boric acid.

A mandatory utility program would greatly increase the demand for insulation. This could increase the usage of products which do not comply with specifications and increase installations made by less than qualified applicators, adding to the problems created by unknowledgeable or uncaring contractors.

We already have the problem in our company of distributors who are selling to anybody who comes down the line instead of using our authorized dealer program with trained and knowledgeable applicators.

To avoid the problems that come up, some customers already are beginning to write their own specifications, adding more confusion and problems for our industry. This is particularly true of some of the utilities who are implementing voluntary programs.

A short presentation allows only a very sketchy overview. If the proposed legislation is enacted, I see these items as being critical. First, all utilities should use a recognized applicable standard to determine product performance. These exist and are continually being upgraded and improved.

Second, manufacturers should be required to produce product in compliance with this standard. To this end, the National Cellulose Insulation Manufacturers Association is committed to the development of a certification program.

Third, product should not be used in any such program which does not meet specifications and which is not properly packaged with coverage tables and application precautions indicated.

Fourth, utilities should be encouraged to work through private applicators whenever and wherever possible.

Fifth, some means will need to be developed to train, educate and qualify the applicators that will be required to fulfill the objectives of this legislation.

Thank you.

Mr. DINGELL. Mr. Bucher, you have given us a helpful statement.

Mr. Davenport?

## STATEMENT OF CARROLL V. DAVENPORT

Mr. DAVENPORT. I am Carroll Davenport. I have a firm in Springfield, Virginia, Davenport Insulation, Incorporated, which happens to be undoubtedly the world's largest insulation contractors. We employ approximately 500 people installing insulation, and, as of today, operate 216 trucks installing insulation.

Mr. DINGELL. I have heard your ads on the radio, WGMS.

Mr. DAVENPORT. Good radio.

In addition to that, we also own and operate a subsidiary firm called Cellin Manufacturing, Inc., in Lorton, Virginia, which manufactures cellulosic insulation, of which my colleague here, Mr. Bucher, has talked so ably.

In addition to that, I represent another industry association called the Society of International Cellulosic Insulation Manufacturers, so today I am actually wearing 3 hats.

I came prepared, actually, to address the subpart 1 on the utility program, and I had mixed feelings on this before I came. I have other more mixed feelings now.

I would like to just preface a couple of my remarks pertaining to this specific proposal because this is what I was asked to address, and on the proposal where it identifies residential construction and the type of houses to be covered as limiting it to one or two family structures; we are saying specifically that they should also include single family, duplex, triplex or row houses as well. Our experience has been this is as much a problem in any city as single-family or duplex-type houses. That should be changed regardless.

We would go on over to subpart 103 in section (a), and I would recommend the change of that to include, inspect the residential building to determine the actual thermal condition of the entire structure and apprise the residential customer of the estimated cost of purchase and/or installing each recommended measure. That would add some credence to it, and the quality or caliber of the people who would be involved in doing the actual inspection work.

In subpart 3 on the next page, under (d), we say procedures for the public utility prepares and sends to each of its residential customers a list of approved area contractors who use materials manufactured in accordance with applicable Federal standards and who regularly install residential energy conservation measures. This list should be designed to encourage participation by qualified contractors in a nondiscriminatory manner.

We go to the next page, under (e). We have added a proposal which is very much like that of the gentlemen from New Jersey and Minnesota in the prior panel, and I would like to add how this changes, because it changes minute by minute. I added (e), to provide the same inspection service called for in (a) in residential resale units to bring units up to compliance with new ASHRAE 90-P requirements.

Why I say this changes on a minute-by-minute basis, Dan Morgenroth, who will speak later, told me they now have an even newer standard energy conservation in existing buildings, 100.1 ASHRAE. Now I would certainly absolutely recommend that be included as a part of any standard for any utility company.

I would like to comment on utility companies. I don't feel that if we were mandated as an insulation company to go into the utility business that I could do it in 20 years. I don't think our profession should be subjected to the thought that any utility company can be mandated to go into the insulation business by a few cursory remarks or some form of legislation which automatically makes it true, and it should be an overnight concern.

I have been far more involved with utility companies in the past 2 years, and I would like to comment, too, that I have been in the insulation business for 25 years, and I think every type of insulation job that is known to man, I have done it, one way or the other, or I have been involved with it.

But I don't think that a utility company can train the people to perform the inspection or perform the actual job applications in the next 30 years, much less in the next 2 years or the next 7 years, and even if they were trained to do this, I don't think—at the present time, my particular company, Cellin Manufacturing, is sold out for the next year, and I am starting a much, much larger manufacturing concern in Albany, New York, which will open in July of this year, and that plant is sold out for the next year, and I can't conceivably see adding utility companies to the size and magnitude of any form of mandate that they could possibly get the materials to operate with. I feel that we do have the legitimate businessmen right now that are in the field that are subject to training, that can be trained, will be trained, and, as a matter of fact, I left 34 businessmen in a conference room in my office this morning before I came here that ranged from 1 applicator to $25 million a year. These people were sitting begging for the knowledge where they could be trained to go out in the field and do a legitimate job.

So now, when it comes to the mandating of a utility company to compete against private enterprise, I feel that we have a type of applicator that will go out and skim off the top, take the profits, the easy job. I am referring to cap insulation jobs, where they blow a few inches of insulation and they talk in the terms of inches instead of terms of R-value and, more importantly, in the terms of effective R-value. I think we should scrap this stuff about talking inches and talk how effective we can do the insulation job, not in the ceilings alone. Our inspections reveal that there are probably 50 different items in a typical attic that need correction. The Washington Gas program was analyzed a little bit earlier and before they started their program, they came up with a 52-count checkoff list of items that they required to do in a typical house in the typical Washington area, and this involved ceilings, walls, cantilever overhangs, garages, ceilings. One of the gentlemen from one other power company mentioned the fact earlier, too, and this is lack of education in the industry, the fact that if you had one or two inches of insulation in a sidewall, there was nothing else that could be done. That is not true. There can be corrective work done in areas like that, and should be, and must be done.

Mr. DINGELL. Such as what?

Mr. DAVENPORT. It is a very simple thing. With the proper materials and tools and know-how to insert a tube up in the wall, and add another 1, 2, or 3 inches of insulation in addition, and probably should be done. Cellulose insulation actually lends itself properly like that. We have had other cases—there was a lengthy article in the Orlando Times last Sunday which indicated in Florida it was impossible to insulate houses in accordance with the terms of what the President recommended for his $2,200 being maximum in a house. In Florida you can't insulate a masonry wall. That is not true. You can insulate a masonry wall. This is a lack of disseminating proper knowledge.

So I feel that we have a training program to do, and I feel that private enterprise, such as Owens-Corning Fiberglas and Mr. Bucher here, and others who do know the insulation business, can speak to that subject.

So I am for not mandating a utility to go into the business. I am for allowing them to do it providing they act responsibly, just like we require our customers to act. I will not sell one single contractor who does not agree that they are going to do the total insulation job. This is a policy we have. This is a policy that I feel that this legislation should bring out.

I thank the committee for my comments here.

Mr. DINGELL. You have given us very helpful testimony.

The Chair will recognize members for questioning.

The Chair recognizes the gentleman from Ohio, Mr. Brown, first.

Mr. BROWN. Mr. Haney, and Mr. Mabry, did either of you sustain any problems during the natural gas shortage in the production of the products which you manufacture in the insulation field?

Mr. MABRY. Yes, out of the 7 insulation plants, 3 of them were either down or partially down during that period of time.

Mr. DINGELL. During the natural gas crisis?

Mr. MABRY. Yes.

Mr. HANEY. No, sir, we did not. Basically, we had invested money in standby fuel systems. We had the standby fuel. The only problem was that our customers did not have the standby fuel systems. These are the smaller window manufacturers, and they really cannot afford to have major standby systems or invest in a large quantity of standby fuel. When the natural gas was cut off, they were down. We could supply the product to them, but they could not produce it because they didn't have the fuel to operate.

Mr. BROWN. So we are in a Catch 22, in a way. We have to get the gas to produce the glass to provide the insulation material to save the gas to produce the glass; is that it?

Mr. HANEY. Yes, sir.

Mr. BROWN. What would be the effect on the production of fiber glass insulation and the cost if this program is implemented?

I have in mind the sort of speed with which we mobilize for war, itself, in certain industries, and we sort of damn the torpedoes, full speed ahead, and increase our production and then the war is over and we have a lot of capacity for the production of fiber glass or storm windows, and we have all the market filled up with retrofit insulation procedures, or methods, and then what do we do?

Would the cost of amortizing your investment in that kind of sudden expansion be charged directly to the folks who buy the insulation and have you done estimates on what that would do to the cost of insulation?

Mr. MABRY. Yes, we have. That is why in my comments I made the statement that we think in our particular case if this were a 9-year program and with the upgraded standards as we see them in new construction, that we would be able to handle this expansion. And when I say that, I am assuming that we mean without any economic dislocation, so that we wouldn't fall into the situation of building a multi-million-dollar plant which would be running at full production for 4 or 5 years and down to complete idle capacity.

Mr. BROWN. If we did do it on a 5-year basis or 4-year basis, it would have a sharp impact on the increase in the cost of insulation, would it not?

Mr. MABRY. It would have a sharp impact on the long-term cost, depending upon the market demand in the years beyond those 4 years.

Mr. BROWN. Let's talk about that. If the 90 percent is accomplished in 5 years, then you don't have much to live on after that. Let's say 100 percent is accomplished. Take the extreme case, and say that this is a success, and we get 100 percent of the retrofit insulation done in 5 years, who are you going to sell the fiber glass insulation to after that in terms of new construction? Fiber glass insulation is not the big item in new construction, is it?

Mr. MABRY. It certainly is, in new construction as well as retrofit.

Mr. BROWN. Isn't it a bigger item in retrofit? I thought new construction frequently used other methods besides fiber glass, that you don't have the same percentage of the market in new construction that you have in retrofit. Is that in error?

Mr. MABRY. Yes, it is. I think the National Mineral Wool will be talking on another panel, and I think you will find that the pounds of glass in new construction, fiber glass insulation, may be as much as 3 to 4 times as the amount in the attic job. Most retrofitting to date has been done in the attic only. Sidewall retrofit requires more technical knowledge and equipment than an average do-it-yourselfer has.

Mr. BROWN. Wait a minute. We are a little off here, I think, because if we do this successfully and if we talk about 100 percent of the retrofit work, we are going to have to do the sidewalls, too, aren't we?

Mr. MABRY. Yes, but it is more cost-effective for the attic. If you take a cost-effective list, you start with the attic, because it is lower cost per square foot to install in the attic, per R-value.

Mr. BROWN. I wonder if you can give us the statistics on the cost impact if we tried to do this job in 5 years versus 9 years. That is not to suggest we shouldn't try it more rapidly, but what the impact would be on the cost of the insulation?

Mr. MABRY. We will try to do that. Quite frankly, of all variables in the assumption, we didn't use 4 or 5 years. We didn't think that short a timespan would be feasible. I'm not sure what we can do but we'll try to respond from our available data.

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Mr. BROWN. The question will be general enough for you to comment specifically on feasibility and other things you wish to add.

Mr. DINGELL. The Chair does advise, I think it is a very important question.

The time of the gentleman from Ohio has expired.

The Chair recognizes the gentleman from Indiana, Mr. Sharp.

Mr. SHARP. Thank you. I wonder if Mr. Bucher or Mr. Davenport care to comment on the allegations that have been made about some of the cellulose products, that they may be fire-hazardous, or may absorb water, or something that leads to damage in the building?

Mr. BUCHER. There have been many allegations made, many questions raised. The specifications to which I refer, do include in them, number one, a procedure for determining the permanency of the fire-retardant chemicals that are used. We have done experimental work on jobs we know were done 10 or 15 years ago and pulled the material out of those jobs and checked flame spread and find it the same as it was at the time it went in. Concerning the fire hazard characteristics, there can be a problem if the manufacturer does not have anyplace the quality control procedures and the equipment to know that the product he is manufacturing is, in fact, a good product. For example, if the system doesn't get the chemicals into the product, we know paper of itself is flammable. Does that answer your question?

Mr. SHARP. Yes; in other words, in your view it becomes important that we have a clear-cut and strong standard there on that score; otherwise, we are likely to have some manufacturers in the field with inferior products that——

Mr. BUCHER. That and the requirement that the manufacturers live up to that standard.

Mr. DAVENPORT. I would like to comment on one thing. I feel all manufacturers should get their house in order and that doesn't include just cellulose manufacturers; it includes rock wool and fiber glass and the whole ballgame, so I think it is time that we all act responsibly.

Mr. SHARP. There are those that even say that about the Congress.

Mr. Davenport, one sidelight issue on the committee that came up when the Secretary of Defense was here the other day was what progress is being made within the Department of Defense, our biggest user at the Federal level, and that led to the Pentagon. I understand you had some experience with perhaps trying to insulate the Pentagon.

Mr. DAVENPORT. Yes, I did. I went down, and I had one man to make a survey on the Pentagon. As a result of the survey on the Pentagon, we find out that it would take approximately 1,500 truckloads of our type of material to insulate the Pentagon, and we estimated approximately $8 million a year in savings. However, we went to them with this particular concept, and so they referred us to GSA, and GSA referred us to a subgroup, and another subgroup, and we wind up making about 10 surveys on 10 different government buildings, including Federal Trade, Tariff, and you name it, right down the line.

One of the comments I made on the Pentagon; we could do it at less than half the price if you let us put our machinery on the loading docks of the Pentagon and use those goods they are sending out and store in the area of Laurel, Maryland, at the rate of 400 tons a week, and we could do it with never moving the machine anywhere near and insulate the Pentagon. As a matter of fact, we say we can insulate all the government buildings in Washington in the same manner and at a fantastically cost-effective rate.

Mr. SHARP. What is GSA's objection?

Mr. DAVENPORT. They say they don't have allocations of funds to do this.

Mr. DINGELL. They will be before us to explain that.

Mr. DAVENPORT. One of the things that came out of it, when President Ford took office, I wrote him a letter thanking him for his comments about the insulation business. I got a very nice reply back saying, "I received your letter."

About three months later I got an order or something that I was to insulate the Vice President's house down there. He wanted it done immediately. So out of this whole Pentagon inspection process I did get one job.

Mr. SHARP. The only reason I might think they would not need your services is because there is adequate paper down there to do the job.

Mr. DAVENPORT. I was not really prepared to talk on this total subject, but one comment that President Carter made that most people have completely ignored is the government's concept, that the government would get involved. He said that immediately that he would, one of his first objectives, and this was prior to the objective of insulating the houses, was that he was going to have insulated the government buildings.

The surveys we have in the Washington area are that there are 2,800 of these buildings in this category. I have consistently said that the government should really clean up its own house first.

Mr. SHARP. What is your estimate on the Pentagon in terms of the cost to the government and the fuel savings?

Mr. DAVENPORT. We figured it would probably be about $8 million a year in fuel savings. The cost would not be much more than that.

Mr. SHARP. So if we spent that in one year, we could actually earn that back in one year, you think?

Mr. DAVENPORT. Almost. I even offered to let us do it and for 10 years I will split the savings. In fact, I will do that with any government building.

Mr. SHARP. Mr. Chairman, I appreciate the time.

Mr. DINGELL. The Chair thanks the gentleman.

The Chair recognizes the gentleman from Michigan.

Mr. STOCKMAN. Mr. Davenport, you have taken a position that the utilities should not be encouraged to play a supplier role in this process. Do you think independent contractors will be in a position to perform the full range of services the consumer will need to have the job done?

When we talk about insulation, we are going to need an inspection or audit of the person's building and someone to recommend the plan based on the characteristics. You will need someone to

purchase the supplies or materials to perform the work and finally you will need financing. There are four or five separate steps that need to be done.

Could you perform that kind of general purpose vendor or contractor role or do you think other contractors would? I would prefer to do it your way if I could be sure there would be some way for the utilities to provide a list or array of general purpose vendors that could get the job done for the consumer who wants to go ahead and take a tax break.

Mr. DAVENPORT. One, I am not a proponent of the Rosenberg proposal. I think that particular program stinks. I don't feel that anybody should responsibly go out, perform an insulation job and cap it and say I have done all that can be done.

I think there should be a qualified inspection. Personally, I don't think that any insulation contractor and definitely no utility contractor should be the person to make that inspection because I have not found one percent of any contractors in the country and no percentage of utilities that can do it.

Mr. STOCKMAN. Who should do it?

Mr. DAVENPORT. I feel that someone separate in the Department of Energy should be set up to do this. I think there should be a label put on that person and they should inspect before and after. They should determine the effective thermal condition of that building prior to something being done and afterwards.

I also feel that there should be energy ratings by that type of construction. There should be a spill over into industry as well.

Mr. STOCKMAN. Okay, you would have a separate government official or employee or inspection service who would make the specific recommendations to the consumer as to what kind of options would be available to him. Some would want to spend more or less and there are trade-offs.

Should the inspector do that, too?

Mr. DAVENPORT. I think there should be a written report made to every owner of a building or a person who pays a utility bill as to what they should have done. If they have that, they don't have to take all of that, but they should do it and, you see, the integrity of the utility company, it is the great God making the inspection. That guy should not be able to do it under the name or a guise of the utility company. It should be somebody that does not have an interest there to be served.

Mr. STOCKMAN. What about the other work that has been done? We have been talking entirely about insulation and that is your business. You would need that same kind of audit and inspection done for furnace retrofit and inspection in the heating and circulation system.

Mr. DAVENPORT. That should be included in. That should be a part of the energy audit, as you would call it. But I feel that if you didn't camouflage all this other junk stuff and call it insulation, you can take an insulation job and accomplish about 80 to 90 percent of your objective right there. That should be the priority.

Mr. STOCKMAN. That is where you have the greatest margin for improvement?

Mr. DAVENPORT. Yes.

Mr. STOCKMAN. How do your customers who are not directed to you by the utility but just one who decides to insulate, how do they finance it? Are you involved in recommending?

Mr. DAVENPORT. Yes. Let me explain that.

We insulate between 200 and 300 live-in units a day. I don't believe that we have ever lost one-half of one percent of the jobs that we have gone out and surveyed on the basis of financing. We tell people, "Why do you want to pay 18 percent or 30 percent interest or what have you on that?"

Number one, if you are dealing with a reputable contractor, you are going to get the lowest price to start with. But if you go to your own bank or your own facilities and borrow the money to operate with, if you need it, fine, that is what we would recommend. We don't lose jobs as a result of it.

Mr. STOCKMAN. You don't do any financing of your own?

Mr. DAVENPORT. We don't intend to, but——

Mr. STOCKMAN. You have some accounts receivable?

Mr. DAVENPORT. Voluminous.

Mr. STOCKMAN. Thank you, Mr. Chairman.

Mr. DINGELL. The Chair thanks the gentleman. Before the Chair recognizes the staff for questions, the Chair would like to ask a couple of questions.

Mr. Davenport, what is the relationship between R-value and effective R-value?

Mr. DAVENPORT. Very simple, the R-value is the insulation value of a product on an inch-by-inch basis. That is the part labeled the R-value. That is what they put on the bag. I maintain that that really doesn't have much bearing on the total value. I say on the basis of how it is installed, and that is where I would differ from Mr. Mabry, I feel that how it is installed is very important.

You can take a fiber glass batt that has an R-19 and if you really install it properly, you can get pretty near an R-19. But if it is on the basis of most types of construction, you may get somewhere in the range from R-3 to R-19, whatever you want to get.

It is the same way with a loose fill insulation and other types of insulation, if you don't do it right to start with.

So the effective value is our measurement. In fact, we determine effective values on everything we do when we perform an analysis.

Mr. DINGELL. I would like you to tell us about the problem of trained people who do this work. The committee is very much concerned about fly-by-nights, unskilled operators, rogues, knaves and incompetents in this business and also about the quality of employees that will be entering the business.

Now you have had some experience with training and some difficulties with getting employees. Do you want to give us some comments on that, please?

Mr. DAVENPORT. Yes, sir, we have had a fair amount of that. Even to the extent that we have used a number of Lorton inmates to help us out with the problem. We don't advocate this system for general public applications, however.

Mr. DINGELL. Is USEC cooperative with you in referring people to you?

Mr. DAVENPORT. I don't have much faith in them.

Mr. DINGELL. You don't?

Mr. DAVENPORT. No, sir. In fact, the only confidence I have in anybody is our own ability to advertise and do our own training. When we made the announcement that we were going into the State of New York, Albany, I think as an example, one of the announcements was that we would employ x number of people in the plant. We also said that we would train over 2,000 people the first year to install insulation in the field. We didn't mean a one hour or one day operation. We were maintaining that it would be a training process that would be continuing.

I feel that competent manufacturers can also set up training programs. I feel that Mr. Bucher and his company or Owens-Corning can do the same thing and train from the concept of doing the total insulation job.

Mr. DINGELL. Thank you.

The Chair recognizes the staff for the purpose of asking questions. Mrs. Harrison.

Mrs. HARRISON. Thank you, Mr. Chairman.

Mr. Haney, you mentioned that there are probably constraints with regard to fuel and environmental situations that may impact on industry in meeting the deadlines set in this bill.

Could you elaborate on that as you see it, perhaps taking fuel and environmental separately?

Mr. HANEY. Looking at the fuel side of the problem, we do have and can use different types of fuel. Our main fuel is natural gas. We can use and do use fuel oil. In some of the operations we use propane instead of natural gas. Obviously, it is imperative that we get at least one type of the fuel in order to keep our operations going.

Here, again, I think the more of a concern I would have on fuel would be with our customers who are trying to gear up to produce the increased number of windows and in the wintertime when their fuel is cut off they are small corporations and they cannot invest in major or secondary systems. They are going to have to shut down during the winter period when they could be producing and working out ahead and building inventories to keep up with this program on the fuel side.

Mr. SHARP. Could I ask a question? Are some of your customers on interruptible contracts? I understand the emergency of last winter, but is this regular every winter that they are on interruptible and have been cut off?

Mr. HANEY. It happened I think more so last winter than any of the other winters, but most industries, depending on the part of the country they are in, have been interrupted for several years. We have some facilities in the East and in fact they are on natural gas about two months out of the year.

Mr. SHARP. Thank you.

Mr. HANEY. Looking at the combination of fuel and the environmental problems, our normal growth rate, I would quote it at about 2-1/2 to 3 percent for the flat glass industry so that we are always projecting when new facilities would be required. These are very expensive and very large facilities.

Historically it has taken us about a year to build a new plant. Now with the environmental impact studies, all of the approvals that must be obtained, getting proper fuel sources for a new area, our studies show that it is going to take us 2 to 3 years to bring on new facilities so that we now have to do a much better job of planning, plan ahead in order to have the facilities on when they are needed.

I am not concerned about us jumping in and building a lot of large float plants and then in 5 or 7 years we have a bunch of extra float plants on our hands. I don't think that is a problem. Right now the industry is operating at about 85 percent of capacity. It is a cyclical business.

So previously when housing starts are down 1.3 million, they jumped up to 2.4 million and this was pretty well absorbed with the excess capacity available and filling out the cyclic ends of the business.

But looking ahead, it is the environmental situation that is one that we are meeting in all States, both State and Federal requirements. But we are getting very close to the state of the art.

If that regulation gets much tighter, then that could present a real problem to us, not only in existing facilities but in building new ones.

Mr. BROWN. Would you yield for me to clarify that?

You say "that regulation." What regulation, the regulation of the environmental emissions standard of the plant or what?

Mr. HANEY. I am talking about regulations both State and Federal in the various States that we are operating in. When I said that regulation, I mean environmental regulations that have to do predominantly with air, not so much with water. We are in good shape with water. But in air we are getting fairly borderline. We meet all the regulations, but we are approaching the state of the art.

What I am saying is that if those regulations get much tighter in existing areas or trying to build new facilities, this could be another delay in trying to bring on plants at the right time.

Mr. BROWN. It delays the production, but are you telling us that the 9-year time frame is not a problem in terms of building up plants and then having them sit idle because you have had so much production in a short period of time?

You remember the question I asked the other gentleman. But is there a time frame where that begins to be a problem? Could you address the same question that I asked him to address either in a separate answer later or at this point?

Mr. HANEY. I guess my problem, Mr. Brown, is really understanding what the 49 million homes represent. I don't know where that datum starts. Right now we are supplying a lot of glass for remodeling, retrofit. So I don't know how many of these homes have already been taken care of.

Mr. BROWN. Do you have any data to indicate how many homes you have done on an annualized basis over the last few years and what that curve has been in recent years? Perhaps I should ask all of you that.

Mr. HANEY. I think retrofit programs really started getting heavy last year. They have been increasing with the increased cost of

housing. I think people have been tending to remodel and replace insulation, add on rooms rather than to go out and buy new homes. This is where we are having a little difficulty really getting the handle on what this escalation is going to mean to us.

The way we have looked at it so far, we feel that reasonably it probably will not be much more than 1-1/2 or a 2 percent increase in our typical growth pattern. That is on top of our normal 2-1/2 to 3 percent increase.

Mr. BROWN. That is somewhere between a 50 percent and a doubling of your growth over the next few years, correct?

Mr. HANEY. Yes, sir, that is right. What I am saying is that I don't believe unless you do this in a 4 or 5-year period, then we could wind up with excess facilities.

Mr. BROWN. I won't belabor this, but I am confused between your statement about the growth pattern of your industry and 40 million homes or 45 million homes and the 9-year time frame and the request that this ought to be mandatory now. All of these things fit together, but they are different statistics.

They are all measuring the same thing, but if I could get them quantified together, that if we get the 45 million homes taken care of in the next nine years, that that then is only a 2 percent increase or doubling of your growth capacity and if you then can handle that without leaving idle capacity at the end of the road which you will then charge off to the customers you sell between now and then and raise the cost of insulation, you begin to get a picture of it.

Nobody has been able to put that together for me. That is why I am trying to feel around that question.

Mr. HANEY. That is a difficult question to answer. I heard the 49 million for the first time this morning. Within our growth pattern is included retrofit programs, but I don't know sitting here how many homes are included in that retrofit program.

Mr. BROWN. The staff has just directed my attention to the fact that apartments, hospitals, schools, industrial buildings and I would assume commercial buildings and those nice new glass skyscrapers in New York and all those sort of things are part of this retrofit question.

I wish we could get a little bit harder statistics. It is a little bit like working with cotton candy. The hard data keeps disappearing. If you could come up with hard data at least on what you have done—somebody is waving at me back there indicating he may have something on paper—it would be very helpful to us.

Mr. HANEY. I think in the third panel there are some groups that have more statistics on that than we have. They are closer to the end customers.

Mr. BROWN. We will take all the statistics we can get and then do with them whatever the results seem to indicate.

Mr. DINGELL. The Chair recognizes Mrs. Harrison.

Mrs. HARRISON. Mr. Mabry, Mr. Bucher, do you basically agree with what we have been hearing on possible fuel environmental constraints in implementing this program on a short time frame or do you have any further information on that for us on your aspects?

Mr. BUCHER. We do not have a problem. We do not use natural gas in the production of cellulosic insulation at all. It is a low power

consumption industry. We do not anticipate natural gas shortages or air pollution requirements being a problem in our industry.

The raw material, the boric acid, is the problem we are faced with.

Mr. MABRY. We are power intensive as you know. For every Btu we use, we save about 15 to 20 Btu's each year. If you had a home insulated for 40 years, you are talking about a ratio of the original Btu we used of about 600 to 800.

We do use a lot of Btu's because our plants, like PPG's, are energy intensive and use a tremendous amount of fuel. We have done similar things in trying to use all fuel sources to avoid what happened to us in this last crunch.

It is a problem for us. As far as environmental, time has stretched out from where we formerly could take a new site and be on stream in 18 months up to 36 months today.

We have the same long-range projection and production planning problems that most companies do.

Mrs. HARRISON. To go back to the boric acid problem which you mentioned, how serious is that?

Mr. BUCHER. Just two weeks ago we had people from U.S. Borax, one of the major suppliers of boric acid at a national meeting at Point Clear, Alabama. They advised us that they have a staff of research people working full time on the problem. We know of means to stretch the chemical somewhat, but to go to all substitute chemicals we get into problems on other elements of the specification covering the material.

They cannot, because of the environmental problems that we have been talking about and other things, have any significant expansion to the production of boric acid this country until about 1981.

Mr. DAVENPORT. I might add that we are importing most of ours from Turkey right now. It is becoming very, very critical right now and the black market is very active.

Mrs. HARRISON. Mr. Swinburne, a couple of questions on your testimony.

You suggest that southern regions of the United States and Puerto Rico be excluded from the program. I would think areas that rely largely on air conditioning would certainly have energy waste too. What is your reasoning?

Mr. SWINBURNE. That was not in my verbal testimony. I skipped over that point.

Mrs. HARRISON. It was in your written statement.

Mr. SWINBURNE. It is my opinion that to get this on stream as soon as possible with the least inhibitions, that in the Southern States I would ignore air conditioning and the savings you have there to begin with and concentrate completely on heating.

Mrs. HARRISON. You believe there are more serious energy loss problems in the cooler climatic regions?

Mr. SWINBURNE. I would defer to the people with the statistics, but I think you will save more in heating than you will with the air conditioning. Of all the existing one and two family houses in the South, there will be a considerable number of those that are not air conditioned, a very large number.

Mr. MABRY. Our statistics differ from that, but I agree only when the house in the South is air conditioned.

Mr. DAVENPORT. I think you would find that the consumer in Florida would debate what he said.

Mr. MABRY. Power is 4 cents per kilowatt in some areas. The President of U.S. Homes told me his mortgage payments one month were less than his air conditioning bill. This is in Tampa, Florida, so I would differ with Mr. Swinburne.

Mrs. HARRISON. You recommended in your written statement that the Administrator develop a model plan. Now is this based on categories of building? Is there one available? We questioned some government witnesses on this yesterday and seemed to be unable to find this.

Mr. SWINBURNE. To my knowledge there is no such plan. I was trying to put myself behind the desk of the Administrator and watch these things come in from the various States and utilities and so forth and wonder if perhaps I had a problem because I would not want to make a decision in one State that might be questioned in another State that we were not permitted to do that here. At the same time I would not want the model plan to be so complicated that it would place these people in a straight jacket.

So I am suggesting a very loose model that would at least give some direction to the various administrators in the various States. We heard from Minnesota and New Jersey this morning. They would probably tell us how to construct such a model.

Mrs. HARRISON. Get input from the States as to their own needs and situation, is that your idea?

Mr. SWINBURNE. I am thinking of a State that has no such plan and has not been thinking about a plan. He is going to be faced with your approval. He might be wondering how we would put together the plan so that it would get through you as quickly as possible.

Mrs. HARRISON. I think that will be a serious administrative problem given the time constraints in the bill.

Mr. SWINBURNE. I think it would, too. On the other hand, I would think the legislation might address itself to that rather than leaving it up to the discretion of the administrator.

Mrs. HARRISON. Where do we go for the technology to develop that?

Mr. SWINBURNE. Well, we are going to have to worry about whether we are going to have performance standards or other types of prescriptive standards. Frankly, I can't answer your question right now. There are some people who are beginning to worry about these things, but they are not really in business yet.

Mr. DAVENPORT. May I add to that?

Mrs. HARRISON. Yes.

Mr. DAVENPORT. I think we really have these plans already in front of us. If we would adopt the standards that HUD has, right there that would be a big step forward. All you have to do is mandate to a State, you have to come up to HUD's minimum property standards or the standards that Mr. Morgenroth is bringing forth later that energy conservation in buildings 121 ASHRAE. That would be it.

I don't see why we have to have all this gobbledygook.

Mrs. HARRISON. Do you have a reply to that, Mr. Swinburne?

Mr. SWINBURNE. He is talking standards and I am talking procedures. I don't quarrel with his standards or what Dan Morgenroth is going to say. I don't want to use the word uniform procedures because that is wrong, but what I am trying to get is a framework of some kind that would give constancy to the decision process as these various plans are being analyzed. That is going to be a tremendous problem.

Mrs. HARRISON. I gather from your written statement that you are opposed to adding corrective measures other than insulation?

Mr. SWINBURNE. Negative.

Mrs. HARRISON. You say "If the corrective measures include items other than insulation, there could be far too many players in this act."

Mr. SWINBURNE. I agree with the gentleman at the end of the table. I think the energy analysis should be a total energy analysis of the house and that it should include all the systems. It must not get back down to the last 5 percent. I am talking about insulation, weatherstripping and caulking. I am talking about storm windows and insulating glass and perhaps furnace retrofit. But those are enough.

I would think that there ought to be an energy budget analysis that included all of that. Maybe Mr. Davenport can tell us on an average how much of that is insulation and how much of it is something else. I wish I knew what that was.

Mr. DAVENPORT. Actually, our average is probably $500 or $600 a house.

Mr. SWINBURNE. I mean percentage of Btu saved.

Mr. DAVENPORT. You can save up to 90 percent with insulation alone.

Mr. BROWN. Doesn't that depend on the house?

Mr. DAVENPORT. I said up to. That would depend on the house, the location, the type of heating systems, how the house is constructed, whether it is ceilings, walls, cantilevered, overhang, whether you have open seals or subsiding. We always say depending on the house, yes, sir.

Mrs. HARRISON. Mr. Mabry.

Mr. MABRY. There is a cost-effective study that was completed by the NHB Research Foundation for the FEA about two years ago which went into retrofit and listed the six or eight major points. It gave the cost-effectiveness of each one. It started with attic insulation and then with caulking and weatherstripping. Each one of them was given a cost and expected payback period. That might be something the committee could study.

Mrs. HARRISON. We will do that.

Mr. MABRY. It is true that every investment you make in any house will have a different cost-effectiveness.

Mr. BROWN. Is there a document number for that FEA study?

Mr. MABRY. I have a copy so I will try to ge that to you.

Mrs. HARRISON. Yesterday the General Services Administration testified regarding the three Federal specifications for blanket and loose fill thermal insulation, design per application and walls and ceilings, residences and other frame structures. They also state that

recent testing by ERDA of standard commercial materials discloses that all physical property requirements are not being consistently met by industry. Would you comment on that? This is clearly a concern of theirs on an industrywide basis.

Mr. MABRY. Is this by the manufacturer or by the application?

Mrs. HARRISON. As I understand their testimony, it is that the physical property requirements are not being met by the manufacturers.

Mr. MABRY. We have what we call an assured R-value which is a quality control check for the product for all its physical characteristics which includes the insulation value on our roll and batt-type insulation.

We are also the largest manufacturer of what is termed blowing wool, made of glass fibers. The National Association of Home Builders Research Foundation regularly tests our material. They are in a position to shut our machines down or take the label away if we do not meet this standard.

There are other members of the National Mineral Wool Association who also label. We are attempting to get a similar type of labeling for our blowing wool. Unfortunately, due to the installation process in pneumatically blown wool, the insulation value is really controlled by the man at the end of the hose.

We do have a standard based on number of bags per thousand square feet and thickness to achieve specified R values. Our labeling program was started two years ago and includes all roll and batt insulations from 11 to R-38.

Mr. BROWN. Could I ask one question because this has come up before and I am unclear on it?

Are there not some houses where you don't have any choice but to use blown insulation?

Mr. MABRY. That is right. Blowing wool is a very important part of our product line because it offers a choice. Side walls would necessitate taking off the side walls in retrofit unless you were able to use blown wool.

Mr. BROWN. I thought that was right, but another comment was made which left me with the impression that was not right and I wanted to be sure.

Mr. DINGELL. Mr. Hunt.

Mr. HUNT. You mentioned that someone had the authority to shut your plant down if your product was not meeting specifications. Has this ever happened?

Mr. MABRY. I would take that back. What I meant to say was that if we label our product indicating that it does meet these standards and it does not meet them it will be necessary for us to stop labeling or producton on that machine until we have resampled and retested the material and it meets the standard.

No, we have not. We are pleased to say that all of our products to date that have been tested have met the standard.

Mr. HUNT. Do you know of any other association or manufacturer who has been shut down under these circumstances?

Mr. MABRY. No, I don't, but there are other members of the National Mineral Wool Association who will be represented later. You may ask them, but I am not aware of any.

Mr. HUNT. Thank you.

In your testimony you mentioned that your organization has developed six geographical recommendations for insulation levels for attics, side walls and crawl spaces. What criteria did you use in the establishment of these recommended standards or recommended levels?

To be more specific, did you use a payback formula whereby the value of the insulation would be paid back within one, two, three or four years or did you go to some general standards?

Mr. MABRY. We used a discounted payback on the basis that the dollars saved tomorrow would not be equivalent to today's dollar.

Mr. HUNT. What was the interest rate that you used in this discounted cash flow?

Mr. MABRY. Ten percent. We also used a forecasted cost of energy which was evidently too conservative because since these calculations were made three years ago, the cost of energy has escalated at a higher rate. We used the savings for the incremental R, in other words, the last R, if it went from 25 to 26 for instance.

As you know, when you add insulation, the first R-value gives you your greatest saving, so the incremental R must pay back the cost of installing that insulation plus a rate of 10 percent. We did not use optimum. That formula calls for the last R just paying for itself.

Mr. HUNT. Then, in view of the accelerated rise in prices of energy and the possibility of using the optimum, would it be your feeling that indeed the standards that you have set for these six geographic zones might actually be low in today's market?

Mr. MABRY. Yes. Several utilities, Atlanta Gas Light, Georgia Power, are recommending higher R values than we are. We feel that is in our best interest to be conservative. We are in the insulation business and we feel, therefore, should be conservative in our recommendation. We are, by the way, running a new calculation right now on 256 cities at the present cost of energy.

Mr. HUNT. Would it be possible for you to make that analysis available to the subcommittee?

Mr. MABRY. Yes, we will. That should be completed in two weeks.

Mr. HUNT. Mr. Bucher, it is my understanding that substitutes for boric acid, such as ammonium sulfate, aluminum sulfate, or calcium carbonate are being used for flame retardancy because of unavailability or because of lower price.

Is it your feeling that the use of these materials as flame retardants would lower the standards?

Mr. BUCHER. Based on our research, that is true. The primary area is in the area of corrosion.

Mr. HUNT. A report has been put out by ERDA, numbered 77-23, which indicates that the utilization of these substitute flame retardants is rather widespread. Would you care to comment on that?

Mr. BUCHER. I suspect that that might be true, although I don't know what other manufacturers are using in their formulations.

Mr. HUNT. Is is true that these other formulations are somewhat cheaper than boric acid?

Mr. BUCHER. Very definitely.

Mr. HUNT. And there would be a cost advantage in using these substandard materials?

Mr. BUCHER. Yes, there is.

Mr. HUNT. Thank you very much.

Mr. DINGELL. Gentlemen, the committee expresses our thanks to you all. You have been most helpful and we are grateful to you for helping us write good legislation.

The Chair now calls our next panel, Mr. Dan Morgenroth, American Society of Heating, Refrigerating and Air Conditioning Engineers; Mr. Thomas Werkema, Building Research Advisory Board; Mr. Stanley Matthews, Chairman, National Mineral Wool Association; Paul Rodgers, Administrator-Director, National Association of Regulatory Utility Commissioners, and Mr. Alex Radin, Executive Director of the American Public Power Association.

Gentlemen, starting with Mr. Morgenroth, we will receive your statements.

## STATEMENTS OF DAN E. MORGENROTH, AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS; ALEX RADIN, EXECUTIVE DIRECTOR, AMERICAN PUBLIC POWER ASSOCIATION; THOMAS E. WERKEMA, BUILDING RESEARCH ADVISORY BOARD TASK FORCE, THE DOW CHEMICAL CO.; STANLEY L. MATTHEWS, PRESIDENT, NATIONAL MINERAL WOOL ASSOCIATION; AND PAUL RODGERS, ADMINISTRATIVE DIRECTOR AND GENERAL COUNSEL, NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS

Mr. MORGENROTH. Thank you, Mr. Chairman and members of the committee.

I will first read an abstract of a paper that has already been presented to the committee.

Mr. DINGELL. Without objection, your full statement will appear in the record.

Mr. MORGENROTH. Thank you, sir.

It is a pleasure to appear before you today and to have the opportunity to present my views regarding the significance and methodology of implementing energy conservation programs for existing residential buildings.

I am Dan E. Morgenroth, a registered professional engineer, and member of ASTM, ASHRAE, and vice chairman of the Building Advisory Board of the National Academy of Sciences. I also happen to be employed by Owens-Corning Fiberglas in Ohio. I am chairman of the ASHRAE Technical Committee 4.4. The Technical Committee 4.4 is responsible for "insulation and moisture barriers."

I speak to you as a qualified professional. I cannot speak for the Society. I serve as a panel member of Panel No. 4 on the exterior envelope. I serve as a member of Panel 5 on Heating, Ventilation and Air-Conditioning Systems of ASHRAE standard 90-75 for "energy conservation in new buildings design."

In the proposed legislation I feel that it is important to keep all the elements properly focused. I do believe in the efficient use of energy and in energy conservation. In implementing energy conservation, we dare not degrade the quality of the man-made built

environment. ASHRAE has carried out considerable research for an understanding of the physiological principles in establishing good designs for thermal comfort and health of the people of this country.

It appears that the intent of this proposed legislation is to provide a basis for direction for saving the maximum amount of energy. However, if this legislation were limited to the three most cost-effective items, up to 80 percent of all possible energy savings would be attained.

In providing a shopping list of energy conservation measures (section 101)(11)(A)) the items are not all inclusive. There are no measures listed for energy conservation of air conditioning for example. Further, there are measures listed that are very marginal as to conserving energy and several that may not prove cost effective and some may in fact be counter-productive. Someone somewhere will need to be responsible for the consequences of improper recommendations. A listing does not establish priorities.

It is recommended that the allowable energy conservation measures covered should be limited to those where objective results can be measured. The three most cost effective ones being (1) caulking and weatherstripping to reduce air infiltration, (2) upgrading the thermal performance of the windows; not just storm windows, as it may even call for the replacement of existing prime windows and the addition of thermal insulating glass, and (3) the addition of thermal insulation to provide better thermal performance of the envelope and make the home more livable. These three items alone, if properly accomplished, would cut the energy consumption up to 50 percent of existing present consumption. All the other items listed fall in the category of fine tuning energy wise.

It is further recommended that ASHRAE 100.1-P "Energy Conservation in Existing Building—Low Rise Residential" be adapted as the energy conservation plan. My statement explains in detail the major effort expended on this industrywide consensus standard.

It is further recommended that an energy budget or target be established for the maximum allowable heat loss and maximum allowable heat gain. This way the homeowner will have a gauge as to when enough is enough and not spend for energy conservation measures beyond the possibility of financial recovery. This will also limit the items included as being covered by tax incentives.

The proposed legislation for conserving the maximum amount of energy would require a major consumer education training program, create the need for educating and training a whole new group of qualified personnel in contracting, engineering, thermal audits and inspection beyond the capability of this Nation to recoup financially and it goes without saying, opens Pandora's box for a whole new group of unqualified opportunists. Enough problems will be created in policing the "contractors" in the execution of the three items listed above as you have already heard testimony that was given by the previous panel.

After experience with the implementations of these three items, cost-effective measures, second order items can be added at a later date.

It should be recognized that users of fuels other than natural gas and electricity are not covered by this proposed legislation. This means that approximately one-third of all existing homes are eliminated and are not able to take advantage of this public utility retrofit program.

Mr. Chairman, I thank you for the opportunity to present my views regarding the proposed legislation for implementing energy conservation in existing residences and am prepared to answer questins relative to the testimony which I have submitted.

Thank you.

[Mr Morgenroth's prepared statement follows:]

STATEMENT ON

ENERGY CONSERVATION PROGRAMS FOR

EXISTING RESIDENTIAL BUILDINGS

DAN E. MORGENROTH, P. E.

Mr. Chairman and Members of the Committee:

It is a pleasure to appear before you today and to have this opportunity to present my views regards the significance and methodology of implementing Energy Conservation Programs for Existing Residential Buildings.

My name is Dan E. Morgenroth. I am presently employed as Manager, Market Development, Owens-Corning Fiberglas, Toledo, Ohio. I am a licensed professional engineer and a member of the National Society of Professional Engineers.

I am a member of the American Society for Testing and Materials and a member of the American Society of Heating, Refrigeration and Air Conditioning Engineers, Inc. I am a member of the Building Research Advisory Board of the National Academy of Sciences and am currently serving as vice chairman of the Board and Chairman for the Technical Assessment and Utilization Councils.

I have served as a reviewer for the Ford Foundation Energy Project, as a consulting member on the "Report of the National Petroleum Council on the Potential for Energy Conservation in the United States 1974 - 1978", as well as being a designer of energy efficient buildings.

I appreciate this opportunity to comment on specific sections of the subject proposed legislation. Before commenting on specific sections, I would like to make a general statement about end effect of the mass effort being expended to conserve energy.

91-931 O - 77 - 34

One comment deals with the quality level of heating and cooling of the residences under discussion. Since 1970 our nation has expended an estimated 33.6 billion dollars to combat air pollution and with considerable success. Additional sums have been expended to improve other areas of our natural exterior environment. Even though the artificial man-made environment in which we live has become more elaborate and more complex, relatively small sums of money have been expended to maintain its quality. It is hoped that in the drive to conserve energy the quality of the built environment will not be overlooked.

The second general comment is that the proposed legislation will require a tremendous input of qualified manpower that does not exist today in the United States. It should be recognized by this subcommittee that there is less than 2000 qualified all around people willing or capable of making an impartial total energy survey of a residence.

There is only one Federal agency group that I know that has had a long history of designing construction and experimentation of single family residences and that is the Forest Products Laboratory in Madison, Wisconsin.

I am chairman of ASHRAE TC 4.4 "Insulation and Moisture Barriers". I speak to you as a qualified professional and cannot speak for the Society. I served as a member of Panel No. 4 "Exterior Envelop" and as a member of Panel No. 5 "HVAC Systems" for ASHRAE Standard 90-75 "Energy Conservation in New Building Design".

I will now speak to specific sections of the proposed legislation for Energy Conservation Programs for Existing Residential Buildings.

Section 101 (5) "Public Utility" is limited to natural gas and electric energy. In this United States 2½ times the number of homes are still heated with fuel oil and L.P. Gas as opposed to electricity. It would appear that refiners through their chain of wholesalers and jobbers, sell fuels in excess of the BTU's listed in the definition in paragraph (5). Is it possible that these big suppliers of energy should also be included in this retrofit program? If not, approximately 1/3 of our current inventory of housing would not qualify for participation.

Section 101 (9) makes the statement "which has a mechanical or electrical system for heating or cooling or both". In the interest of true energy conservation and in order not to be discriminatory, might read "...purchases new energy for heating and cooling or both". This definition differentiates between users of new and consumers of waste heat, such as the low pressure exhaust steam of a district heating system.

Section 101 (11)(A)The term "residential energy conservation measures" mean ... change to read ...the act of increasing the efficiency of energy utilization and the reduction of energy wastage related to the residence.

The listing of specific measures in the enabling legislation would appear to be out of order because of the wide variations in constructions, climatic conditions within the United States. Some of the measures listed may not always be cost effective, others may, in fact, be counter productive and in some case may even be detrimental to the safety and well being of the structure. There are six categories listed in the proposed legislation, yet several cost effective items are omitted. There is no listing for cost effective,

energy conservation measures relative to air conditioning, such as awnings on west windows or solar screens to reduce solar load, exhaust fans to reduce attic temperature and many more. Further, it may be cost effective on a retrofit plan to change from black to white colored shingles on a 15 year old roof.

The application of the energy conservation measures requires the input of a professional or qualified persons. In adding alterations to existing constructions additional changes may be required. If a home is too tight in relation to air infiltration, qualified engineers will provide for a positive air supply and yet not increase new energy consumption.

Section 101 (11) Item E - Hot water heater insulation may or may not be effective depending on the household and energy used. On electric water heaters more insulation can be cost effective, however on fossil fuel fired water heaters and their accompanying flue openings that continually exhaust the interior air from the house to the exterior added insulation may have a marginal benefit.

Section 101 (11) Item F - Storm Windows. All storm windows do not have the same performance, so some may not necessarily be cost effective. This is particularly true if the gasketing is loose and water weep holes are drilled in the bottom so as to leak as much air as still might enter the prime window, little is gained thermally. Quality storm windows meeting ANSI A134.3 - 1972 with a maximum of 1 to 4 CFM of air leakage per lineal foot of sash crack should be required.

Section 101 (11) Item D - Insulation is part of a later discussion

under Section 102. Because of the wide diversity of products classed as insulation, commentary on individual materials will not be made a matter of this record.

There is always the possibility of a regulated public utility becoming involved in the solar energy field to supplement new energy that they have for sale. Should provisions be made in this legislation for utility financing solar energy packages?

Residential Energy Conservation Plans

First, under Section 102 (b), there should be listed specific targets as to the allowable energy consumption. What is the level of consumption that will put everybody on an equal basis? Such a targeted approach was taken by FHA in the development of MPS Revision 51a, April, 1971 (see Section 2) to the minimum property standards for one and two living units. This revision specifically stated that the allowable heat loss could not exceed 31 to 34 BTU per square foot of living area. The heat gain for air conditioning was limited to approximately 1½ tons per 1000 square feet of living area, depending on the size of the house. This gave the builders the necessary flexibility in design, construction, building orientation, color and type of materials, size and type of windows and doors, just so long as the heat gain and heat loss budget was not exceeded. This was a true performance specification with a definite target. The only variable to energy consumption was vagaries of the actual weather conditions and manner in which the occupants operated the residence.

I am suggesting that the administrator establish for this retrofit program the allowable heat loss and allowable heat gain in BTU

per square foot of the actual conditioned living space based on the local design weather conditions. This is fair to all people everywhere in the USA as each would now receive the same unit amount of energy per square foot of living area.

The retrofit program could be tailored to meet the wide variations in needs when each is focused on the same target.

An important point was made at the BRAB "Building Futures Forum" April 28, 1977. Almost anything one does to an existing house will save 10% of the energy cost. However, if 10 different actions are taken the resultant fuel consumption will not be zero.

What is ASHRAE?

The American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., known popularly to its members as ASHRAE, is the one and only professional and technical society devoted exclusively to promoting the arts and sciences of heating, refrigerating, air conditioning, ventilation and allied technologies. Since 1894 , it has grown to more than 30,000 members. Its membership is composed of people from the United States, Canada and 89 overseas countries who share a common interest in the many aspects of human comfort and environment control. All members belong to the international organization, which is headquartered in New York City, and most members belong to one of the Society's local chapters situated throughout the U.S. and Canada.

Objectives of ASHRAE:

The object of the Society is to advance the arts and sciences of heating, refrigeration, air conditioning and ventilation, the allied

arts and sciences and related human factors for the benefit of the general public BY...

1. Stimulating technological progress for the good of mankind.
2. Maintaining a high professional standing among its members.
3. Encouraging the continuing education and professional advancement of its members.
4. Providing educational opportunities through its publications, research, seminars, chapter scholarships and through Society, regional and chapter meetings.
5. Conducting a program of basic and applied research through grants-in-aid to colleges and laboratories.
6. Developing codes and standards and by cooperating with other organizations in development of standards.
7. Encouraging fellowship among engineers and industry leaders.

As of this time, ASHRAE has 123 chapters in the U.S. and Canada.

Development of ASHRAE 90-75

Several people who worked with FHA in the early 1970's on energy conservation programs are members of ASHRAE and used this experience in the development of ASHRAE 90-75, "Energy Conservation in New Building Design". This publication was issued in 1975.

In 1976, ASHRAE established committees to write standards for retrofitting various types of buildings. The Standard pertinent to this proposed legislative is ASHRAE Standard 100.1 covering the thermal performance of existing buildings for energy conservation. This new proposed Standard is based on the thermal performance requirements outlined in ASHRAE 90-75. The manner of presentation is in fact part performance and part prescriptive; thus, a compromise presentation

between MPS Revision 5la, and a purely prescriptive Standard.

It should be pointed out here that ASHRAE has acted as an umbrella society to involve full industry participation including representatives of 'uilders, designers, building material manufacturers, and representatives of code bodies in developing a consensus standard.

Development of ASHRAE 100.1 - P "Energy Conservation in Existing Buildings - Low Rise Residential".

The professional representation on ASHRAE task forces have developed standards that use todays' technology and considers economic payback to justify implementation. Next month, June 1977, an announcement will be made as to the availability of ASHRAE Standard 100.1 for public review. These are voluntary energy conservation standards developed by professionals, and are available to anyone who has an interest for comment. This standard will also be concurrently circulated by American National Standards Institute for public review.

Section 102 (b)(2)(B) Standards for installation of any residential energy conservation measures could take advantage of the work completed or in progress by ASHRAE. ASHRAE Standards are established to assist industry and the public by offering a uniform method of testing for rating purposes, by suggesting safe practices in designing and installing such equipment, by providing proper definitions of this equipment and by providing other information which may serve to guide the industry. ASHRAE obtains consensus through participation of its national and international members, associated societies and a public review.

ASHRAE Standards are prepared by a Project Committee appointed

specifically for the purpose of writing the Standard. The Project Committee Chairman and Vice-Chairman must be members of ASHRAE and, while other members may or may not be members, all must be technically qualified in the subject area of the Standard. Every effort is made to balance the concerned interests on all Project Committees.

ASHRAE has contributed considerable sums of money and manpower to the development of "Energy Conservation in Existing Buildings - Low Rise Residential". I recommend that this subcommittee take due advantage of this mass effort by the professional in establishing energy conservation plans.

Section 102 (d)(2) It should be pointed out that ASHRAE through its respective Technical Committees collects, studies, analyzes, and brings together the best materials expertise on products and systems in the interest of supplying to the building community the most comprehensive up-to-date reliable technical information. It is recommended that the information published by ASHRAE be used as the authoritative source to reduce the concerns relative to deceptive acts and practices.

Section 103 (a) (1)(B) "The cost saving ....likely to result from installation of a suggested measure in typical residential building ...." is a very involved inspection and calculation program.

As stated earlier, there are many things that can be accomplished in the act of retrofitting a residence and each unto themselves may result in a 10% savings. However, if all ten items are accomplished, the energy will not be zero. As the fuel bill is reduced each item added may prove less effective than if it had been first on the list of accomplishments. The cost effectiveness of the suggested measures

will vary from house to house. This one requirement in the utility program would create one horrendous manpower problem as well as placing the utility in many confrontation situations with suppliers of various suggested measures for energy conservation.

It is suggested that the wording be so written that the utility would suggest measures in each building that would bring the energy consumption in line with the target budget recommended in Section 102 (b)(1) of this statement. Everyone would then know when enough is enough.

Section 103 (a) (2) This suggested legislation as written seems to assume that "Contractor" or other single authority for making objective evaluation of a total residence is willing and available. This is not a fact. There are many "Contractors" available with services to sell such as insulation contractors, storm window installers, waterproofing and caulking contractors, electrical contractors to install thermostats, exhaust fans, or even redo the furnace if the idea can be sold. There is no single craft involved in the thermalizing or retrofitting of residential construction. There really are no qualified "Contractors" in the U.S. capable of making a total retrofit evaluation. The present system is for the individual home owner to buy each item individually.

It appears that major home owner education program is needed by an objective authority. There is further a need to train and qualify persons as thermal engineers or at least specialists in residential construction to be employed by the utility. This is assuming that the "right of the public utility to inspect....to confirm the installation" remains in the proposed legislation.

A massive professional training program will be required over many years to develop sufficient number of qualified personnel to carry out the intent of this proposed legislation.

Recommendations (An alternate proposal)

In the proposed legislation I feel that it is important to keep all the elements properly focused.

It appears that the intent of this proposed legislation to provide the basis for direction for saving the maximum amount of energy. However, if this legislation were limited to the three most cost effective items up to 80% of all possible energy savings would be attained.

It is recommended that the allowable energy conservation measures covered should be limited to those where objective results can be measured. The three most cost effective ones being (1) caulking and weather stripping to reduce air infiltration (2) upgrading the thermal performance of the windows and (3) the addition of thermal insulation to provide better thermal performance of the envelope and make the home more liviable. These three items alone if properly accomplished would cut the energy consumption up to 50% of existing consumption. All the other items listed fall in the category of fine tuning energy wise.

It is further recommended that ASHRAE 100.1-P Energy Conservation in Existing Building - Low Rise Residential be adapted as the energy conservation Plan. My statement explains in detail the major effort expended on this industry-wide consenuous standard.

It is further recommended that an energy budget or target be established for the maximum allowable heat loss and maximum allowable heat gain. This way the home owner will have a gauge as to when enough is enough and not spend for energy conservation measures beyond the possibility of financial recovery.

The proposed legislation for serving the maximum amount of energy would require a major consumer education training program, create the need for educating and training a whole new group of qualified personnel in contracting, engineering, thermal audits and inspection beyond the capability of this nation to recoup financially and it goes without saying opens Pandora's box for a whole new group of unqualified opportuntists. Enough problems will be created in policing the "contractors" in the execution of the three items listed above. After experience with the implementations of these three items, second order items can be added at a later date.

## MAINTAIN THE QUALITY OF THE BUILT ENVIRONMENT

The quality of the built environment is one of the most important factors affecting the well being of our nation. It is important to establish programs and policies to complement the well being of people, improve the quality of the built environment, and not be detrimental to the social structure of America. Although Americans are considered a high technology society and in many ways considered unfashionable because of the building of shopping centers, digging of strip mines, scattering beer cans along the highways, we are also moving at a very rapid rate on the biological time scale to extend the benefits of adequate food and shelter, and adequate education to all members of our species on earth.

Consider just what sort of creatures the inhabitants of earth are. At some time several million years ago our ancestors began to use tools and to speak. Finally we began to create wholly artificial and man-made micro environments around ourselves in the form of clothing, shelter, and buildings. Men have been able to inhabit every land, every climate and latitude on earth and to thrive there. Yet, biologically, men are still naked, tropical animals with neither fur nor fangs. Men, like all living beings, are creatures of the environment in which they live. The part of the environment that affects people most directly is the environment immediately around them that impinges upon them.

The part of the environment that affects people most is the man-made environment. People who live in modern society live almost entirely within their man-made micro environment. They are almost never without clothing except when they are bathing, swimming, or sunning themselves. Studies which have been carried out indicate that in the Northeastern United States between October and April people are rarely outside of buildings or vehicles. They spend their evenings and nights in their homes. Employed people walk short distances to an automobile, bus or train. They ride 20 minutes to more than an hour to a place of work which is nearly always inside another building. After 8 hours or more they return by vehicle to their homes and begin the cycle again. They are exposed to the world outside less than one hour a day. The routine of housewives and young people in school are somewhat different, but their hours outside of buildings and vehicles are also as few.

Is our man-made environment with its modern technology and complex modern society dehumanizing us and destroying the quality of our lives as many now say we are? The answer is emphatically "No". As the artificial man-made environment has become more elaborate, as societies have become more complex, the quality of the human life has vastly improved. Over the past several centuries as nations have become more urbanized, more industrialized, as their per capital gross national incomes have risen, the quality of life for the people in these nations has also risen, make no mistake about it.

By all measures the quality of human life is highest in the modern, urban, industrial society. The healthiest people with the highest quality of life are the members of the upper income groups in modern, urban, industrial society. Their life expectancy at birth is more than 70 years as opposed to the life expectancy at birth of 40 years or less among the poor in undeveloped nations. The high quality of life for these fortunate people is a direct result of the complex societies and the man-made environments in which they live. They enjoy an abundance of highly nutritious and sanitary food, they live and work in protected, well lighted, sanitary buildings maintained at temperatures and relative humidities that are at near optimal for them.

Since 1970 our nation has expended over 33.6 billion dollars to combat air pollution and with considerable success. In the air over cities such as New York the level of sulphur dioxide and particulate has been reduced by 80% or more.

What has been the affect of this on human health?

Certainly it has reduced the hazards from outdoor air pollutants. Major man killing smogs are no longer occurring. In places such as New York City where there are few, if any smogs associated with excessive deaths in the past, meticulous efforts have failed to show that the present level of pollutants in outdoor air have any affect at all on current mortality, and there is no convincing evidence that they have any immediate affect on the frequency of respiratory illnesses. In spite of all our efforts to clean up the outdoor air, the number of deaths and illnesses that are attributable to air pollution have not declined at all.

Our first and major concern should be the quality of the built environment of our dwellings. People spend more of their time there and more important human activities go on there than in any other place. Infants, young children, the old, the ill, the disabled and a very large proportion of women spend almost all of their time there. Here we sleep, prepare and eat our food, perform our eliminative functions and carry out most of our sexual activity; here we get most of our rest, relaxation and entertainment.

Just as dwelling units should be safe and provided with clean and healthy air, so also they should be adequately heated and cooled. Last year 490 people in the United States died from exposure to cold. Many of these died in houses and buildings. During the cold wave in January and February of this year there were more than 1500 calls per day to New York City authorities protesting unheated apartments and houses. One-half dozen people in New York literally froze to death within their own dwelling.

Heat is also a major threat to humans. A major heat wave can cause hundreds of deaths in cities such as New York, Chicago and St. Louis. Most of these are deaths of old people or people with chronic cardiovascular diseases. Adequate air conditioning of their dwellings might prevent many of these deaths.

The greatest problem that must concern us is how to make our social and economic system operate in a manner that will enable us to correct the deficiencies in the built environment for Americans. There are plenty of professional architects, planners and builders waiting to carry out the task. Many of the techniques of design and construction that are needed are already available. What is not available is the social and economic technique accomplished and paid for.

Probably one of the reasons why we expend so much public money and national effort on the improvement of the natural environment and so little on the improvement of the man-made environment lies in the fact that the major features of the natural environment — the air, the rivers, the oceans and the forests — are in the public domain and therefore a proper target for public concern and for the expenditure of public money. Most of the man-made environment, on the other hand, is in the private domain. There is great hesitancy to expend public money on this part of the environment. When public effort is expended to improve it we often try to accomplish our goals by means of codes, standards, regulations, punishments, or other sanctions upon the private individual or corporation in order to get them to make the necessary improvements at their own expense. Not infrequently this places demands upon people and corporations which they are unable to meet.

In our society in which the motivation of people in the private sector is derived from their enlightened self-interest and the possibility of profit or reward, it seems to me that our system would be much more effective in renewing and improving the built environment if it provides economic and social support, rewards and incentives for those who accomplish the needed task.

RBM. — ADDENDUM #2 MAY 10 '77

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Housing Administration
Washington, D. C.

INTERIM REVISION No. 51a

April 1971

To holders of FHA publication "Minimum Property Standards for One and Two Living Units." This revision pertains to several paragraphs dealing with insulation of living units.

This revision deletes paragraph 714-4; replaces paragraphs 714-3 and 714-5; and revises 1003-3.2 and 1003-3.3. In future construction, the following insulation requirements will be applicable to all one and two living units regardless of the type of fuel energy used.

The purpose of this change is to fulfill the Department's commitment to the national air pollution control and fuel conservation programs. Its implementation will also provide the homeowner with more economical operating costs in most areas.

This revision is effective with respect to applications received after June 1, 1971.

FHA No. 300
(Interim Revision No. 51a)

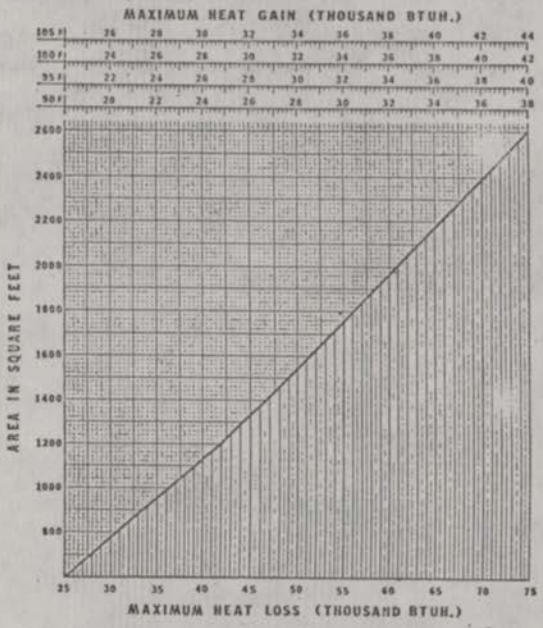
INTERIM REVISION No. 51a

714-3 INSULATION OF LIVING UNITS

714-3.1 Total Heat Loss

The total calculated heat loss of the living unit (all fuels inclusive) shall not exceed the values shown in Figure 7b. These calculated values are exclusive of floor losses. (See Section 714-3.3 below.) The floor area used is the total area to be heated to 70F, measured to the outside of exterior walls. An example of the use of Figure 7b is shown below.

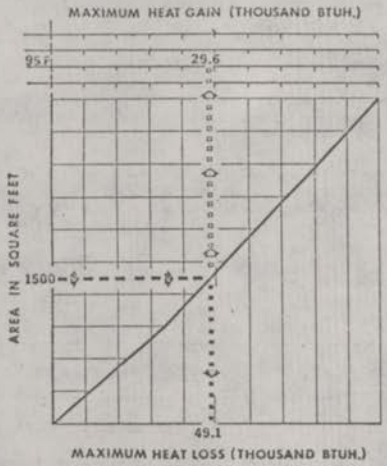
Figure 7b



714-3.2 Total Heat Gain

When air conditioning equipment is proposed, the total calculated heat gain of the living unit shall not exceed the value shown in Figure 7b, exclusive of floor heat gains. (See example below.)

Figure 7b




(Example: For a living unit of 1500 square feet with no floor loss, the maximum heat loss is 49,100 Btuh, the value read from the horizontal scale at the bottom of the figure. If this same unit is to be air conditioned, the corresponding maximum allowable heat gain in a geographical area having a design dry bulb temperature of 95F (exclusive of duct system gain) shall not exceed 29,600 Btuh.)

714-3.3 Heat Losses Through Building Sections

a. Ceilings. Generally in ceilings, the maximum coefficient of heat transfer (U-value for heat flow up) should not exceed:

1. 0.05 for ceilings with heating panels (Insulation R-19).

2. 0.08 for ceilings without heating panels (Insulation R-11).

b. Walls. To lessen the effects of cold walls and drafts, the total calculated heat loss (excluding infiltration loss) through all exterior walls, doors, windows, etc., should not exceed 20 Btuh per square foot of total floor area of the spaces to be heated to 70F.

c. Floors. To reduce the effects of cold floors over unheated basements, crawl spaces, breezeways and garages, the maximum coefficient of heat transfer (U-value for heat flow down) shall not exceed:

| Winter Design Temperature | Maximum U-value |
|---|---|
| + 25F to - 10F | 0.10 (Insulation R-7) |
| Colder than - 10F | 0.07 (Insulation R-11) |

Note 1. A basement shall be considered unheated unless it is provided with a positive heat supply equivalent to at least 15% of the total calculated heat loss of the living unit, or contains the heating unit and uninsulated ducts or piping.

Note 2. A crawl space is considered unheated unless it is (a) provided with positive heat supply equivalent to at least 10% of the total calculated heat loss of the living unit, or (b) contains uninsulated ducts or piping, or (c) is used as a supply or return plenum.

Note 3. A garage is considered unheated unless provided with a positive heat supply to maintain a minimum temperature of 50F.

d. Crawl Space Plenums. When a crawl space is used as a supply or return plenum, the crawl space perimeter wall shall be insulated to provide a maximum heat loss of 35 Btuh per lineal foot of perimeter wall assuming a crawl space air temperature of 70F for return plenums and 110F for supply plenums. The following insulating R-values may be used as a guide to achieve these requirements.

| Winter Design Temperature | Insulation R-Value | |
|---|---|---|
| | Supply Plenum | Return Plenum |
| Warmer than +25F | R-3.75 | R-0 |
| Colder than +25F | R-7 | R-7 |

e. Loose Fill. Blowing or pouring type insulation should not be installed in attic space where clear headroom is less than 30 inches at a point 12 feet from exterior walls. Where eave vents are installed, adequate baffling should be provided.

1003-3.2 Inside design temperature shall not be less than 70F. Heat loss and heat gain calculations shall be made using the winter design dry-bulb at 99% and summer design dry-bulb at 1% shown in current ASHRAE Handbook of Fundamentals.

1003-3.3 Concrete slabs. Edge heat loss of concrete slabs around the perimeter of heated spaces shall not exceed a maximum value per lineal foot of exposed edge of 42 Btuh for unheated slabs and 50 Btuh for heated slabs. Calculations of heat loss through concrete slabs shall be made using the following formula:

$$H = F \times P$$

Where H = Heat Loss of the floor slab (Btuh)

F = Heat Loss coefficient from Table 10-1 (next page) (Btuh per lineal foot of exposed slab edge).

P = Perimeter or exposed floor edge (Lineal feet).

TABLE 10-1 - Slab Edge Heat Loss Factors

Heat Loss Per Foot of Exposed Slab Edge. (Btuh)

| Winter Design Temperature ( °F) | Total Width of Insulation Inches | F for unheated slab [1] | | | F for heated slab [1] | | |
|---|---|---|---|---|---|---|---|
| | | R=5.00 | R=3.75 | R=2.50 | R=5.00 | R=3.75 | R=2.50 |
| - 30 and colder | .....24..... | 34 | | | 46 | | |
| - 25 to - 29 | .....24..... | 32 | | | 44 | | |
| - 20 to - 24 | .....24..... | 30 | | | 41 | | |
| - 15 to - 19 | .....24..... | 28 | | | 39 | | |
| - 10 to - 14 | .....24..... | 27 | 40 | | 37 | | |
| - 5 to - 9 | .....24..... | 25 | 38 | | 35 | | |
| Zero to - 4 | .....24..... | 24 | 36 | | 32 | 48 | |
| + 5 to + 1 | .....24..... | 22 | 33 | | 30 | 45 | |
| + 10 to + 6 | .....18..... | 21 | 31 | 42 | 25 | 38 | 50 |
| + 15 to + 11 [2] | .....12..... | 21 | 31 | 42 | 25 | 38 | 50 |

Note 1. Insulation R-Values shown are for thermal insulation resistance (R = 1/C).

Note 2. Where Winter Design Temperatures are warmer than +15F, perimeter insulation is not required. If installed in these areas (edge only) use values shown for +15 to +11 above. If not installed, use value of F = 45 for unheated and F = 60 for heated slabs.

Mr. DINGELL. Thank you, Mr. Morgenroth.
Mr. Radin.

## STATEMENT OF ALEX RADIN

Mr. RADIN. Mr. Chairman, I have submitted a statement to the committee. May that be inserted in full in the record?

Mr. DINGELL. Without objection, your full statement will appear in the record and we will recognize you for a summary.

Mr. RADIN. My name is Alex Radin. I am Executive Director of the American Public Power Association, 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. As explained in more detail in my prepared statement, there are six items which should be given serious consideration by this subcommittee.

One, electric utilities selling less than 750 million kilowatt-hours of electricity at retail annually would not be covered under this bill. These smaller utilities should be afforded, through an amendment to the bill, an opportunity to participate voluntarily, and thereby take advantage of the proposed secondary market for residential energy conservation loans. Financial assistance to cover administrative costs of such systems should also be considered.

However, at a meeting of our energy conservation task force last week, that task force recommended that the smaller utilities not mandatorily covered should be covered if they participate voluntarily. The following day our executive committee approved that recommendation. We will therefore encourage all of our members, irrespective of whether or not they are mandatorily covered, to participate in this program.

Mr. DINGELL. Are you suggesting an amendment on this program?

Mr. RADIN. Yes. These smaller utilities should be afforded through an amendment to the bill an opportunity to participate voluntarily and therefore take advantage of the secondary market for energy conservation loans. It is not clear to us. We think they may already be permitted to take advantage of this secondary market, but we would like to be assured that they could take advantage of it if they are not mandatorily covered. We think the committee also should consider financial assistance to take care of administrative costs of these smaller utilities.

Second, the program may not be effective in meeting the insulation requirements of rental units. The Administrator should be directed to study the effectiveness of the program with respect to such units. If the program is not found effective for rental units, we would suggest that insulation be required as a condition of renewal of a lease or making of a new lease on rental property.

Third, flexibility should be provided to the Administrator to include additional techniques in the definition of a "residential energy conservation measure" in section 101(11) to take advantage of other energy conservation opportunities.

For example, a heat pump is not covered in that section of the bill. We believe the Administrator should be given discretion to add

other energy conservation devices to take into account changing situations.

Fourth, some State constitutional and statutory provisions prohibit publicly owned utilities from lending funds. The provision authorizing the Administrator to supersede such provisions might not withstand a legal challenge. Alternatives to direct financing by such utilities, such as the creation of a National Energy Bank, could avoid these problems and should be explored. Section 106 may not cover a constitutional provision which prohibits a publicly owned utility from lending its credit for private purposes.

Five, a national thermogram program, if implemented, could locate buildings with significant heat-loss problems, and provide data to evaluate the effectiveness of the insulation program.

Attached to my statement is an article from our magazine which describes one of these programs. We would like to suggest that the committee consider using NASA or the military to run a national thermogram program.

The City of Seattle has undertaken a thermogram program. I have spoken to the Superintendent of Seattle City Light, and he has advised me that in three or four long weekends the National Guard has the capability of making a thermographic flyover of the State of Washington. A national thermogram program would serve as a baseline for this entire program. You would have a picture of what the United States looks like at the beginning of this effort, from a thermographic standpoint, and would have a basis of measuring the effectiveness of this program.

We would like to recommend that the committee consider using military or civilian aircraft for a national thermograph program.

Mr. BROWN. Would that be adequate to get individual housing?

Mr. RADIN. Yes, it is.

Six, good faith efforts by State regulatory authorities and public utilities should be available as a defense to the sanctions contained in section 105 of the bill. We feel that despite the best efforts of a utility, it might not meet all the requirements of this bill. We feel a good faith effort should be regarded as a defense.

That completes my statement. We may wish to submit additional comments at a later time.

[Mr. Radin's prepared statement follows:]

STATEMENT ON UTILITY BUILDING CONSERVATION PROGRAM OF H.R. 6831, SUBMITTED BY ALEX RADIN, EXECUTIVE DIRECTOR, AMERICAN PUBLIC POWER ASSOCIATION

My name is Alex Radin. I am Executive Director of the American Public Power Association. APPA 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, Subpart 1, of the National Energy Act.

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 Subcommittee 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, since many small systems would have considerable difficulty in meeting the administrative demands of complying with these programs. Our research indicates that approximately 75 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. 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 last Friday approved 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.

We therefore believe that this measure should be amended to enable those systems not required to participate under the Act, to nevertheless participate voluntarily where the aims of the program would be advanced.

The Administrator should be authorized to establish the guidelines for such participation. Rules 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 for providing direct assistance in meeting them.

If an opportunity for voluntary participation is afforded, then financing through the secondary markets should be available.

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, 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 the case of a store or a factory, such tax credits, in conjunction with an expectation of lowered utility expenditures, will probably provide a sufficient incentive for the owner 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.

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 conservaton 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 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 ocnservation 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.

We have had only a short time to analyze H.R. 6831. A more thorough study on our part may reveal additional problem areas. I hope, therefore, that we may have an opportunity to submit additional remarks for the record, should we so desire.

Mr. DINGELL. Thank you.

Gentlemen, it is with regret that I observe we have a vote on the floor. I guess we had better go over and vote and we will come back. We will be back as quickly as we can.

[Brief recess.]

Mr. DINGELL. The subcommitee will come to order.

Mr. Werkema, you are recognized.

## STATEMENT OF THOMAS E. WERKEMA

Mr. WERKEMA. Thank you, Mr. Chairman.

I am Thomas E. Werkema, an employee of The Dow Chemical Company. I am the chairman of a Building Research Advisory Board Task Force on the thermal performance of exterior walls. I am also the incoming chairman of the Public Affairs Committee of the American Society of Heating, Refrigerating and Air Conditioning Engineers. My comments are based on more than 20 years of experience in the building industry.

I was here a good bit of yesterday and you have my written remarks; therefore, what I would like to do this afternoon is in this oral presentation focus on some of the concerns expressed as I heard in the hearing earlier.

Mr. DINGELL I think that would be very helpful, and without objection your full statement will appear in the record and we will recognize you for your comments.

Mr. WERKEMA. Thank you.

First of all, concerning the issue of capacity, we have lived with accelerated demand for insulation systems and products since the energy shortfall was underscored by the oil embargo. This spurred development of new insulation systems and products which are available now, and can make an immediate and meaningful contribution to energy savings in the future also.

While the possibility certainly exists that a sharp buildup of demand could conceivably tax any industry capacity to provide needed products, recent experience with natural market forces has enabled our industry to anticipate and cope with heavy new demand. Because of that we have already taken steps to significantly expand our production capacity over the last several years and we plan to continue to add capacity in the near future.

We understand much of the rest of the foam plastic industry also has taken steps to expand production. So we expect generally an adequate supply under the program proposed.

Concern was also expressed yesterday about quality and price expected from the remodelling contractor.

Our experience is limited, but we introduced a new retrofit system for residential construction last fall. It's a system in which our insulation is wrapped around a home directly over the old siding, and then the new siding is placed over that insulation.

In the course of that project we found that most of the business of the remodelling contractor comes from referrals. Since it does come from referrals, that certainly puts the pressure on him to maintain quality.

We also found that the local competition is severe enough that prices are pretty well kept in line. In fact, we also found that the price competition is sometimes so severe that the insulation part of the re-siding business is actually left off.

We think that the tax credits will certainly help to overcome that problem.

The question was also asked yesterday concerning specifications for insulating materials. There are—and it wasn't mentioned yesterday—but there are also Federal specifications for plastic foam. In fact, a wide spectrum of uses of these materials are covered by the building codes as well.

We have also gone on record supporting the voluntary laboratory accreditation program referred to yesterday by Dr. Snell of the National Bureau of Standards.

A point not made so far, at least not that I have heard so far in the hearings that I would like to emphasize, is that any legislation or regulation should be structured in such a fashion as to encourage and accept new technology for the thermal upgrading of buildings.

The energy measures developed under this legislation must be as performance oriented as possible.

The Building Research Advisory Board has proposed to ERDA a study on the thermal performance of the exterior envelope, that is, really, how does that envelope perform. As our committee has developed this proposal, we have become increasingly concerned that, really, the level of knowledge that we have leaves a great deal to be desired.

We have been told, incidentally, that ERDA does expect to support that project, and, in fact, would hope to have it under way rather shortly. So as our knowledge of thermal performance of buildings increases, new technology will evolve, and that evolution should be encouraged and the acceptance of appropriate new techology must be assured also.

Research funds, both public and private, must be oriented towards an understanding of thermal performance of buildings so both appropriate standards can be developed and that new technology can be developed also.

Further, allowing energy prices to rise commensurate with the value of energy will allow both the regulator and, perhaps even more importantly, the consumer to evaluate any new technology on this appropriate economic scale.

Quite frankly, we have had some experience that the technology we are selling now, both for new and existing houses, would certainly be easier to sell if the fuel prices were higher; it would be easier for us to demonstrate its economic value.

Presuming new techology is encouraged, we do support the program proposed in sections 101 to 109 inclusive, particularly though we would like to emphasize those portions of section 103 which ask the utilities to supply lists of contractors and lending agecies from which the customer can select. It's of critical importance, we feel to maintain competition both among the contractors and the lending institutions.

Thank you, Mr. Chairman.

[Mr. Werkma's prepared statement follows:]

STATEMENT OF THOMAS E. WERKEMA ON THE BILL FOR THE USE OF UTILITIES FOR THE THERMAL UPGRADING OF EXISTING RESIDENTIAL BUILDINGS

I am Thomas E. Werkema, an employee of The Dow Chemical Company. I am the chairman of a Building Research Advisory Board Task Force on the thermal performance of exterior walls. I am also the incoming chairman of the Public Affairs Committee of the American Society of Heating, Refrigerating and Air Conditioning Engineers. My comments are based on more than 20 years of experience in the building industry.

President Carter's emphasis on thermal upgrading of buildings—and financial incentives to help make it affordable—are both sound and needed in our view.

We feel our industry is technically well positioned to meet challenges posed by these new energy incentives. We've lived with accelerated demand for insulation systems and products since our energy shortfall was underscored by the oil embargo. This has spurred development of new insulation systems and products which are available now, and can make an immediate and meaningful contribution to energy savings.

While the possibility exists that a sharp build-up of demand could conceivably tax any industry's capacity to provide needed products, recent experience with natural market forces has enabled our industry to anticipate and cope with heavy new demand. Additionally, any concern about escalating prices as a result of this demand will be answered by the effect of normal supply/demand factors.

It is vital, however, that the industry now review programs and systems within this new context and make the necessary investment and commitment to develop and market needed new insulation programs and systems.

It is important, too, that any legislation or regulation be structured in such a fashion as to encourage and accept new technology for thermal upgrading of buildings. The energy measures developed under this legislation must be as performance oriented as possible. As our knowledge of the thermal performance of buildings increases, new technology will evolve. That evolution must be encouraged and the acceptance of appropriate new technology must be assured. Research funds must be oriented towards an understanding of the thermal performance of buildings so appropriate standards and new technology can be developed.

From our specific standpoint, we have already felt a strong and growing demand for our STYROFOAM [1] brand insulation from homeowners, builders, commercial and industrial, and institutional users. Our systems and products are proven and accepted, and the cost and insulation benefits well documented. This demand has fostered further research and development, and as a result we have greatly expanded our ability to meet diverse insulation needs—from protecting the Alaskan pipeline to energy saving systems for mobile homes.

As an example of new technology, we have recently introduced a system in which our insulation is wrapped around the outside of an existing house and then new siding is installed over the insulation. Not only does the system add insulation, but it also reduces air infiltration, a major cause of heat loss, especially in old houses. That recent experience in the market for the insulation of existing homes has assured us of quality performance in this market. We have found that most of the business obtained by home improvement contractors is obtained by referral from satisfied customers. We have also found that the local competition not only keeps their prices in line but their quality as well.

We are comfortable with the local utility as the focus for the thermal improvement of existing houses. We would caution, however, that monopolistic local situations should be avoided. All qualified contractors must be accepted to maintain maximum local competition.

Because of rising demand, we have also taken steps to significantly expand our production capacity over the last several years—and plan to continue to add to capacity in the near future. We understand that much of the rest of the insulation industry has also taken steps to expand production. We would expect generally adequate supply under the program proposed.

The critical factor is the consumer. Increased emphasis on thermal upgrading can make a significant contribution to their well-being and pocketbooks in the long run. But, this sudden and intense emphasis on conservation will catch many people unprepared to implement required changes. There's a need and obligation to increase efforts to educate users to the variety, application, and insulation values of various systems and products. Each home, school, factory or business has distinct insulation needs. We will have to show people how to find, buy and use insulation effectively and economically. However, with the participation of the local utility and the encouragement from the tax credit program, we would agree in general with the projections of the FEA for the success of this program.

Mr. DINGELL. Thank you, Mr. Werkema.

The Chair recognizes Mr. Matthews.

## STATEMENT OF STANLEY L. MATTHEWS

Mr. MATTHEWS. Thank you, sir.

I am Stanley L. Matthews, president of the National Mineral Wool Association, and I am vice president of Rockwool Industry, Incorporated.

I have with me Mr. Sheldon Cady, who is the executive vice president of the National Mineral Wool Association.

I am a retired Army officer, and have been in the insulation business for about 14 years. I am vice chairman of the ASTM, the main committee on thermal and cryogenic insulation and a member of Mr. Morgenroth's panel, TC4.4.

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[1] Trademark of the Dow Chemical Company.

I was also on panel 4 of ASHRAE, 90-75, and I am a member of the panel developing the 100 series for high rise residential buildings, on retrofitting of existing buildings. That is panel 100.2.

I have to support the comments Mr. Morgenroth made with regard to using the ASHRAE 100.1 series as a consensus standard, certainly as a minimum, and one that is available, which will preclude the 390 day lead time proposed in this piece of legislation, which to me does not evidence a great deal of a sense of urgency of getting on with the job.

The program should deal, as Mr. Morgenroth mentioned, with the cost effective items first, the weather stripping, storm windows, caulking and insulation. The fine tuning of changing furnace burners, or changing furnace orifices, putting new interrupters in, much study needs to be done on that to determine if those are safe and if they are efficient.

The program of five years will tax, in my opinion, the capacity of the mineral fiber insulation industry, and we certainly support the concept of approximately a nine or ten year base. This will afford companies like mine, for example, to expand and get a responsible write-off on our equipment over a ten-year period, and not because the problem that was indicated of having to increase our prices beyond our regular depreciation schedule for new equipment.

The question was asked also about the amount of mineral fiber that was used in new construction. Approximately 85 percent of all of the new construction is insulated with mineral fiber, either fiber glass or rockwool.

One of the concerns also previously mentioned was that one-third of the people in this country are not going to be covered by a utility program, and this has to do with those who unfortunately have to heat with oil, which is the product we are trying to keep from importing.

I think some consideration of attacking that portion of the problem is necessary, and not just limiting it to natural gas and electricity.

Mr. DINGELL. Could I ask a question? The program covers those who heat with natural gas or who use electricity. Given that set of circumstances, doesn't that make it possible for an electric utility who services a home to cover that home, even though it might be heated with oil?

Mr. MATTHEWS. It could, sir. I don't think that is the general understanding of what is in the legislation and it should be spelled out more clearly.

Mr. DINGELL. I think you make a good point, and we will lean on that point.

Mr. MATTHEWS. Thank you.

There is another area of approximately 4.8 million living units which creates a problem, and this is the mobile home. Just recently, in the past year, Federal standards for the thermal performance of mobile homes have been developed, and in the past they were manufactured under the standard, A119.1, which was an industry consensus standard. This is a problem area possibly the committee should look into, studies or encourage studies in ways to retrofit these units, because the mobile home is an energy consumer of large magnitude.

Another area that is not exactly germane to this but is always thought of in terms of retrofit programs, is the ever occurring announcment of tax credits. Every time they are announced the insulation business takes a down turn as our citizens wait for Congress to proceed.

I believe the first submission of this was by Mr. Halpern back in the late 1960's, and Senator Moss from Utah in the early 1970's, as I am sure you gentlemen know, it was passed by both Houses of Congress last year, but they didn't meet at the conference table.

Mr. BROWN. You would think they would know better by now, wouldn't you?

Mr. MATTHEWS. I think many people are again waiting to see if this Congress will provide the tax credit and some joint resolution or some action must be taken to assure people of what the retroactive date of this will be, because right now they are sitting on their hands waiting. We have noticed a down turn in that segment of the market.

An area also mentioned previously was the area of energy for the plants. If you read the Washington Post this winter, there was an advertisement in there indicating that approximately 40 percent of the productive capacity of the mineral fiber insulation industry was shut down during the natural gas crisis.

It is ludicrous, I guess, but a fact of life, that here was a product to conserve energy not being able to be made because it didn't have the energy with which to make it.

Thank you, sir. That concludes my remarks.

Mr. DINGELL. Thank you.

Mr. Rodgers?

## STATEMENT OF PAUL RODGERS

Mr. RODGERS. Thank you, Mr. Chairman and members of the committee.

My name is Paul Rodgers. I am the Administrative Director and General Counsel of the National Association of Regulatory Utility

Commissioners (NARUC), a nonprofit organization of State regulatory commissions founded on March 5, 1889.

The NARUC fully supports energy conservation programs for residential buildings. The NARUC as early as September 20, 1973, adopted a resolution to encourage utilities to offer the installation of home insulation as part of their service; 85th NARUC Annual Convention Proceedings, pp. 195-196.

This move was on the initiative of then Chairman Rosenberg, of the Michigan Public Service Commission at that time.

Many of our member commissions are today involved in the implementation or administration of such energy conservation programs. Accordingly, we do not believe that a Federal presence is required in this area to achieve our national energy goals.

However, if the Congress decides to so insert the Federal presence as proposed by subpart 1 of part A of title I of H.R. 6831, a bill proposing the National Energy Act, we recommend that it be amended to provide for close consultation between the Administrator and the State regulatory community which 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.

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.

[The appendix to Mr. Rodger's statement follows:]

APPENDIX

The NARUC respectfully proposes the following amendments to Subpart 1, Part A, Title I, of H.R. 6831, a bill proposing the National Energy Act.

(1) Section 102(a), page 12, 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 Subsection (e), page 15, 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, selected after consultation

with representatives of 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 consultation and 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 1, Part A, Title I of the 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.

(3) Section 104(a), page 19, 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?)

(4) Section 105(a), page 22, 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)."

(5) Section 105, page 23, 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 judicial review upon petition by an aggrieved party.

Mr. DINGELL. You indicated earlier, Mr. Rodgers, that many of the States are now engaged in this kind of program, and therefore, it is not necessary for there to be a Federal program.

How many States are engaged in the program; can you tell us?

Mr. RODGERS. It would take us some research. We would be glad to supply that for the committee. The leaders have been New York, Pennsylvania, and California, and Minnesota. Michigan has been a great leader starting under Mr. Rosenberg and persuaded by the present chairman. There was impetus from Mr. Rosenberg who was with FEA when he announced his proposal. I might add that his proposal was quickly adopted by this association earlier this year. We will be glad to provide this information.

Mr. DINGELL. The number of States, is it more than half of the States involved?

Mr. RODGERS. No, it wouldn't be half.

Mr. DINGELL. It is not?

Mr. RODGERS. No, sir.

Mr. DINGELL. What percentage of the home heating energy is involved in the States that are involved?

Mr. RODGERS. We would not know that without a questionnaire, sir.

Mr. DINGELL. Rather less than a half again?

Mr. RODGERS. I would think so.

Mr. DINGELL. You suggested that the States had endorsed the Rosenberg plan. I assumed they were endorsing the inclusion of the cost of insulation, and fuel efficiency programs, and equipment with regard to homes as being in the rate base, or out of the rate base.

Mr. RODGERS. As an expense item, I think was the intention of the NARUC, not in the rate base. If it was in the rate base, that means they would continue to draw a return on that, so I think the idea would be best as an expense item.

Mr. DINGELL. As an expense item?

Mr. RODGERS. Yes.

Mr. DINGELL That is, as you know, a very important difference.

Mr. RODGERS. Yes.

Mr. DINGELL. I am sure from your long experience in this and your many appearances before congressional committees and your wide work in this area, that you fully understand the subtle difference that exists between expense and rate basing.

Mr. RODGERS. That is correct.

Mr. DINGELL. I assume then that that utters the position of NARUC that this should be as an expense item to the utility as opposed to a rate base item.

Mr. RODGERS That is correct. Of course, it would be at the option of the State commission to begin with. Of course, we are all for flexibility at the State level, and, of course, that is a good provision of the Administration's legislation; you have the State in the first instance coming up with a plan and submitting it to the Federal Administrator and not the other way around. We think the purpose of this provision is to try to reflect the State differences by letting the State be the first author.

Mr. DINGELL. I think that is a helpful suggestion. You mention that you suggested several amendments.

Mr. RODGERS. Yes.

Mr. DINGELL. Will you submit those amendments to the committee so we have them before us?

Mr. RODGERS They are submitted with my statement. In the appendix there is a page and a half of appendix which sets forth all of our amendments.

We are particularly interested in this State regulatory advisory committee, because the way the present act is written out there is no provision for consultation with anyone except other Federal agencies. We think it's important that an advisory committee be injected which would represent all of the pertinent interests and work with the Administrator in the beginning. Of course, it would be continuing this kind of cooperation throughout the life of this program.

Mr. DINGELL. Thank you very much.

The Chair recognizes members for questions.

Mr. BROWN. Mr. Rodgers, suppose you were a utility such as one that I think of very quickly, that is, of course, hypothetical, that has been criticized for investing too much of its limited capital in electric generating capacity, and not enough of it in capacity for the storage of natural gas.

In the face of the natural gas shortage, we now have a Federal program which says we want you to use your limited resources to finance the examination of the homes in your service area for retrofitting, and we want you to expense that item.

Mr. RODGERS. I think that is highly impractical. I think you make a very good point, Mr. Brown, because I think that there are variations among utilities all across the country. I think that these plans must be submitted on a per utility basis by the State commissions for plans which might provide different treatment of utilities. This thing is so complex and variations so great that you cannot have a uniform plan nationally.

Mr. BROWN. Does that mean you are walking away from the comment you just made to Mr. Dingell that this ought to be an expense item or should it be on a utility by utility basis?

Mr. RODGERS. Where the utility does it it should be an expense item, but in some cases the utility might not want to do the whole thing.

Mr. BROWN. The legislation calls for utilities to be required to provide this service on request of the customer nationwide, and if we are going to accomplish 90 percent of the homes being examined for improvement of their heating situation, how can we make it optional to the utility that they provide the service?

Mr. RODGERS. The way I read the act there is great flexibility in the hands of the States that are going to be the first drafters, and flexibility in the hands of the Administrator. In the case of utilities, you mention there might be compromise worked out whereby the utility would publicize the use of contractors, and that would provide the service. That seems to me to be a satisfactory compliance with this, because I read this act as being really rather vague. There is, it seems to me, rather sufficient flexibility, because, of course, I don't think you can impose this on all utilities. I think there are some that might have some real problems.

Of course, we do have problems with the impact on our small contractors, and on the unregulated sectors. I think under this provision a utility could do it all and that would take away a lot of business from your independent contractors. I don't think that would be the intention.

Mr. BROWN. I think we have to clean up the legislation in that regard. I am not sure what the legislation intends, and I am not sure how fair the legislation is in some of the ways it is written in view of the testimony given to us by the first gentleman who spoke on this panel. I just wanted to be sure that you are not telling us that we ought to blanket in the requirements.

Mr. RODGERS. No.

Mr. BROWN. The hypothetical case I speak of is somewhat more real than I have indicated, and I am sure you are aware of that.

Mr. RODGERS. I agree. We certainly would support the flexibility.

Mr. BROWN. Let me go back to Mr. Morgenroth. Do you know whether or not the Administration contacted the National Academy of Sciences or any enterprise boards with reference to this list of savings that you referred to, some of which could be counterproductive where they were stimulated by tax credits?

Mr. MORGENROTH. To my knowledge, no one from the Federal Governent has contacted the Building Research Advisory Board or the National Academy of Sciences relative to this subject on energy savings. The energy savings that I gave in my testimony is based upon information from the American Society of Heating, Refrigeration and Air Conditioning Engineers.

Mr. BROWN. Could you identify those which were counterproductive that were recommended by the Adminstration?

Mr. MORGENROTH. Yes, sir. There are several in this list on page 10. Let's use item E for openers on water heater insulation.

Mr. BROWN. If you could explain very briefly, because my time runs out quickly.

Mr. MORGENROTH. There are three for insulating water heaters. (1) To keep people from getting burned because the heater may be hot, and (2) to reduce the heat on the air conditioning load, and (3) to reduce the possibility of fires. About 99% of all water heaters are installed within the conditioned environment. During the winter time any heat given off through the walls by the water heater goes into the conditioned space. It doesn't go out doors as far as the insulation on the exterior of a water heater is concerned. However, a gas fire water heater has a flue up the middle and that is connected to the chimney out of doors. This flue is not insulated and this flue continually exhausts heat out of the house through the chimney and it doesn't make any difference how much insulation you put on the exterior of the water heater when the inside is not insulated.

Mr. BROWN. The air-conditioner is working on cooling the inside of the house while the water heater is working to heat it; is that your point?

Mr. MORGENROTH. No. What I am saying is in the winter time the heat that is given off from the outside of a water heater is generally beneficial, because you are using the same energy for heating the water as you are running the furnace, or whatever.

By insulating the outside, one is still not insulating the inside, and so heat is continually being dissipated from a water heater up the flue at all times.

Mr. BROWN. What I would like to ask each one of you is to provide for us information about how you would improve the listing of those areas addressed by this part of the legislation in terms of what ought to be included for encouragement of individual or community action, or work done by a utility, and then refined by the utility or conducted by the utility in the interest of the home owner or property owner.

I am really asking whether or not the list should be broadened—you mentioned mobile homes—to include commercial buildings and office space and other practices such as closing up windows on industrial buildings. There are many industrial buildings built back in the turn of the century era, and particularly I would think maybe in the New England area and elsewhere, that seems to me are great waste sources for heating, and one of the ways you might be able to take care of that is just simply closing up the windows altogether in an industrial building where they serve currently no purpose.

Mr. MORGENROTH. Mr. Brown, one question, sir. Is this particular subject we are addressing today limited to the existing residential buildings?

Mr. BROWN. Not residential. I mean to address all buildings, all stationary sources of energy consumption.

Mr. MORGENROTH. As far as the American Society of Heating, Refrigeration and Air Conditioning Engineers is concerned, we have a multi-faceted program. One is for residential low rise [ASHRAE 101.1], one is for residential high rise [ASHRAE 100.2], a completely different program and a completely different technology is required for industrial [ASHRAE 100.4], another one for institutional [ASHRAE 100.5] and commercial [ASHRAE 100.3].

You cannot use the same techology in all buildings.

Mr. BROWN. I appreciate that, and I don't want to belabor this, but your suggestion that some of the things for which tax credits were recommended are, in fact, counterproductive raises the thought in my mind that maybe there are areas we ought to be getting at in the tax credit area that were not included and maybe there are areas that are included in other parts of the bill or in other ways that we should do something about.

I am talking now about all buildings and methods by which heat can be saved.

Mr. MORGENROTH. In my written testimony I have made the following statement relative to section 101(A), the residential energy conservation measures: "The act of increasing the efficiency of energy utilization and the reduction of energy wastage in a residence," and not to list all of the items per se, as that becomes a shopping list in many ways to unqualified opportunists. Please let the professionals solve for the proper cost effective measures to be used.

Mr. BROWN. I understand what you said.

Mr. DINGELL. The time of the gentleman has expired.

The Chair recognizes the gentleman from Michigan, Mr. Stockman.

Mr. STOCKMAN. Mr. Morgenroth, I want to compliment you for your statement. It's one of the shortest we have had, at least your summary version.

I think you have really provided some illumination we haven't gotten yet. Underlining all of our discussion is a fear we seem to have, and I think it is legitimate, that if through the mandatory utility program and tax credit and other similar devices we suddenly increase enormously the demand for home insulation services and for contractors and for supplies and so forth, then we are going to open up the market to a real can of worms in terms of opportunists, and marginal operators getting in and bilking the Government and consumers, and so forth, and we really don't seem to have a very good handle on how we can control that situation and how we prevent the development about 1981 or 1982 when the GAO does a nationwide study and finds it's even worse than the Medicaid program in terms of abuse that takes place.

It seems to me you have suggested that there are some conservation devices that are inherently far more cost beneficial in terms of accepted state of the art, the studies, verification studies available and so forth.

It seems to me if you get to some that are less, it's going to be very easy to get substandard material or devices used to get substandard insulation done, to get them applied to the wrong settings in terms of thermal characteristics of the home or the furnace you are dealing with, and so forth.

In order to avoid that, wouldn't we be better off to limit the tax credit and limit the mandatory provision of service on the part of the obligation of the utility to those few things such as insulation, storm windows and so forth that we know will have a large cost benefit ratio, that we have pretty good standards on how from the private industry associations, and that we have some competence

out in the field in terms of vendors or contractors that can provide it, and that if people want to do some of the more exotic or marginal things, as we were discussing before, let them. Let's not create a market for it, let's not subsidize the market for it.

Do you think that would be our best strategy as opposed to a bureaucratic strategy where we have kinds of reports filled out and inspectors out in the field and so forth to make sure none of this inevitable abuse that does develop in a seller's market takes place?

I would like the comments of others, too.

Mr. MORGENROTH. Mr. Matthews made similar comments, and I would certainly recommend that the three most cost effective items being the reduction of air infiltration, the upgrading of the thermal performance of windows. Now, this in itself is a very broad subject, and I would not expect that it would be limited only to the use of storm windows. In some old houses, in a retrofitting plan, one may want to replace the total prime window as well as putting on storms so as to upgrade it, so not just subsidize storm windows per se. Storm windows alone may not be cost effective on bad prime windows.

The third most cost effective—and this is not in rank order of cost effectiveness—the third one would be thermal insulation of the total exterior building envelope.

The matter was brought up relative to the cost effectiveness of each one of these individual energy conserving measures. For the sake of clarity, our discussion might be limited to just the three major items.

If one installed insulation first, then added storm windows second, the benefit accrued from storm windows would be less effective than if storm windows were installed first, and then thermal insulation second and caulking third. So, if there are 10 things that we can do to conserve energy and they may all contribute 10 percent savings, if you accomplished all 10 things it doesn't mean our energy consumption will be zero.

Mr. STOCKMAN. I guess the point I am getting at is when you are dealing with the three categories you have mentioned, we have standards number one for insulation, we know what is good insulation and bad, and we have standards for material both in terms of safety and effectiveness, and in terms of thermal efficiency.

There are people in the business today doing it, and it seems to me if we don't limit it in that way we are going to end up with a lot of salesmen coming to people's houses at 8 o'clock at night showing them how putting this little gimmick on their flue or furnace is going to save them $500 or $1,000.

Do you agree with that?

Mr. WERKEMA. I would agree with that in general, Mr. Stockman, but I would like to make the point that the thing that is apt to do is to inhibit development.

Mr. STOCKMAN. I know that is the other side of it. Maybe initially we should limit it, and then have some procedure where adequately demonstrated techniques could be added to the list.

Mr. Werkema. Perhaps an evaluation could be done at the local utility level. That is where the economics are going to work out anyhow. That is where the heating load develops. It depends on the

local situation, the climate and so on, and the evaluation perhaps should be done there.

Mr. STOCKMAN. Mr. Morgenroth?

Mr. MORGENROTH. I would like to comment just so I am not misunderstood. I would not like to limit my comments to caulking, storm windows and insulation. I would like to say that the three itmes that you discussed in this whole general category should be covered, caulking and weather-stripping, and other measures to eliminate air infiltration. Another, the thermalizing of windows, not necessarily is limited to storm windows, but doing it complete. Another is to improve the thermal performance of the envelope, of the opaque wall and ceiling area. This will not inhibit but will actually, in fact, encourage innovation if people can create better ideas, better techniques, better materials for improving the thermal resistance at less cost than those currently available, but the list should be limited to those three functions.

Mr. STOCKMAN. I think what the other gentleman was saying was in other areas entirely outside of these three categories, if you limit the mandatory program and credit, you might not get the development you need that perhaps might be beneficial in the long run on devices for furnaces.

Mr. RADIN. We think there ought to be sufficient flexibility to allow a heat pump, for example, to be considered an energy conservation device.

Mr. STOCKMAN. Would we be in a position now, not this committee but the Administrator, be in a position to have reliable data and tests available saying we are looking for a cost benefit ratio of x under certain standard conditions and then judge which fall in that and which don't and include only those that meet that cost benefit standard in his list of mandatory items, and, therefore, eligible for tax credits as well?

Is the state of our knowledge advanced enough to do that today? Could anyone comment on that?

Mr. BROWN. Do you understand the question? I think it's a good question.

Mr. MORGENROTH. Are you talking about the coefficient of performance of heat pumps as per example? We have that information as of now.

Mr. STOCKMAN. I am saying on any given measure, whether it's insulation or heat pumps or flue restrictors or whatever it might be, do you feel that our state of knowledge in terms of the cost benefits, costs that go into, pay out period, the energy to be saved under certain standard conditions, I mean obviously there are going to be variations and that is another problem; are you applying it to the right circumstances but under standard conditions, do you feel our information is good enough now where if the Administrator were charged with this function to reach a cost benefit ratio of 1.5 under standard conditions that he could evaluate the various strategies or conservation measures that we have?

Mr. MORGENROTH. No. I can answer that question, which I think I answered earlier. It depends upon the rank order in which they are applied to the building.

Mr. STOCKMAN. I realize that.

Mr. MORGENROTH. Therefore, one can't come up with, I don't believe, a single number for every individual item.

Mr. MATTHEWS. One comment. The remarks Mr. Morgenroth made before of limiting this to a few known items, every time you pick up a mail order catalogue from one of the mail order houses, not the major ones, there is a gimmick that is going to give you more miles per gallon on your carburetor.

Mr. STOCKMAN. Somebody put one on mine, and it didn't do any good.

Mr. MATTHEWS. These are the gimmicks people are coming around door to door or in catalogues, that might be considered acceptable under some of the language in here. It is the same kind of gimmick until the industry, who is resposible such as the utility industry, purveyors of the gas fired and oil fired equipment, have tested these things and found them to be cost effective and found them to be safe, I think it's stretching our imagination a little bit to say we can add all of this fine tuning equipment to the legislation.

Mr. STOCKMAN Thank you, Mr. Chairman.

Mr. DINGELL. The time of the gentleman has expired.

The Chair recognizes counsel, Mrs. Harrison.

Mrs. HARRISON. Thank you.

Mr. Morgenroth, I understand there is Bureau of Census data on installation of storm windows and doors in residences in the Nation. Do you have any information on this?

Mr. MORGENROTH. Yes, I do. The U.S. Department of Commerce Bureau of Census publishes the characteristics of the housing inventory, and I have here a copy of table 1A, which is the latest published Census, 1974, which does indicate that in 1974 approximately 50 percent of all of the houses currently have storm windows.

It also indicates that 50 percent of all of the houses existing in the United States today already have storms on all or some doors covered in 1974. It also indicates something like 80 percent of all of the houses have insulation in the attic now. It may not be good enough but they have it there now.

This is available.

Mrs. HARRISON. Of course, that does not go to the other point you made of how effective that may be, considering its age and so forth.

One other question: You recommended an energy budget or target for maintaining heat loss, and maximum heat gain. What kind of a figure are you recommending in this legislation?

Mr. MORGENROTH. If there is to be some limit to the number of energy conservation measures or devices that is to be added to the house, one may eventually get to a list where it is not economically feasible. I would recommend that a target in the legislation similar to that that had been established by HUD as the target or gauge by which a homeowner knows when enough is enough.

For instance, one can say that the heat loss of all the houses in the United States, regardless of types of energy used and based upon the local designed conditions, should not exceed 25 Btu's per square foot of floor area per hour.

One can also establish the same kind of target or budget for heat gain, that all houses should not require more than one and one-half

tons air conditioning per thousand square feet of conditioned area. If that was the maximum allowable heat loss and heat gain, other measures then might need to be added to the house in order to meet that energy target.

Mrs. HARRISON. This is part of HUD's standards for new homes?

Mr. MORGENROTH. It was originally a part of the HUD standards. It was known as MPS, Minimum Property Standards. It was revision 51A. A copy of that is attached to my testimony, and it is the Unit Recommended Heat Loss and Heat Gain of Individual Homes in Accordance with the Square Footage of Floor Conditioned Area.

This gives you at least bottom line of when you have conserved as much energy as your neighboring people in other states or anywhere else in the United States.

Now, you would take different measures in different localities to meet that target.

Mrs. HARRISON. Thank you.

Mr. DINGELL. Mr. Hunt?

Mr. HUNT. No questions, Mr. Chairman.

Mr. DINGELL. Mr. Morgenroth, you have indicated one paper on this subject. Are there other papers on this subject in government files that would be of use to us in arriving at some judgment as to where the best crafting of the legislation lies?

Mr. MORGENROTH. On budget numbers?

Mr. DINGELL. You mentioned one publication at HUD on the subject. Are there other publications you might guide us to that would assist us?

Mr. MORGENROTH. The National Mineral Wool Association has published a bulletin of how to meet this standard by types and kinds of windows, sizes of windows, quantities of insulations, and so forth. It is called the National Mineral Wool Association Standard for Implementation of HUD Standard 51A. So has the National Association of Home Builders Research Foundation.

Mr. DINGELL. Very good. Is the HUD standard a reliable and adequate standard, in your view?

Mr. MORGENROTH. This particular standard by HUD was published in 1971.

Mr. DINGELL. So it is somewhat outdated?

Mr. MORGENROTH. It is a little out of date, and I would suggest it be upgraded, yes, sir.

Mr. DINGELL. It has not been upgraded?

Mr. MORGENROTH. They have switched to a different procedure.

Mr. DINGELL. And you are suggesting we should have HUD update it.

Mr. MORGENROTH. That we have it updated yes, sir.

Mr. DINGELL. Can you give us an idea of how long it would take and how much labor would be involved?

Mr. MATTHEWS. A couple of weeks.

Mr. MORGENROTH. I would say done and verified in a couple of months.

Mr. DINGELL. With how many people?

Mr. BROWN. One month or a couple of months?

Mr. MORGENROTH. Thirty days.

Mr. DINGELL. How many people?

Mr. MORGENROTH. I would say probably 4 or 5 people.

Mr. DINGELL. Once we got that updating done, what would we have?

Mr. MORGENROTH. You would have a target for energy heat loss and heat gain against which all retrofitted measures would be gauged so that one does not install more measures or take more actions than would be cost-effective.

Mr. DINGELL. How would we use this once we had it in hand?

Mr. MORGENROTH. It could be part of the legislation and could be part of the utility program that houses should be retrofitted to meet this target, very specifically.

Mr. DINGELL. I am not critical; I am trying to get your input. Maybe the other gentlemen have comments.

Mr. MORGENROTH. This is a target which the utilities should be recommended to meet, and this would put an upper limit as to the government's expense on any individual house.

Mr. DINGELL. If it is a sensible suggestion, we are going to get that done.

Mr. BROWN. Would you yield?

Mr. DINGELL. Yes.

Mr. BROWN. It seems to me what you could do if you want to set targets, and this legislation seems to lean a lot to goals, is set the standards by which you would want to improve each household or the limit of Btu loss that you would permit each household. That, then, in turn, would give you something that would be quantifiable in savings if you combine it with a suggestion made by somebody else, that you get the reading of every household in the country as to what is now being wasted and put that together with your suggestion as to where you reduce the Btu's to, and in some households that would involve insulation and storm windows and storm doors, and maybe in a couple of other households it would involve perhaps only the insulation process, and you could also quantify it perhaps in terms of how much tax credit would be allowed, if you really want to get a great design.

Mr. MORGENROTH. If the budget for heat loss was 25 Btu's per square foot, it would seem to me not realistic to give tax credits to fix up a house to get down to 15 Btu's per square foot heat loss.

Mr. BROWN. Would the average contractor or insulation installer be able to put this information together and do the job?

I am not talking about some guy who suddenly sees this as a bonanza and goes out and hawks up a certificate that says he is an insulation man, but somebody who knows about insulation. Would he be in a position to do this?

Mr. MORGENROTH. I would say this is one way that one could provide more credibility to the program because the information would be supplied by many of the manufacturers and suppliers of windows and glass and insulation to those contractors to make sure they knew and had the information on how to meet the standard.

Mr. BROWN. I am not sure you answered the question. I am asking whether the individual workman who is a heating and insulation installer would be able to understand that Btu heat loss per square foot of floor space and come up with some information? Perhaps the other part of the question is: Would your average

public utility around the country have folks in it who could make the inspection to qualify that?

Mr. MATTHEWS. One thing, when 51A was in vogue, at the same time the NAHB Research Foundation published the insulation manual. The calculation techniques were simplified to one page: fill in the blanks so you can calculate what the heat loss or the heat gain for a structure in a given design area should be under ideal conditions. It is something that an insulation contractor can fill out, or home builder. In fact, I have known home builders who had their secretaries do it in 15 minutes. There is a simplified system.

Mr. BROWN. The homeowner might not be able to do it, but the individual contractor could?

Mr. MATTHEWS. Right.

Mr. DINGELL. Mr. Hunt has one question.

Mr. HUNT. Mr. Morgenroth, this standard of 51A HUD, the 25 Btu per hour, per square foot heat loss, is a single standard. It doesn't matter whether you live in Minnesota or Florida, am I correct, so in Minnesota you would have more stringent insulation requirements than you would in Florida?

Mr. MORGENROTH. That is correct.

Mr. HUNT. Is there any indication of what the profile of the existing housing stock is?

Mr. MORGENROTH. The profile——

Mr. HUNT. As far as meeting the efficiency standard of 25 Btu's per hour, per square foot?

Mr. MORGENROTH. I do not have that at hand. I would like to. As just a bit of background on that, HUD in 1950 originally required all houses to meet 50 Btu's per square foot. That was a HUD standard. That was in existence since the early fifties. How many of those houses are still in existence and not upgraded, I don't know, and I don't know of any way to find out other than from what is available from the Bureau of Census.

Mr. HUNT. Fine. Thank you very much.

Mr. BROWN. Is wind a factor here?

Mr. MORGENROTH. Wind is a factor on air and infiltration.

Mr. DINGELL. How about heat radiation; isn't it a factor there?

Mr. BROWN. Heat loss?

Mr. MORGENROTH. The wind factor, is this referred to as the chill factor?

Mr. BROWN. No; what I am talking about is if you don't have any wind, the major problem is the heat goes up and out of the roof of the house, I would think, and if you have a heavy wind blowing on it, it seems to me you want to be sure your walls are better insulated.

Mr. MORGENROTH. That was accomplished by caulking and weatherstripping to counteract any variations in wind pressures between interior and exterior.

Mr. DINGELL. It is also a fact, an airconditioned engine or machine gun, or whatever we have that is air-cooled, if you have one temperature without, let's say, if you have a cold temperature without, it is going to lose heat faster than if you have relatively high heat without, with or without the wind blowing, and the air speed and the wind that moves across there also adds to the cooling

effect. So the more wind you have going across, the more cooling you get, regardless of whether you have leaks that admit a change of pressure within and without the structure.

Mr. MORGENROTH. I can answer the question. It would be a little technical, but I can. If the exterior thermal resistance of a total wall were R-15, as per example, according to the ASHRAE Guide and Handbook of Fundamentals. Thus when you calculate this total thermal resistance, the resistance contribution of the exterior surface film on the outside is R-0.17 at 15 miles per hour.

Now, if the winds were blowing at 50 miles an hour, therefore, the resistance on the exterior surface film might go to zero and wipe out its contribution to the total of R-15, it would be almost infinitesimal, about 1%. That is the technical way to answer it.

Mr. BROWN. If you have a house that has not been caulked in the windows and doesn't have storm windows, and so forth, but you put insulation in the attic and there is no wind, then it seems to me that that house will not have as much heat loss as the same house would on the same temperature day if you had a high wind; is that correct?

Mr. MATTHEWS. You are dealing with infiltration versus convective or radiated heat loss. If you are blowing cold air on one side, it is pushing warm air out the other side, and maybe a percentage doesn't go in the attic, but you can't solve that problem that way.

If you caulk the house up nice and tight, and the wind blows, you have no stack effect drawing heat out of a solid material such as this table. And I think Mr. Morgenroth covered the point on the value of the surface air film adequately on that.

Mr. BROWN. Maybe the answer is neither Mr. Dingell nor I are going to be in the insulation business.

Mr. WERKEMA. The fact is on the infiltration, some of the data tends to indicate the heat load on a house is of the order of perhaps 30, 40, 50 percent infiltration.

Mr. MORGENROTH. On a well-insulated. You have to keep it in order of proper perspective.

Mr. DINGELL. Gentlemen, we thank you. You have been most helpful to us.

Our next panel of witnesses is composed of Mr. David Graham, Corporate Counsel, National Rural Electric Cooperative Association; Mr. Maurice E. Halsey, Assistant Vice President, Government Relations, Northern Illinois Gas; Mr. John Hammon, Executive Vice President, National Home Improvement Council; and Herbert D. Nash, Chairman, Energy Management Committee, Edison Electric Institute.

Gentlemen, be seated and identify yourself each from your left to your right for purposes of assisting the members of the committee, and the reporter and we will be pleased to recognize you in that same order for the presentation of your statement.

STATEMENTS OF MAURICE E. HALSEY, ASSISTANT VICE PRESIDENT, GOVERNMENT RELATIONS, NORTHERN ILLINOIS GAS COMPANY, ACCOMPANIED BY KENNETH CUCCINELLI, MANAGER OF ENERGY SYSTEMS, AMERICAN GAS ASSOCIATION; DAVID B. GRAHAM, CORPORATE COUNSEL, NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION; HERBERT D. NASH, CHAIRMAN, ENERGY MANAGEMENT COMMITTEE, EDISON ELECTRIC INSTITUTE; AND JOHN HAMMON, EXECUTIVE VICE PRESIDENT, NATIONAL HOME IMPROVEMENT COUNCIL

Mr. HALSEY. I am Maurice E. Halsey, Assistant Vice President, Government Relations, Northern Illinois Gas.

Mr. GRAHAM. I am David Graham, Corporate Counsel, National Rural Electric Cooperatives Association.

Mr NASH. I am Herbert D. Nash, Chairman, Energy Management Committee, Edison Electric Institute.

Mr. HAMMON. I am John Hammon, Executive Vice President, National Home Improvement Council.

Mr. DINGELL. You may consider yourself recognized from your left to your right.

## STATEMENT OF MAURICE E. HALSEY

Mr. HALSEY. Thank you, Mr. Chairman. As I said earlier, I am Maurice E. Halsey, Assistant Vice President of Northern Illinois Gas Company. I am with Northern Illinois temporarily on loan to the American Gas Association. And Ken Cuccinelli, of the American Gas Association, on my right, is accompanying me today.

I am testifying on behalf of AGA, which is composed of 300 member companies providing natural gas distribution and transmission services to over 160 million consumers in all 50 States.

Our major concern with the utility conservation program provisions of the Natural Energy Act is the mandatory Federal nature of the program. AGA recommends, instead of mandating such a program, a voluntary program should be established with appropriate Federal guidance at the State level by the State public utility commissions who are more familiar with the economic, supply, baseload pattern, and climatological considerations that are inherent in such a program. State PUC's are also better equipped to review rate-making considerations and proper rate base treatment for utility conservation programs.

We believe this total approach can work because: A State program under the auspices of the State PUC is more efficient and would involve less Federal bureaucratic red-tape, would remove the need for a second tier of Federal implementing regulations, and would minimize Federal involvement in an area of proper State concern.

Finally, the free enterprise system is already at work providing thermal retrofit services to consumers. The forces of the marketplace should not be tampered with, if further development of necessary conservation services to consumers is to continue.

During the first quarter of this year, AGA surveyed member distribution companies months before the President's energy mes-

sage to determine industry activity in marketing attic insulation and other retrofit services to improve residential thermal efficiency. From a base of 130 companies reporting, 30 companies indicated they were already marketing attic insulation—a 40 percent increase from 1976—and another 26 indicated they were planning to provide this service by the end of 1977—a 54 percent increase from 1976. Gas utility interest in marketing attic insulation has increased on a voluntary basis along with interest in other conservation devices, such as wall insulation and clock thermostats. This shows the marketplace can work in conjunction with a sense of public utility responsibility and State PUC cooperation to achieve desirable results without the restrictive, unnecessary, mandatory framework established in this bill.

AGA also has the following comments and recommendations on other specific provisions of the bill.

Definitions: The definition of residential energy conservation measure, which includes certain furnace efficiency modifications, should be modified to reflect safety considerations associated with increasing combustion efficiency and modifying flue openings. AGA recommends the definition include furnace efficiency modifications to combustion efficiency and to flue openings when such modifications or retrofit devices are certified as safe to install by an accredited testing laboratory, and the installers are properly trained.

Antitrust and Pricing/Interest Problems with State Conservation Plan Requirements: Section 102(d)(2) of the bill does not ensure adequate protection for a utility from the threat of an antitrust suit based on possible violations of Federal law because of the mandatory nature of the program. This is further reason for supporting a voluntary approach rather than a mandatory approach to mitigate the possibilities of antitrust litigation against utilities interested in the program.

Also, section 102(d)(4), which covers fair and reasonable prices and interest on loans to residential customers for installing conservation measures, needs further clarification. The legislative history of the bill should offer further guidance to State regulatory authorities and provide answers to the following questions:

How would a utility handle customers who are clear financial risks?

Should there be any subsidies of the loan intrest rate and guarantees on certain loans?

How should problems with usury laws in some States versus the capital costs associated with the financing be handled?

Information Requirements of Utility Programs: The portions of the bill that require suggested conservation measures, energy savings and availability of arrangements should be limited to the specific utility providing heating service to the residential customer. That point has been brought out on several occasions today. This will maximize conservation efforts toward the major household consumer of fuel or energy—space heating.

Also, the "information on energy savings" provision should be modified to include only an estimated range of energy savings. Energy savings is an imprecise science at best that cannot take into

account such subjective considerations as personal lifestyle and use patterns, which can't be defined in reaching an ultimate conclusion on energy savings to the customer.

Service Requirements for Utility Programs: AGA wants to make it clear that gas utilities do not want to be in the business of competing with contractors or with financial institutions for thermal retrofit services or conservation loan financing. The financing service provision of the bill should be modified so that the utility would be in a position to offer to arrange financing through: Conventional financing sources, or Federal program sources, or State program sources, or the utility's own financing program, if that is deemed appropriate.

This would offer maximum financing flexibility for the customer and ensure the utility was not forced into the consumer financing business in which it lacks fundamental expertise and the necessary capital resources.

Also, the financing program amendments to the National Housing Act would classify a public utility as a "financial institution" or "loan institution" if it makes loans for energy-conserving home improvements. This provision establishes a dangerous precedent with the added dimension of introducing a wide, new array of reporting requirements for utilities. This would cause increased costs of compliance that must ultimately be borne by all consumers. AGA strongly recommends that utilities be exempted from any new regulatory reporting requirements of Federal, State, and local laws, if classified as a "financial" or "loan" institution.

Finally, the service requirements in the bill would allow the borrower to repay the loan for a period of no less than three years. AGA believes this provision is unduly restrictive and recommends that the borrower have the right to voluntarily accelerate payment on the loan without incurring any penalty.

Alternative Programs: AGA commends and supports the provision in the bill permitting alternative installation programs since it provides needed flexibility to utilities already actively engaged in thermal retrofit programs. However, the requirements for alternative programs need further modification in two respects: One, "The savings likely from the measure" should be modified to an estimated range of energy savings, for reasons previously mentioned.

Two, the provision covering "other requirements set by the Administrator" is too open-ended, and could effectively operate to limit development and progress of programs that are already underway, and programs that are more effective and more efficient. Also, Federal regulations too often are ineffective at setting national average requirements. AGA rcommends this provision be deleted from the bill or, in the alternative, be modified to include more specific provisions in the bill itself or in its legislation history.

Federal Standby Authority: The bill provides that the Administrator could freeze the rates of a utility if it fails to comply with an order. This provision could be unconstitutional and could amount to a deprivation of property without due process of law. It should be deleted since Federal injunctive authority provides adequate enforcement authority with sufficient procedural safeguards, something that is very important to all of us in the utility business.

Conservation Gas or Finders-Keepers Rule: AGA urges the subcommittee to include a finders-keepers or conservation gas section in the bill to effectively ensure that gas conserved within a utility's system will revert back to that utility for it to sell or use to minimize the disruptive impact of curtailments on other users. This provision would also provide an added incentive for vigorous conservation programs and more rapid achievement of our national energy conservation goals.

We offer these suggestions for your consideration, and we would like to say that we are very pleased that we had the opportunity to come here and respond, and I understand later we would be available for questions.

Thank you.

Mr. DINGELL. Thank you, Mr. Halsey.

Mr. Graham?

## STATEMENT OF DAVID B. GRAHAM

Mr. GRAHAM. Mr. Chairman, members of the subcommittee, generally our members are not directly affected by the particular part of this act you are considering today because only 4 electric cooperatives met the definition of "public utility" in that they have sales of electric energy exceeding 750 million kilowatt-hours per year. Based upon a preliminary examination of subpart 1 of part A of H.R. 6831, however, I believe these 4 cooperatives and others which will eventually fall within the definition of "public utility" as kilowatt-hour sales increase will be able to comply with the provisions of the bill. We thought it would be interesting to the committee to tell you a little about what we are doing now because this is along the lines of what this legislation is encouraging or mandating.

As the committee may know, we did not delay implementing a vigorous drive to improve weatherization of the homes of our low-income member-consumers once the President made it clear that solving the severe energy problem facing the Nation was a high priority.

Several months ago, NRECA approached the Rural Electrification Administration regarding the possibility of instituting weatherization programs. Farmers Home Administration funding proved to be available, so shortly thereafter, at our Annual Meeting, a resolution was adopted which created a Co-op Energy Conservation Committee. This committee has met twice and is now in the process of considering the final details on implementing the coop-FmHA weatherization program. The committee, of course, recognized the need to broaden the program beyond the low and middle-income group currently eligible to all cooperative members. That level is $15,600 a year. Therefore, the National Rural Utilities Cooperative Finance Corporation is developing a weatherization financing program which rural electric cooperatives can utilize with all of their members.

We, along with the Farmers Home Administration, are now making every effort to acquaint our consumer-members as rapidly as possible with the program and the economic benefits that they will receive by participating in it. Last week, for example, over

1,100 cooperative members, in town for our annual legislative rally—some of you may have seen one or two of them—were acquainted with the details of the program as they have evolved to date. FmHA has also held a number of weatherization meetings around the country.

One potential problem for the electric utility industry which appears to exist from our examination of this part of the bill is that no mechanism exists for recovery of the costs of processing loans or inspecting residential buildings to determine and apprise the residential customer of the estimated cost of purchasing and installing insulation, weatherstripping, etc. We would recommend that language allowing the utility to charge an inspection fee be included in the bill in order to help utilities avoid financial loss through participation in the program. We had a similar provision worked out with Farmers Home in our weatherization program.

In conclusion, based upon the very limited experience we have with the electric cooperative-FmHA weatherization program, we would suggest that an unprecedented educational campaign is needed to make consumers aware of the importance of weatherizing their homes and the savings they will realize with lowered utility bills. Likewise, consumers must be educated as to how to properly insulate their homes. We would also suggest that the Department of Housing and Urban Development and other appropriate Federal and State agencies upgrade their thermal performance standards just as the FmHA recently proposed to upgrade its standards because of the importance of such standards to low-income people.

We have included in the testimony a number of suggestions made by our committee recently. In fact, our Rural Electric Newsletter published this information last week and some of it probably will be of interest to the committee.

I will add one thing beyond my printed summary. With regard to mobile homes we apparently serve somewhere between a third and perhaps up to a half of the mobile homes in the country—we believe research programs of some type to develop economical ways of retrofitting these homes should be pursued. In addition, more stringent insulation standards on new mobile homes should be developed and should be added into this bill.

In conclusion, we feel that the voluntary program should be given a chance which AGA just mentioned, and I think EEI will, because I think we are finding fairly good enthusiasm with the voluntary approach that we are involved in right now. Of course it is easier for me to say that since we are less affected by the bill as it is presently drafted than the other members of the panel.

Thank you.

[Mr. Graham's prepared statement follows:]

TESTIMONY OF THE NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION ON SUBPART 1—UTILITY PROGRAM—OF PART A OF THE NATIONAL ENERGY ACT

Mr. Chairman, and members of the Committee, my name is David B. Graham. I am the Corporate Counsel of the National Rural Electric Cooperative Association. NRECA is the national service organization whose membership consists of over 1,000 rural electric cooperatives that provide electric power to over 25 million consumer-members throughout 46 states.

Generally, our members are not directly affected by Subpart 1 of Part A of H.R. 6831 because only four electric cooperatives meet the definition of "public utility" in that they have sales of electric energy exceeding 750 million kilowatt-hours per year. Thus, these four cooperatives would have to develop "utility programs" pursuant to SEC 103(a) whereby as of January 1, 1980, complete weatherization programs consisting of providing our members with inspections, cost estimates, offers to have the insulation installed and loans for that purpose would be made available. Obviously, there has not been ample time to receive reactions from our affected members, but based upon a preliminary examination of Subpart 1 of Part A of H.R. 6831, I believe these four cooperatives and others which will eventually fall within the definition of "public utility" as kilowatt-hour sales increase will be able to comply with the provisions of the bill.

As the Committee may know, we did not delay implementing a vigorous drive to improve weatherization of the homes of our low income member-consumers once the President made it clear that solving the severe energy problem facing the Nation was probably the most important task facing his Administration.

Several months ago, NRECA approached the Rural Electrification Administration regarding the possibility of using Section 5 loans of the Rural Electrification Act for the purpose of weatherization and/or insulation programs. Although the use of Section 5 loans did not prove feasible, Secretary Bergland found that the Farmers Home Administration could make funding available for this purpose under Section 502 of the Housing Act of 1949. Shortly thereafter at our Annual Meeting the attached resolution was adopted which created an Ad Hoc Energy Conservation Committee. This committee has met twice and is now in the process of considering the final details on implementing the program. The Committee, of course, recognized the need to broaden the program beyond the limited group currently eligible—those families whose annual income does not exceed $15,600—to all cooperative members. Therefore, in order to help make available a complete weatherization program to the over 60 percent of our members not elegible to participate in our FmHA financed program, the National Rural Utilities Cooperative Finance Corporation is developing a weatherization financing program which rural electric cooperatives can utilize with all of their members.

We along with the Farmers Home Administration are now making every effort to acquaint our consumer-members as rapidly as possible with the program and the economic benefits that they will receive by participating in it. Last week, for example, over 1,100 cooperative members, in town for our annual legislative rally, were acquainted with the details of the program as they have evolved to date. FmHA has also held three regional weatherization meetings in order to acquaint the state FmHA and rural electric officials with the program.

One potential problem for the electric utility industry which appears to exist from our examination of Part A of H.R. 6831 is that no mechanism exists for recovery of the costs of processing loans or inspecting residential buildings to determine and apprise the residential customer of the estimated cost of purchasing and installing insulation, weatherstripping, etc. A similar problem arose with the electric cooperative-FmHA weatherization program which we have apparently solved with the inclusion of language in the proposed rules implementing the program which will allow the cooerative to charge a fee for inspection of the residence before the weatherization work takes place plus inspection afterwards to insure that the work was satisfactorily completed from the consumer-members' standpoint. We would recommend that language be included in H.R. 6831 which will help utilities to avoid financial loss through participation in the program.

In conclusion, based upon the very limited experience we have with the electric cooperative-FmHA weatherization program, we would suggest that an unprecedented educational campaign is needed to make consumers aware of the importance of weatherizing their homes and the savings they will realize with lowered utility bills. Likewise, consumers must be educated as to how to properly insulate their homes. We would also suggest that the Department of Housing and Urban Development and other appropriate Federal and State agencies upgrade their thermal performance standards just as the FmHA recently proposed to upgrade its standards. Actually, our cooperative conservation committee felt that the FmHA proposed standards were not sufficiently stringent, but they did represent a significant step in the right direction. Such standards are extremely important to low-income people.

For your information, I have quoted from the May 6, 1977, *Rural Electric Newsletter* the following actions taken by our cooperative energy conservation committee last week which we believe may prove of interest to you, and which we feel need attention and support from the Federal government. We believe amend-

ments along the lines of some of our committee suggestions should be incorporated into the bill, and we would be happy to assist the Committee in the development of appropriate language.

—A request that REA and FmHA staff to work with NRECA in developing and publishing technical and promotional information on weatherization. Need was expressed for a catalog of materials available accompanied by specifications on what they would achieve in conserving energy. Such information in the hands of cooperatives would be helpful to them in advising contractors doing weatherization work for electric consumers.

—A request that REA strengthen its member services staff in order to assist its borrowers in helping the ultimate consumer cope with high energy prices and shortages.

—A request that NRECA staff contact the Bureau of Standards and other appropriate agencies to get an understanding of procedures used in evaluating various insulating products. Consensus of the committee was that more needs to be known about testing and labeling of products. "We seek standard procedures of testing and publicizing of standards," the committee said.

"Our committee is concerned that quality materials are used and that our people can evaluate their effectiveness."

—A letter to the administration seeking priority in the use of energy to manufacture insulation materials, consistent with the President's announced emphasis on home weatherization. The committee was concerned with reports from manufacturers, with whom they met during their meeting, that insulating materials were in short supply and restrictions on energy use and the building of new plants would impede energy conservation efforts. The committee noted that for every Btu used in manufacturing insulation materials, the nation could save 20 Btus. Ask that the Bureau of Standards evaluate its standards for weatherization materials in light of current energy costs.

The committee adopted the following resolution, asking that it be shared with member systems of NRECA:

"The committee strongly recommends to all rural electric systems that they be actively involved in the promotion of energy conservation by getting their members involved on a local basis, informed of the energy problems and provided guidance on home weatherization and other energy conservation techniques, and that they (the Co-ops) make use of the FmHA weatherization loan program as one of the tools available in promoting home weatherization."

We appreciate the opportunity to appear before you today and provide our views to you.

Mr. DINGELL. Thank you very much.

Our next witness is Mr. Nash.

## STATEMENT OF HERBERT D. NASH

Mr. NASH. Thank you, Mr. Chairman. I will be excerpting from the prepared statement and adding some comments which are not there.

Mr. DINGELL. Very fine. Without objection, your full statement will appear in the record.

Mr. NASH. Thank you. I am Herbert Nash. I am Vice President of Pennsylvania Power & Light Company, and Chairman of the Energy Management Committee of Edison Electric Institute.

Edison Electric Institute, 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. It is not difficult, therefore, for EEI to give its full support to the concept and intent of H.R. 6831 as it relates to energy conservation in the home.

For about 7 months now an EEI committee has been developing a national energy conservation program for both new and existing

residential buildings. In fact, this committee is meeting in Chicago today. A group of about 50 utility executives are considering the details of this national energy conservation program, and we expect that it will be available for implementation in the very near future.

To a considerable extent this program appears to be a practical implementation of the provisions of H.R. 6831. Here are some of its highlights. For the purpose of stimulating public participation we will promote our program under the name of "National Energy Watch." NEW will have 3 basic objectives. At the national level, the objective will be to help minimize the drain on fossil fuels. At the industry level, it will be to help reduce the need for costly new generating facilities, and at the homeowner level, it will help restrain rising energy bills.

This program, we feel, deserves some attention and will be accepted by the electric utilities across the Nation.

The entire program outlined in the bill involves the need for some kind of a marketing approach or some kind of incentive program. My company has been involved in attempting to stimulate action on the part of consumers in the area of energy conservation for the last 5 years. We find that it is very difficult to get any kind of level of interest or support from consumers to actually proceed with making investments that are necessary to improve the insulation level in their structures, particularly residential structures. In fact, within the last month, we ran an ad in one of our local newspapers, advertising a free home energy survey which would be conducted by the personnel in my department. This newspaper circulates to 140,000 people, and we had 170 coupons returned, indicating that the consumer was interested in having a free survey made of the energy requirements in his home.

This to me illustrates the lack of interest on the part of the consuming public, at least in today's marketplace.

Mr. BROWN. When was this done?

Mr. NASH. It was done on the Sunday 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 when all of our consumers were faced with severely high energy bills.

Mr. DINGELL. This might reflect a measure of cynicism. The mail is quite bloated with the junk as you know.

Mr. NASH. It was a quarter page ad run in the Sunday newspaper. We have run a number of other things as well on energy conservation materials and we have gotten very meager results from energy conservation activities. We need some kind of an effective marketing program and it has to have attached to it some incentive.

The incentives as we see it are the tax incentives and credits as has been testified here before. Many people have heard all kinds of comments and they are holding back making a move to install conservation equipment and devices because they don't know what the Federal Government is about to do with respect to this whole area of tax incentives.

With regard to the specific details of H.R. 6831, I have five major areas of concern.

First, and this has been expressed to you folks before and that has to do with our concern over the addition of administrative

detail responsibilities on utility companies. We feel that we have been burdened and continue to be burdened by regulatory agencies with all kinds of additional administrative responsibilities with respect to preparation of reports and submitting material of all sorts. We would hope that this legislation would in as great a detail as possible, reduce the amount of administrative detail that would be imposed on the electric utility industry.

Second, we would call the committee's attention as it has been called to your attention before, our concern about the antitrust allegations involving the insulation of homes which has arisen in the past in certain jurisdictions and we think that this is a major concern to us in the electric utility business and something that needs to be dealt with in the legislation.

In addition, the utility we feel should not be liable to the homeowner in any event for a poor job which might be done 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 restriction that exclude these costs from rates.

Also, that the cost of additional manpower that is required directly and exclusively to implement this energy conservation program should be recoverable costs in rates of some sort. I would like to give you an illustration of what we are talking about as far as manpower requirements are concerned with respect to the intent of the legislation as it is now written.

It says that the utility shall survey all homes within its service area and give a customer some indication of the potential cost benefits of an insulation program in that home by January 1, 1980. That is two years, I believe, from about the time we could get this implemented.

My company happens to supply about 800,000 residential customers in Northeastern Pennsylvania. I estimate that I would have to add to my staff approximately 3,200 energy conservation consultants in order to accomplish this work within the two-year time frame. We now have a total employment in my company of about 7,000 employees, so we are talking about almost a 50 percent increase in the total employment of this utility.

I have on my staff at the present time 40 residential conservation consultants. So we are talking about an order of magnitude of increase in personnel that is about 80 times.

So I think it is important for the committee to recognize the amount of workload that can potentially come along to a utility if we are required to do this kind of survey work.

[Mr. Nash's prepared statement follows:]

STATEMENT OF HERBERT D. NASH, ON BEHALF OF THE EDISON ELECTRIC INSTITUTE

Introduction

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 HR 6831.

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. 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.

It is not difficult, therefore, for EEI to give its full support to the concept and intent of H.R. 6831 as it relates to energy conservation in the home.

For about 7 months now, an EEI committee composed essentially of vice presidents of member utility companies, has been developing a national energy conservation program for both new and existing residential buildings. In its conception, the program takes into account the considerable experience individual companies have already gathered in the development and administration of their local programs. The national program will be presented to the EEI Board of Directors in June for final approval. We intend with this proposed national effort 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. To a considerable extent, our program appears to be a practical implementation of the provisions of HR 6831, and I think you might be interested,therefore, 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." NEW 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 NEW 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 of ten for full compliance, and fractional compliance will earn lesser numbers of points. The objective for the homeowner, of course, will be to score as many points as possible. New homes that score at least 80 percent of the total number of possible points will qualify their owners for membership in a legally constituted organization to be known as the "National Energy Watch," and will earn for their owners the recognition that goes with such membership. The owners of existing homes will qualify for NEW membership if they improve the pre-modification scores of their homes by at least 20 percent.

We envision the National Energy Watch as a legally constituted organization with its own officers, bylaws, a national headquarters and local chapters, all operating under the control and with the support of EEI and participating member companies. Not only will "The Watch" provide recognition to homeowners who have modernized their homes to conserve energy, but we intend also to give it a working function; to continuously add to its own numbers, to actively solicit additional homeowner members, and thus add to the utility companies' own capability to expand the efort.

To stimulate homeowner participation in the NEW program, we propose many of the same incentives that are outlined in H.R. 6831. Among them:

1. Financial Assistance

A number of financing plans of different types have already been established by one or more utility companies across the country.

—Programs in which the utility does not get directly involved, but works with the banks and/or with branches of the Savings & Loan Association 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 bank 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 in which the utility will take advantage of Federal funds which would be available from Title I, FMHA, etc.

Many variations of the foregoing plans are possible. Unless Government regulations are established requiring it, NEW 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. NEW will monitor all plans developed by individual companies, and pass worthwhile suggestions on to other companies in the program.

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 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 handles the necessary paperwork but subcontracts the actual construction to an independent contractor.

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. Materials and Labor Discounts

Beyond financing and remodeling assistance, NEW will endeavor to arrange a cooperative promotion program with materials manufacturers and home improvement constractors in which they offer quantity discounts on labor and materials to homeowners who participate in the NEW program.

4. Tax Credit

President Carter has proposed that homeowners who "weatherize" their homes be given a tax credit of 25% for the first $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 NEW package.

That is a brief outline of our plan. May I add that we have already reviewed it in concept with a number of 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 Asssociation
National Rural Electric Cooperative Association
American Gas Association
National Mineral Wool Insulation Association
National Home Improvement Council
Architectural Aluminum Manufacturers Association
National Oil Jobbers Council
National Cellulose Insulation Manufacturers Association
American Public Gas Association
National LP Gas Association

With regard to specific details of H.R. 6831, 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 have just outlined. 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 would call the committee's attention to the fact that 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.

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 specific points listed above. I would be happy to submit copies of these suggestions to the committee if it is interested.

In summary, allow me to say again that the investor-owned electric utility industry gives its full support to the concept and intent of H.R. 6831 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.

Mr. BROWN. Could you justify those figures on some kind of a work schedule basis?

Mr. NASH. Yes, this is based on two hours per job, four jobs per day per man to survey homes. This is based on actual experience we have had as a result of this advertising program I mentioned to you where we have been out and have actually surveyed homes. We find it takes about two hours for a person to make a top to bottom survey analysis of a structure in order to give a customer meaningful recommendations as to what can be done in that home.

Mr. BROWN. We had some suggestions of very exotic ideas of flying over all the country and reading all the meters and so forth. I am not sure I know what the process is.

Mr. NASH. That is called thermography. I won't comment. We have some other schemes that we think are more practical. I could go into detail on those because we are about to implement such a program as soon as the cold weather comes.

But thermography doesn't give you the picture of heat loss in absolute numbers. It shows you whether there is excessive heat loss or whether there isn't, but it doesn't tell you whether it is 10 Btu's a square foot or 100.

Mr. BROWN. Two hours worth of examination doesn't seem unreasonable, four in an 8-hour day.

Mr. NASH. You have to figure transportation and preparation time.

Mr. BROWN. What time frame then would you get everybody in your service area taken care of?

Mr. NASH. If we were to do it in two years, it would take 3200 men working four jobs a day for two years.

Mr. BROWN. Thirty-two hundred men exclusive of the time it would take to train those people?

Mr. NASH. That is correct. In addition to that, we are talking about installation of equipment.

I would like to say that from the utility point of view, we feel that the private enterprise system has in place the capability to do many

of the things this legislation suggests that the utility should do. I don't think that the utility industry is at all interested in insulating homes. I don't think the utility industry is particularly interested in financing the insulation of homes, nor are we interested in having the financing costs added to the bill for electric service, at least the electric utilities are not.

Mr. BROWN. You said the utility industry is not interested in insulating homes. You mean doing the physical work?

Mr. NASH. That is correct.

Mr. BROWN. But you are interested in having homes insulated?

Mr. NASH. Absolutely. I am talking about the physical work.

Mr. DINGELL. Can you make some kind of an estimate as to the number of additional employees that would be required by the electric utility industry over the next year to accomplish the goals with regard to inspection?

Mr. NASH. Well, I would judge that my company represents about 1 percent of the total population across the country, including investor-owned and non-investor-owned utilities. We have about 1 percent of the residential stock in the country in our service territory so you can multiply that times 100.

Now I will drop another one on you. That says that we need over 25,000 installers in our service area.

Mr. DINGELL. You say you need 25,000 installers?

Mr. NASH. There would be needed 25,000 installers installing insulation in the homes in order to do this job in our service area.

Mr. DINGELL. So if we multiply that out by 100, you get 2-1/2 million installers. That is in a 2-year time frame. I think you are misreading the bill. It says that within two years you would have to offer that. It doesn't mean that within two years it would all have to be done.

Mr. NASH. Not the installation, but I read the bill to say the savings in costs of home heating and cooling that are likely to result shall be given to the customer within two years, which suggests that that survey must be completed within that time frame.

Mr. BROWN. You already have 3,200 of those inspectors available after they have made the inspections so we are only talking about 2,120,000 people.

Mr. NASH. This sounds facetious, but I felt it important to put it on the record that we are talking about rather gigantic numbers of people. We are talking about a rather substantial training job. We are talking about something that could be short-term employment which you suggested. All of these considerations I think are germane to the discussion.

Mr. DINGELL. Can you document your figure of 25,000 installers?

Mr. NASH. This is based on some work that has been done by the Department of Community Affairs in Pennsylvania on the weatherization program for the low income where they are using people to do this work and it takes a 4-man crew one day to do one house.

So I use those statistics to generate the numbers that I used.

Mr. BROWN. Are you using a 9-year time frame?

Mr. NASH. Two-year time frame.

Mr. BROWN. I think the 9-year time frame is when they hope to get this accomplished. So you do reduce it.

Mr. DINGELL. You drop to a quarter of the 25,000 and you are talking about 8,000 installers or perhaps a little less.

Mr. STOCKMAN. Mr. Chairman, I think I know what we want here, we know the housing stock and how many houses that have to be retrofitted. What we need from industry is the solid time estimates and the assumptions on which they were based to perform certain functions, then we can make our own assumptions as to what period of time, et cetera.

Mr. DINGELL. I have a notion we will be making inquiries to that effect from the administration. Did I hear Mr. Hunt sitting next to me saying we have something on this?

Do you have a comment, Mr. Hunt?

Mr. HUNT. No, Mr. Chairman. I ran some rough statistics this morning and I came out with something in the neighborhood of 400,000 installers over a 6-year period.

Mr. DINGELL. So you would have a third less than that over a 9-year period?

Mr. HUNT. Yes.

Mr. DINGELL. I think we had better get back to your statement.

Mr. NASH. Finally, we are concerned with a provision that stipulates that remodeling loans arranged for residential customers by utility companies shall be repaid as part of the customer's periodic bill. Our experience has been that extraneous charges on monthly bills aggravates complaints, increases unpaid bills and adds to our administrative workload.

We are being asked to finance and bill customers who may have oil heat and other forms of heat and they may never see the reduction of energy billing on their electric service bill. They will see it on some other form of bill, yet they will be relating this added cost to an electric service cost which we have plenty of problems with right now, believe me.

I am sure you all are aware of what has been happening to electric costs. I have brought with me suggested modifications in the bill covering the specific points listed above. Copies of these suggestions will be available to the committee if desired.

I thank you.

Mr. DINGELL. Thank you, Mr. Nash.

Mr. Hammon.

## STATEMENT OF JOHN HAMMON

Mr. HAMMON. Mr. Chairman, with your permission we will submit a written statement for the record at a later date. I would like at this time to make some brief verbal comments.

Mr. DINGELL. Without objection that will appear in the record. We will recognize you for any comments you wish to make.

Mr. HAMMON. Thank you.

My name is John Hammon, executive vice president of the National Home Improvement Council. In speaking for our members who represent the various segments of the home improvement and remodeling industry, we are pleased to present a brief statement at this time on the implications of this bill to this industry.

The membership of the National Home Improvement Council under the overall umbrella of our national organization consists of

six separate industry councils; a manufacturers' council, a wholesalers' and retailers'council, a lenders' council, a contractors' council, an energy utilities' council, and a publishers' council. Each of these separate councils has its own interests and programs and each will have a separate role to play in any national energy conservation program.

But all contribute to the overall purposes and objectives of the National Home Improvement Council which has pledged itself to support a program to help accomplish the very ambitious retrofit goals envisioned in this bill.

The membership of the National Home Improvement Council at present includes 46 of the major manufacturers, trade associations and publications concerned with home improvement and approximately 1700 of the leading home improvement contractors, lending institutions and public utilities in 27 local chapter organizations throughout the country.

Our energy conservation committee is working now on a plan to help mobilize the resources of the home improvement industry to help meet the needs of the retrofit program proposed in this bill.

In developing this program we are working closely with Edison Electric Institute, a member of the National Home Improvement Council, and various other organizations and firms, and we support the objectives of the National Energy Watch (NEW) program that Mr. Nash described in his testimony here today.

The program proposed by our energy conservation committee will identify experienced and recognized contractors who can be called upon to make retrofit installations and will also help plan and conduct training programs for contractors, both to make retrofit installations and to conduct home inspections or home energy audits.

As several other witnesses here have already indicated, there most certainly will be tremendous problems to be solved, just to identify the qualified contractors and to train enough additional contractors to meet the needs in this program, and at the same time, to protect the homeowner from incompetent workmanship and unscrupulous opportunists.

The membership of our association is prepared to cooperate with other groups and with government agencies in helping to solve those problems. We hope that your committee will feel free to call upon the National Home Improvement Council whenever it can provide any additional information or any assistance to your deliberations and to your evaluations of the roles of manufacturers, lenders, utilities and contractors in the national energy conservation program.

Thank you very much.

[Mr Hammon's prepared statement follows:]

STATEMENT OF JOHN HAMMON, EXECUTIVE VICE PRESIDENT, NATIONAL HOME IMPROVEMENT COUNCIL, INC.

My name is John Hammon. I am executive vice president of the National Home Improvement Council. Speaking for our members, who represent the various segments of the home improvement and remodeling industry, we are pleased to present this brief statement concerning the implications of H.R. 6831 on this industry.

The membership of the National Home Improvement Council—under the overall umbrella of our national organization—comprises 6 separate industry councils. These are:

Manufacturers Council
Distributors Council
Lenders Council
Contractors Council
Public Utilities Council, and
Publications Council

Each of these separate councils has its own interests and programs, and each will have a separate role to play in any national energy conservation program—but all contribute to the overall purposes of the National Council—which has pledged itself to support a program to help accomplish the very ambitious retrofit goals envisioned in this bill.

The membership of the National Home Improvement Council at present includes 46 of the leading national firms, trade associations, and publications concerned with home improvement, and 1700 of the leading home improvement contractors, lending institutions and public utilities in the following 27 local chapter organizations through the country:

Birmingham, Alabama
Boston (Eastern Massachusetts)
Buffalo, New York
Canton (Stark County) Ohio
Chattanooga, Tenn.
Chicago, Ill.
Cleveland, Ohio
Columbia, S.C.
Dallas, Texas
Detroit, Michigan
Erie, Penna.
Grand Rapids (Western Mich.)
Houston (South Texas)
Kansas City, Mo.
Los Angeles, Calif.
Milwaukee, Wis.
New York (Long Island)
Pittsburgh (Western Penna.)
Portland, Ore.
St. Louis, Mo.
Salt Lake City, Utah
San Diego, Calif.
San Francisco (Bay Area) Calif.
Seattle, Wash.
Springfield (Western Mass.)
Washington, D.C.

Our Energy Conservation Committee is working now on a plan to help mobilize the resources of the home improvement industry to help meet the needs of a nationwide retrofit program such as that described in this bill. In developing this program, we plan to cooperate with other groups and associations, including Edison Electric Institute (which is a member of the National Home Improvement Council) and we support the National Energy Watch (NEW) program described by the Edison Electric Institute spokesman in his testimony here today.

The program proposed by our Energy Conservation Committee will seek to help identify the competent and reputable contractors who can be called upon to make retrofit installations. It also will seek to help plan and conduct training programs for contractors—both to make retrofit installations and to conduct home inspections or home energy audits.

As several other witnesses have already indicated, there most certainly will be tremendous problems to be solved, just to identify the qualified contractors and to train enough additional contractors to meet the needs of a program of this scope and, at the same time, to protect the homeowner from incompetent workmanship and unscrupulous opportunists. We are prepared to cooperate with other groups and with government agencies in helping to solve those problems.

We hope that your committee will feel free to call upon the National Home Improvement Council whenever we can provide additional information to assist in your deliberations and your evaluations of the roles of manufacturers, lenders, utilities and contractors in the national energy conservation program.

Enclosed is a directory of the NHIC Board of Directors, with names and addresses of the leaders of each of our local chapter organizations. Our complete national membership list is available on addressograph plates and, if requested, we will be pleased to produce this roster for the use of the committee in whatever form would be most convenient for your use.

We have been asked to submit, as part of our written statement, information as to the total number of home improvement and remodeling contractors in the country, and there are several sources.

Two nationally recognized trade journals maintain trade statistics as a regular course of their business. According to Qualified Remodeler magazine, Chicago, Illinois, one of these trade journals, there are approximately 30,000 professional remodeling contractors.

The second trade publication, Home Improvement Contractor magazine, Park Ridge, Illinois, reports approximately 25,000—30,000 professional remodeling contractors.

To verify these surveys, the National Home Improvement Council has recently undertaken an ambitious survey of its own, but results are not yet available.

A survey of the Washington, D.C. area is the prototype for similar surveys to be conducted market by market in other areas throughout the country and the results of these surveys will be provided on request, when available.

The National Home Improvement Council questions the role of a public utility being actively engaged in the contracting business as a separate profit-making operation in competition with the independent contracting community which enjoys no special state-supported monopoly position.

However, if the utilities do become involved, we would strongly recommend that their role be to work with the professional contracting community to provide the installation services to the homeowner.

Mr. DINGELL. Thank you very much, Mr. Hammon.

The Chair recognizes the gentleman from Ohio, Mr. Brown.

Mr. BROWN. Mr. Chairman and gentlemen, let me ask you the same question I asked earlier: Do you know if any of your organizations were contacted by the administration in the development of the administration legislation?

Mr. NASH. I was, yes.

Mr. BROWN. With reference to this program?

Mr. NASH. Specifically, yes.

Mr. BROWN. Maybe the gentleman who is responding in your behalf or in whose behalf you are responding could identify himself.

Mr. GRIFFIN. I am Robert Griffin of the EEI staff. We responded to a questionnaire by Mr. Schlesinger and submitted a residential conservation program on March 13th.

Mr. BROWN. Is that the program that has been undertaken here?

Mr. GRIFFIN. It is the same program with a new title.

Mr. BROWN. I am confused now. I understand you are testifying against the prospect that the program can function successfully because of the number of people who would be involved?

Mr. NASH. I only raised the question as a pragmatic issue so that we don't create false impressions or expectations about what can be accomplished in any given time frame.

What I was trying to point out was that if this thing is approached without taking a look at the factual aspects of manpower requirements, time requirements, the specific amounts of work that are involved here to accomplish the objective of insulating 90 percent of the existing housing stock within some unrealistic time frame, that I was trying to raise the point that this needs to be considered. I am not against the program.

Mr. BROWN. But you are losing me a little bit on whether what has come out is the same thing that was submitted. Was it submit-

ted with a time frame? Perhaps it would be appropriate, Mr. Chairman, if the EEI would send us a copy of what they sent to Mr. Freeman so we could compare it.

Mr. DINGELL. The Chair will be pleased to receive it. It will appear in the record at this place.

[The following material was received for the record:]

EDISON ELECTRIC INSTITUTE
90 PARK AVENUE • NEW YORK 10016 • (212) 573-8700

March 18, 1977

Mr S David Freeman
Energy Policy and Planning
Executive Offices of the President
Room 200 - Old Executive Office Bldg
Washington, D C 20500

Dear Mr Freeman

Following the discussion in your office on March 3rd, we have been working hard to develop the concept of a voluntary program to further the cause of energy conservation, somewhat along the lines of the old "Gold Medallion Home" program. Organizations representing several other interested industries have been cooperating fully with us in this effort.

Why a voluntary, rather than a mandatory, program? I think there are several good reasons to give this approach a chance to do the job:

1. Voluntary programs can be more easily tailored to important regional and state differences in energy supplies, uses, requirements, climate, regulatory attitudes and financing capabilities. And, in line with the President's pledge, they represent an opportunity to keep an appropriate degree of government at home, instead of concentrating more of it in Washington. Many electric and gas utilities have already established "energy efficient home" programs, and others are in the process of doing so. A mandated federal approach would likely preempt these successful local initiatives.

2. A voluntary program offers the opportunity to achieve needed energy conservation goals without setting up the additional layers of bureaucracy that would be needed to enforce mandatory goals. This is especially appropriate at a time when the President has pledged to streamline government so that it can more effectively and economically serve the people.

3. A voluntary program provides a needed flexibility and quickness of response to changing energy situations that would be more difficult to achieve if changes had to filter through the bureaucracy indicated for a mandatory program.

4. A voluntary program is more representative of the new Administration's promise to make the people partners in government and to involve them more directly in the challenges that face the nation. The voluntary approach would seem to be a natural outgrowth of the President's recent program to solicit energy

conservation ideas from the public -- one which has drawn hundreds of thousands of responses. Working with the Administration, the electric and gas utilities can provide the leadership to make the program succeed.

5. A voluntary program provides the most workable transition from the de facto energy policy of the past -- "all the energy you want at the lowest possible cost" -- to the new and developing awareness that we must marshall, conserve and use wisely all the energy resources at our command.

Attached is an outline of the program as it has evolved to this point. I know you will recognize that many details must be worked out, but we wanted to get the concept to you as soon as possible in order that the proposal can be considered in connection with the energy policy statement to be enunciated by the President on April 20th.

My associates and I feel that a meeting to discuss this matter with you and other interested government officials is urgently needed. We are ready to meet with you at your earliest convenience.

Sincerely yours

W Donham Crawford
President

WDC/mjm
attachment-

TESTIMONY ON BEHALF OF THE EDISON ELECTRIC INSTITUTE

ON

H.R. 6831 - TO ESTABLISH COMPREHENSIVE NATIONAL ENERGY POLICY

BEFORE THE

SUBCOMMITTEE ON HOUSING AND COMMUNITY DEVELOPMENT
OF THE HOUSE BANKING COMMITTEE

My name is Dwight H. Swanson. I am Chairman of the Board and President of Iowa Power & Light Company and Chairman of the Policy Committee on Conservation and Energy Management of the Edison Electric Institute, the principal national association of investor-owned electric utility companies. The member companies of EEI serve some 99% of all customers of the investor-owned segment of the electric utility industry, and 77% of the nation's electricity users. We appreciate this opportunity to present our views on HR 6831.

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.

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 HR 6831 as it relates to energy conservation in the home.

For about seven months now, an EEI committee composed essentially of vice presidents of member utility companies, has been developing a national energy conservation program for both new and existing residential buildings. In its conception, the program takes into account the considerable experience individual companies have already gathered in the development and administration of their local programs. The national program will be presented to the EEI Board of Directors late this month for final approval. We intend with this proposed national effort 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."

NEW 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 NEW 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 NEW 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 NEW program, we propose many of the same incentives that are outlined in HR 6831. Among them:

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. NEW 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.

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.

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 NEW package.

Thus, in brief summary:

I. The objectives of the NEW 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.

II. The way NEW 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

So much for NEW. May I just add that we have already reviewed it in concept with a number of 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

American Gas Association

National Mineral Wool Insulation Association

National Home Improvement Council

Architectural Aluminum Manufacturers Association

National Oil Jobbers Council

National Cellulose Insulation Manufacturers Association

American Public Gas Association

National LP Gas Association

With regard to specific details of HR 6831, 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 have just outlined. 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 would call the committee's attention to the fact that 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.

Let me give you some idea of the manpower requirements the proposed Energy Act establishes for both the proposed inspection of residential units and actual installation of insulation. 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.

Let me give you some indication of what this means in terms of manpower. 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 time proposed.

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 establishes it as a national energy goal 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.

Clearly, the manpower requirements we are setting up for ourselves are substantial.

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 aggrevates 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.

Now I would like to discuss briefly the success of Iowa Power's own voluntary insulation porgram throughout our 5,600 square mile service area in central and southwestern Iowa.

We strongly believe in energy conservation and were one of the first utilities in the nation to begin active educational and informational programs for customers. We've been working at it for the past four years. When we began, we had approximately 175,000 residential electric customers. Through our efforts and through excellent cooperation on the part of insulation manufacturers and local dealers, we estimate that over 30,000, or better than one out of six of those customers have added insulation to their homes. Since that beginning, we have added another 12,000 residential customers and all of those structures are well insulated and energy efficient.

This program has been carried on through mass media advertising. Energy conservation seminars for customers, school information programs, mailings to customers, meetings with insulation dealers and manufacturers, and work with builders and developers. We have a registered insulation dealer program which contains reasonably stiff accreditation and performance requirements monitored with us by the dealers who wish to participate. Such dealers who do not live up to the requirements are dropped from the program and are not recommended to customers. In the Des Moines area alone, 32 quality insulation contractors are now participating with us.

In 1974 we recognized the need for a limited financing program. Home improvements, which might include insulation and weatherstripping, were of course available at reasonable rates from financial institutions. It seemed to us, however, that financing in smaller amounts might be beneficial, particularly for the lower income homeowner who was beginning to feel the brant of increasing energy prices. Thus, we instituted a financing program, charging 9% simple interest, which could be paid for over 36 months on the utility bill. Meetings were held with contractors and forms provided for their use. Since that time we have financed 1,250 jobs at a total cost of approximately $365,000. This works out to an average of $300 per job. You can see that the cost is relatively low. Generally, this reflects the amount of money needed to increase attic insulation to approximately an R-30 value, which is our recommended rating.

We think the program has been successful and we plan to continue. On the other hand, it is obvious that only a limited number of customers who have actually added insulation have taken advantage of our financing. Dealers tell us the financing has been very important as a sales closing tool. It removes an excuse for not acting. After that roadblock is removed, most prospects simply decide to pay the relatively low cost themselves, rather than go through the financing mechanism.

Iowa Power and other public utilities are well equipped to assess thermal efficiency of homes, make recommendations on efficiency standards and cooperate with contractors who install energy saving materials. We do not believe we are as well equipped to modernize and insulate individual homes and suggest this is most efficiently done by private contractors.

In spite of our successful financing program, utilities are not generally accustomed to that function. That is not our business, and we believe it is in the public interest for traditional financial institutions to perform the credit granting function so that families that borrow for energy improvement do not undertake obligations beyond their ability to pay. This is why we are enthused about the fact that a number of recognized financial institutions in our service area have begun to grant special low cost energy conservation loans and to undertake public education programs for customers. Des Moines Savings & Loan Association is a good example, and their Chief Executive Officer, Richard L. Bryan, testified on May 23 before this very committee. We are cooperating in every way possible with Des Moines Savings and with other financial institutions and strongly feel that such three-pronged cooperation between the utility, financial institutions, and insulation dealers and manufacturers guarantees that a voluntary program of insulation upgrading is the best way to meet the President's energy saving goals.

We at Iowa Power are also well aware that an adequately funded weatherization program to help low income people save energy and costs is essential. We have worked in close concert with the Iowa Office of Planning and Programming and other public bodies on such plans. We therefore support the increased funding for the weatherization program as a necessary part of the nation's total residential conservation effort.

Our insulation activity at Iowa Power is simply one facet of a broadbased corporate conservation and energy managmeent plan. This includes consumer publications on wise use of energy efficient appliances, specific energy efficient certification programs for both new homes and existing homes, work with heating dealers on

furnace check-ups to insure efficiency, promotion of the energy saving heat pump, energy audits for residential, commercial and industrial customers, school programs and an active speakers bureau for adult groups.

We are not alone in this activity. Just a month or so ago, the seven major investor-owned utilities in Iowa jointly announced a major energy conservation program. This includes insulation and energy efficient standards for both existing and new structures, plans for aerial thermogram photography of all major Iowa communities, a statewide energy audit program for all structures, industrial/ commercial customer seminars and education programs, and insulation financing.

As utilities across the country become involved to a greater degree in the kinds of activities I've been describing, the process of inspecting structures to ascertain energy efficiency will become a gigantic task. We are concerned that this be done most efficiently and at lowest cost - while still being accomplished in a manner that will guarantee protection for the homeowner. To this end, we are carrying on discussions with major financial institutions, the U.S. League of Savings & Loan Associations, and major insulation manufacturers to ascertain the possibility of establishing a separate, independent inspection service.

Obviously, there are costs involved in all of the above activities. Such costs must be includable in our rate base. Since the cost-benefit ratio is extremely positive from the consumer point of view, this should be no problem. At Iowa Power, while we have spent a major portion of our advertising budget on energy conservation information, additional costs for the program are minimal, with administrative costs approximating no more than $15,000 annually.

We also admit some difficulty in reaching owners of rental properties, whose occupants are often low income families where improved insulation is most needed. However, we believe these situations are best solved locally, after regional goals have been established. It is, of course, totally unfair to improve an absentee landlord's property at the expense of all ratepayers or taxpayers. Again, a jointly maintained inspection bureau, as mentioned earlier, might be authorized to assess adequacy of existing structures, with reports to local governmental units, so those rental properties which are truly deficient in insulation can be identified and improved.

I urge this committee to take action on the legislation you are considering soon. People in Iowa want to conserve and have done a good job. This can be documented by gas and electric sales results over the last two years. Nevertheless, there are now delays and indecision, and many of our customers are waiting to see what happens in Washington before proceeding with plans to insulate and addother energy conserving materials.

They also are vitally concerned that fair treatment be provided for those who have taken the initiative in conserving. I have attached a copy of a letter written last February to the Iowa State Commerce Commission by a Des Moines man. He was writing to express his strong opposition to a proposal for mandatory insulation requirements. I'll quote just a sentence or two here - "Thirty years ago I purchased a home. As soon as I could afford it, I had it completely insulated... later I had storm windows and weatherstripping installed...now this monstrosity would have me pay to do these things for those who have been too lazy, too improvident or too dumb to do them themselves. I say No! No! No! I am sick to the point of death of doing for others the things they will not do for themselves."

I believe this view is typical of the 30,000 customers I mentioned earlier.

A voluntary program does work. It has worked and is working in Iowa. Given the number of competent installers available and the ability of insulation manufacturers to produce the product, I don't believe a mandatory insulation program for all structures would have resulted in the installation of appreciably more insulation in our area during the last four years.

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.

Mr. STOCKMAN. The program they submitted was the Energy Watch which was the voluntary industry program they were talking about today. It was not the one the administration adopted which was in this bill.

Mr. BROWN. I am sorry. I thought I elicited the other response. Then your testimony and your comments about what you submitted make more sense. I was a little confused.

Mr. HALSEY. The American Gas Association was invited to participate in the mini-energy conferences prior to the final formulation of the President's energy program. I believe we did respond in general on some of these proposals, but not specifically on what is now before us.

In addition to that, the Association was asked to respond to—I will call it the Rosenberg proposal from the FEA previously, which has some similar proposals within it.

Mr. DINGELL. The basic difference is in the Rosenberg, the cost of the services and the re-equipping of the dwellings in the rate base and under the administration proposal it may or may not, that is right.

Mr. HALSEY. That is correct. We were opposed to the inclusion in rate base.

Mr. DINGELL. If you have those comments, would you make them available to us?

Mr. HALSEY. Yes, we will.

Mr. BROWN. Could I also ask, you represent AGA, then?

Mr. HALSEY. Yes, sir.

Mr. BROWN. The EEI, for some financial estimates of what is involved here in terms of the capital that would be tied up in the utility industry in financing the program if it is all done through the utilities. Do you understand what I am asking?

Mr. NASH. Yes.

Mr. BROWN. I am concerned about the fact that we seem to have a capital shortage in the United States based on the future needs for not only industrial expansion unrelated to energy, but certainly in the energy area. I am curious to know whether it would be to the country's interest to load the financial responsibiity of financing this program onto the utility industry as opposed to having it be done through the conventional banking industry or some other source, even Federal guarantees of the loans or something like that.

Now would you comment for the record on that subject? You may make any comments you would like now. Do you understand my concern?

Mr. NASH. Yes, I believe I can comment.

I don't know if I speak for all utilities, but let me speak as I am knowledgeable about what has gone on. That is to say that I don't think our concern as a utility and the utility industry is that we are going to be deluged with the requirements to put up the capital to finance as much as we are concerned about the administrative burden that doing this kind of financing, even though it may only be a small number of jobs that we have to finance, places upon us. We don't have in place a mechanism to handle these kinds of transactions.

It is the same as selling facilities to a customer. We go through all kinds of gyrations to account for this because we don't normally sell equipment. We are not equipment vendors.

I will tell you what I base my comments on. Some companies are already into financing insulation. The results seem to indicate that most people are either doing it themselves and paying for it themselves or they are hiring a contractor and the contractor is making arrangements for the financing or they pay cash for it and then a very meager number of customers apparently are asking for and taking advantage of the utility's financing plan.

As an example, Consumers Power in Michigan has a program that relates to their gas customers. I think it has been in operation for a little over 3 years. They have in excess of 750,000 gas customers. They have insulated about 80,000 homes in the 3-year period and they have offered a finance plan as part of this. About 60,000 of the homes were done by do-it-yourselfers and they financed 250 projects. Their administrative costs to handle the financing has been in excess of $150,000 a year.

Mr. BROWN. For 250 projects.

Mr. NASH. It is the burden of handling these kind of things that has us concerned as much as does what kind of a requirement we are going to have to come up with to provide the capital. It is a 2-edged thing and I think more of our concern is about the administrative loading and the problems we get into and the collection and so on and so forth as opposed to whether we can raise the capital.

Mr. BROWN. Could I also ask EEI and AGA to provide us information about how many utilities are actually in the business of installing insulation? We found out that Washington Gas Light is. I was startled to know that.

Mr. NASH. We can provide that data.

Mr. BROWN. Would that also embrace the rural electric cooperatives?

Mr. GRAHAM. We could provide that.

Mr. BROWN. Would EEI's data embrace yours?

Mr. GRAHAM. No.

Mr. BROWN. Could you provide that, too?

Mr. GRAHAM. Yes.

Mr. HALSEY. Congressman, Ken Cuccinelli did testify before Mr. Dingell's staff in March and can give you some comments on that. I am also with Northern Illinois Gas Company and I do have some statistics available on our insulation program that you might be interested in.

Mr. BROWN. Do you have an estimate of what percentage of the industry is in the insulation business?

Mr. HALSEY. Yes, sir, we have some figures on that.

Mr. CUCCINELLI. We have a recent survey which is not totally finished but the survey basically, and let me get my data together here, went out to our members. We received 130 responses.

Mr. BROWN. Out of how many members?

Mr. CUCCINELLI. Out of 272 distribution company members. The number of companies marketing attic insulation was 30 which was an increase from 18 to 30 over the last survey which was at the beginning of last winter. The number that were planning to go into

it were 26 and we had an additional 69 that were considering it. There were levels of interest within the industry.

I think we can give you more precise numbers. Besides the insulation, there are things like clock thermostats, storm windows and doors and these types of things that several of the utilities are marketing.

I would like to mention the point that Mr. Halsey made regarding the March 3rd date. It is in the record, the AGA position on the Rosenberg plan. We have responded in a letter from Bud Lawrence to Chairman Dingell. I think it was a February 7th letter in which some attention was given to our position on the Rosenberg plan.

Mr. BROWN. I would also like to get a comment, a rationale, from you on your feelings about including or not including the costs of this kind of financing in the rate base from both EEI and the rural electric utilities and the others.

Mr. NASH. EEI would prefer not to include it in the rate base.

Mr. BROWN. I want to know what your position is and why and the same with the others.

Mr. DINGELL. Maybe AGA would want to give us a comment as to your views on the rate base. Do you suggest rate basing these expenses or not?

Mr. HALSEY. No, Mr. Chairman, we do not. We will furnish you our official comment with some attempt to evaluate the economics pro and con of that situation.

I might add that there are some things that maybe perhaps the committee may be aware of that are implicit in this situation. That is, that within the various States the State regulatory authority has some say about whether or not a utility gets involved in this kind of activity.

So although the figures might sound, depending on your perspective, discouraging, I think you have to know a little bit more about the local situation before you really assess that.

As I mentioned, just in case some figures are useful, Northern Illinois Gas Company initiated a home re-insulation program in early 1975. We started with a 2-month test market in a 70,000 customer area. For 2 months we had 500 customers avail themselves of this service.

Basically all we did was obtain a list of accredited contractors, ones that we felt that we could have faith in and that we could put our name behind their work. We had the contractor contact the customers who indicated an interest. We arranged that. We offered financing assistance. We neither tried to promote that financing business nor discourage it.

Mr. HALSEY. At any rate, 500 customers did avail themselves in this test market situation, and based on that we decided to go with a companywide program, also initiated in 1975.

We advertise through our bill enclosures, since we mail to 1.1 million residential customers six times a year. We advertise by that method, and also through newspaper advertising offering this reinsulation program.

There are 7,500 customers who have directly used our program as of this date.

Now we know that many others, through the communications or the benefits and so forth, have sought their own contractors, and

have sought their own financing and gone outside and reinsulated, but 7,500 customers have used our service directly.

Of those 7,500 customers, 40 percent used a deferred payment program. In other words, financed it through the company. Sixty percent paid cash, or 30 day cash; if they paid within the 30 days it was the same as cash. The average job cost $250 for 1150 square feet of attic area.

On the average the existing residential structures included in this group had about three inches of insulation. Twenty percent had no insulation.

Mr. DINGELL. How much insulation did the first group have?

Mr. HALSEY. The first group had three inches, which is not a good measure really, but roughly R11 insulation factor, and 20 percent of the customers availing themselves of the service had no insulation. We attempted to bring insulation up to between R11 and R19, depending upon customer requirements. In other words, we didn't say our program is we bring you up to this level—some arbitrary levels. They considered the costs and so forth, and elected which level they wanted.

Following the insulation of these 7,500 jobs, we surveyed 100 of these customers randomly, and on the average they have realized an overall 17 percent energy savings. The average customer cost per year for heating of these customers is approximately $300, heating costs, with a resulting savings of about $51 per year. That is the statistics available on that particular program.

Also, as Mr. Cuccinell pointed out, our companies are involved in a lot of other conservation activities in addition to retrofit and insulation, and I could name those off for my own company and give you some data on that.

That is our reinsulation program. We are now expanding it with some further advertising in another round of bill enclosures, and we are offering various levels like two different levels, higher levels of insulation. We are trying to continue to promote this reinsulation program. In addition—and this I think points out the part I mentioned about dealing with your State regulatory authority—we recently filed with the Illinois Commerce Commission a plan whereby NIGAS would insulate 1,000 homes of senior citizens who earn less than $4,600 per year, and we will pay for the entire cost of that insulation.

At this time our State Commissioner has not yet approved that request.

If we are allowed to do it we would ask community action committees to select the recipients within those parameters that I defined, and we will meter and test each one of the 1,000 residences in order to determine the actual energy savings realized. I think the important thing here is we don't just come up with these ideas and think it's a good or bad idea. We must get the concurrence of our State regulatory commission.

Mr. BROWN. I wonder if I could also ask the panel if you can comment for the record, not now, but for the record, on the proposal Mr. Morgenroth made about standards for Btu loss per square foot of floor space in a house.

Mr. DINGELL. I think that would be entirely appropriate. Without objection, it is so ordered.

[The information requested had not been received by the committee at the time the record closed.]

Mr. GRAHAM. What would you define that as?

Mr. BROWN. Mr. Morgenroth's ideas about standards per square foot of floor space in a house of permissible Btu loss as one means of setting up and implementing a program. I think it might be helpful if you would also comment on the appropriateness with reference to your figures on inspections and so forth, or what might occur if we set standards for the sale of houses that are in some way federally financed, that would require that any house that turns over that is related to Federal financing, moves from one owner to another, would be obliged to meet these standards.

Do you follow my question?

Mr. NASH. Yes.

Mr. BROWN. Because you gave us the question about how long it's going to take to get this done and how many people and so forth, and if we adopt some program like that that relates to approval——

Mr. NASH. Our concern is that we have probably insulated the electrically heated homes out in the marketplace now to above or equal to any standards that are going to be promulgated. So the standards of insulation that EEI is talking about——

Mr. BROWN. If you have some backup for that I think it would be helpful. I don't know whether it's true or not. I hope you are right.

Mr. NASH. We have been selling insulation and created the insulation business as it exists today. If there is any capability in the marketplace for insulating structures it is because the electric utilities industry really put in place what is there now, because as part of the selling of electric heating in the 1960's insulation had to go with the package. So maybe that is a self-serving statement, but I think it's a fact, a generally accepted fact.

I think the contractors would agree. At any rate, our standards are spelled out in this new program that I mentioned to you, and we are talking about different levels of insulation, depending on degree day areas, and that varies, of course, across the country, North to South. On our standards, we can give you this information on what the standards are and it will be in the information we submit to you.

Mr. BROWN. If you would all comment on that idea.

Mr. NASH. Yes, I think it's a realistic approach. It's a practical way to try to get at the whole subject of how do you go about determining whether a building is or is not well insulated, and standards of it.

Mr. BROWN. That was not my suggestion. I want the question on Mr. Morgenroth's standards, but I also want a comment on what the impact would be if we required through Federal legislation that every home that changed hands in terms of ownership must meet these standards before it can be sold from one person to another.

Do you follow me?

Mr. NASH. Yes.

Mr. BROWN. That with reference to your comment about home inspectors and preparers.

Mr. NASH. You have to take some kind of guess as to how many of the homes that are turned over annually are really up to Federal standards.

Mr. BROWN. Before the Chairman hits me, I want to say apparently you won't be the only one guessing about this program.

Mr. DINGELL. The Chair recognizes the gentleman from Michigan, Mr. Stockman.

Mr. STOCKMAN. Mr. Halsey, I want to follow up on what I think is a very important point you made when you referred to conservation gas that would result from the effect of implementation of this program, and your preference it be left on a finders-keepers basis. In other words, that utility where the conservation gas would accrue would have the right to dispose of it.

I want to follow this up, because I asked this question of the FEA spokesman yesterday or the day before, and he didn't really think it was much of a problem to worry about, or there really wouldn't be any issues involved, but actually if the program is going to work and work effectively, you are going to have a couple of trillion cubic feet of gas labeled conservation gas. Some of it will be real because the well supplied utilities in the medium term probably will have real gas available to dispose of. Those utilities that are in a very poor supply situation are only going to be averting shortages by this conservation gas, so it wouldn't be real gas to be disposed of.

In addition to that, there are many other facets of this whole package that are going to work into that situation. I want to itemize these, and then ask you whether you have given any thought to it, and where you think the gas utilities are going to be when all of these things add up, because in addition to the conservation gas, which is going to vary with your medium term supply situation, you are going to have conversion gas, and that is the gas gained when industries and utilities convert from gas to coal.

Of course, that is going to vary from utility to utility depending on the clean air situation, and a lot of other factors to restrain or encourage conversion but it would be very uneven from one gas utility to another.

You are going to have new purchase gas going into the system, and under the terms of the program you are going to have to load the incremental costs of that newly purchased gas, $1.75 cap we are talking about now onto industrial or low priority users, so there is another factor going ito the equation.

Then another part of the bill would bring supplemental gas, synthetic gas and other sorts of peak supply gas under Federal regulation for the first time.

It seems to me when you get all of these different sources feeding into your system, all kinds of different pricing rules regarding these different sources, where are you going to be? Do you think that is going to cause some pretty serious problems that you really haven't thought about yet and need to have given some attention?

Mr. HALSEY. It definitely has, it is causing us a lot of long term problems, and we have already indicated that we have a number of different opinions on the various proposals in the President's legislation. On the conservation gas, we already know that we can see the effects of conservation and that it does make a difference in our load factor on our system, and if a company, particularly one that you mentioned before, is placed in a situation where let's say that it is prevented from taking on new hookups, and it is required to

aggressively pursue conservation programs and it is required to aggressively or through tax disincentives to shed industrial load, et cetera, et cetera, you could project that down the road where that company would virtually be put out of business.

The more serious consideration for those customers who do remain on the system is that utility economics works on the basis of a rate of return on your investment in plant, not on really how much product necessarily, it does in a way, but not directly on how much product you push through the system, if you can optimize your load factors, yes, you earn a better rate of return, but your rate of return is based on the fact that you have a fixed in place plant that cost you, let's say $1 billion in our case, and we are—under current regulatory pricing economics—allowed to earn a rate of return on that fixed plant.

Now, as you continually reduce the amount of volume that you put through that system, in order to recover those fixed costs and earn a rate of return on it, you must continue to charge higher and higher per unit price on that reduced volume going through the system. So that the customer who is now using less and less and less pays more and more and more per unit.

That has, we think, some very drastic long term impacts on our industry.

If we are forced to eventually end up strictly in the residential business, and for natural gas in any kind of a Northern climate, your space heating load is by far the greatest residential load that you face.

In Northern Illinois territory our residential load is about 85 percent temperature sensitive, and what it does to you is it forces a tremendous peak during the winter time and with virtually no load at all on your system in the summer. If you are going to render adequate utility service, you must provide that capacity to meet that maximum hour demand during the winter, a situation the electric utilities are even more concerned about than we.

Mr. STOCKMAN. You have the ability to store much more.

Mr. HALSEY. Yes, but the point is if you continually shed industrial or base loads you cannot store it all. One of the other fallacies, we feel, about the proposed legislation is that it assumes that all industrial load is low priority or it classes everything as though it's boiler fuel. That is not necessarily true. There are many direct fired applications where gas is a very critical component of that process.

Mr. STOCKMAN. Let me interrupt you there. I see that part of the argument, but you are going to have to go out in the market and take long term contracts on the basis of our projected demand, let's say, over the immediate term future.

Mr. HALSEY. Right.

Mr. STOCKMAN. Now if there is great uncertainty as to how much conservation gas you are going to have in 1984 and how much conservation gas you are ging to have available in 1984 and you are buying gas on contracts, generally doesn't that put you in a pretty serious bind as to whether or not you are going to be able to meet the load demand of your system?

Mr. HALSEY. It certainly does, and particularly as we are forced into an almost 100 percent residential market, and our winter

peaks keep climbing, we have to add utility capacity to meet that, we have to add storage to meet that, and it's a downhill snowball situation that is going to drive us right out of business. So we have some very serious long term reservations about what is being proposed.

The conservation gas is just one of the very beginnings, and we say if a company is out actively promoting conservation for the benefit of its customers, then to further sort of—I won't say penalize them—but take the gas now and divert it to somebody else, is not very much of an incentive for that company to really address that problem.

Mr. STOCKMAN. That is another question. We were arguing back and forth here. He is in a gas short system, and I am in a gas sufficient supply system. If we do an effective conservation effort in Michigan and you do get real conservation gas, should Michigan Consolidated have control over or should there be some authority, say in the FEA or FPC deciding where that gas can best be allocated or directed around the country? It seems to me you are going to have to get into that problem because of the great variability in the base from which all utilities begin.

If you have anything to submit for the record to kind of highlight that policy aspect, or that point of the problem, we would appreciate it.

Mr. HALSEY You asked a wide range of questions, and we will try.

Mr. BROWN. You will, of course, be fair to those of us who are gas short in your discussion.

Mr. HALSEY. Yes, Mr. Chairman, we will.

Mr. STOCKMAN. Thank you.

Mr. DINGELL. The Chair thanks the gentleman.

I believe Mr. Halsey indicated that rate basing expenses of insulation, et cetera, was not in accord with his views, and the views of the American Gas Association. I think Mr. Hammon, you indicated so. Mr. Nash indicated so. I think Mr. Graham, you did not make a comment. You nodded your head.

Mr. GRAHAM. No; I agree with them.

I agree with the others; we wouldn't want to put it in the rate base.

Mr. DINGELL Thank you.

The Chair recognizes Mrs. Harrison.

Mrs. HARRISON. Thank you.

Mr. Hammon, the National Home Improvement Council represents how many remodelers, contractors, people who do retrofitting? Can you give us a percentage of that kind of industry that you do represent?

Mr. HAMMON. That is a little bit difficult to answer. Various sources give different figures on the total numbers of home improvement and remodeling contractors. I do not have these figures at hand, but the written statement we submit will give that information.

The definition of what a remodeling contractor is varies a bit depending upon whose figures you are using. Our membership is limited to those who are qualified contractors whose major business is home remodeling. We consider these to be professional remodel-

ing contractors. There are many others in the marketplace, who are doing maybe a couple of jobs a year, or who are doing remodeling as a sideline who call themselves remodeling contractors. There is no standard either by Government or in the private sector to determine who is and who is not a remodeling contractor.

Our 1,700 local members include the leading professional remodeling contractors in the country. We would have to say that they represent a relatively small percentage of all those who do remodeling, if you include the vast number of small contractors who may do one or two jobs a year or who do some remodeling as a sideline to another business.

Mr. HARRISON. One of the things that basically concerns us is the problem of the quality of installation done, inspection, warranty by the worker and so forth. On what you were telling us then, could you submit for the record a list of your members so we would have some idea?

Mr. DINGELL. Would you make available to us on loan, a roster of your members?

Mr. HAMMON. Certainly, this could be done.

Mrs. HARRISON Yes.

Mr. DINGELL. Mr. Hunt?

Mr. HUNT. I have no questions.

Mr. DINGELL. The Chair thanks my colleagues for their patience and we expressly and especially thank our panel for its kindess and patience with us. We have kept you long and we are grateful to you for your assistance.

It was much appreciated.

The committee will stand adjourned until 10 o'clock tomorrow morning.

[The following statement was received for the record:]

TESTIMONY PRESENTED TO THE FEDERAL ENERGY ADMINISTRATION'S "PROPOSED ENERGY AUDIT PROCEDURES" HEARINGS, MAY 10, 1977, BY FRANK GORELL, PRESIDENT, SEASON-ALL INDUSTRIES, INC., INDIANA, PA

The purpose of our being here is to explain as clearly as we can what a thermally improved, custom-fit replacement window is and how it is used and the reasons it must, in our opinion, be included in the list of approved energy conservation measures.

As the last page of this paper, we have shown you four photographs. The first photograph shows the old, worn-out, energy-guzzling windows, which waste huge amounts of energy, both for heating and cooling, through their single glass and throught he many cracks that leak energy. In photograph two, we show where the old sash, glass inserts,have been removed and the installer is in the process of removing the old parting strips, or blind stops, of the original window. Once these parting strips have been removed, there exist two clear openings. Nothing else is done to alter the opening, either on the inside or on the outside of the building. Photograph three shows the installer about to put the frame of the replacement window into place. After both window frames are secured with four installation screws and caulked, the sash for each of these windows are inserted, and, in photo four, a new thermalized window has replaced an old, battered-up, leaky, energy-guzzling window. There are some forty million homes and thousands of public and commercial buildings in our country that are over twenty years old. Most of these homes and buildings have old wood double-hung or steel casement windows that are in terrible condition. Installing a storm window on badly deteriorated windows will help. However, significantly more energy will be saved if these very poor windows are replaced with new thermally improved windows. It is our understanding that the government will have mandatory energy efficiency standards for windows used in new construction by 1980. Why shouldn't such windows be used now in old buildings?

One idea we must emphasize . . . deteriorated single-glazed, non-weatherstripped windows waste more heating and cooling energy than any other part of any building.

Let me repeat . . . old worn-out windows waste more energy than any other part of any building.

This may sound surprising. If it does, we have to admit the wall and ceiling insulation manufacturers have been more successful than window manufacturers in pointing out different ways buildings waste energy.

To begin to understand the heat loss through windows as compared to ceilings, it is necessary for you to realize something else that may sound surprising . . . heat does not always rise.

Heated air tends to rise, but heat itself travels only in one direction . . . toward cold. It travels down through floors. It travels horizontally through walls . . . and doors and windows. And it also travels up, through ceilings.

But it travels faster through windows than through floors or walls . . . or ceilings.

When it is 0° outside and 75° inside, ceilings lose heat at the rate of only 23 Btu's per hour per square foot. This compares to 105 Btu's per hour per square foot lost by windows. Windows waste energy almost five times as fast as ceilings.

Looking at the average two-story house (and more homes and buildings are two or more stories, rather than single story), we find that the average ceiling is 750 square feet and loses 17,250 Btu's per hour. The same house has 200 square feet of windows and loses 21,000 Btu's per hour if the window is in average condition with a U value of 1.13. If the windows are deteriorated with a U value of 1.562, they can lose 29,400 Btu's per hour.

Deteriorated windows in the average two-story house lose 70% more energy than the ceiling.

As the number of floors in a home or building increases, the significance of the ceiling becomes less and less, and the opportunity for energy savings with windows increases. In a two-story house, the windows lose 170% as much as the ceiling. In a three-story house, the windows lose 25% as much energy as the ceiling.

A thermalized replacement window can dramatically decrease this energy loss through windows. It can change the U value of a deteriorated window of 1.562 to a new U value of .445 . . . reducing fuel consumption by 61%.

In addition to fuel savings, there are other savings that accrue to the home or building owner. Because custom-fit, thermalized replacement windows are aluminum, they practically eliminate the need for maintenance, such as a scraping, painting and reglazing. These savings alone can go a long way toward repaying the investment in fifteen to twenty years.

The custom-fit, thermalized replacement window is a measure specifically intended for neergy conservation, and we have figures to substantiate that it is more than likely to reduce energy costs in an amount sufficient to enable a person to recover the total cost of pruchasing and installing the modification within its attributable life.

Windows that are deteriorated waste more energy than any other part of any building. And there is only one remedy to this loss . . . replacement windows.

While storm windows can make a relatively sound prime window energy efficient, it takes a new window . . . window replacement . . . to make a deteriorated window energy efficient. This is necessary because excessive infiltration must be stopped by the prime window.

Custom-fit, thermalized replacement windows must be listed by the FEA as approved energy conservaiton measures. There are applications where only replacement will do. Storm windows are not practical on high-rise buildings, and there is resistance by some homeowners to storm windows.

If, indeed, our country's energy shrotage is as critical as we believe it to be, it seems to us that the only consideration in the case of windows should be conservation of energy. The reason for this is very obvious. The money will be expended whether or not the energy guzzlers are replaced. In the one instance, money will be spent to buy new windows which save energy; and in the other instance,the money will be spent on fuel that goes right out the window.

FEA's definition of an energy conservation measure is "one that is likely to reduce energy costs in an amount sufficient to enable a person to recover the total cost of purchasing and installing such modification within its attributable life." The formula that FEA has proposed to evaluate energy conservation measures within that definition uses energy prices expressed in base year dollars. We believe that the effect of future energy cost increases which are attributable to inflation must be considered. During the fifteen years which you have projected, there will be inflationary cost increases which can be avoided with the proper energy conservation

measures. These savings should be considered in evaluating any particular measure.

Inasmuch as you have used a 10% discount rate to measure the time value of money, we feel that an 8% general rate of inflation would be appropriate. By adjusting each year's energy rates for the projected rate of inflation, you will be able to project what actual savings will be available to recover the measure's cost.

We must look at these saving realistically. Our purpose here is not to provide high grade investment opportunities, but to conserve energy with products which pay for themselves with reduced energy costs over their useful lives. In thermalized, custom-fit replacement windows, we have such a product.

[Whereupon, at 6:20 p.m., the subcommittee adjourned, to reconvene on Wednesday, May 11, 1977, at 10 a.m.]

# NATIONAL ENERGY ACT

WEDNESDAY, MAY 11, 1977

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY AND POWER,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
*Washington, D.C.*

The subcommittee met at 10 a.m., pursuant to notice, in room 2325, Rayburn House Office Building, Hon. Philip R. Sharp, presiding, Hon. John D. Dingell, chairman.

Mr. SHARP. The subcommittee will come to order.

This morning we will be considering the energy efficiency of consumer products and I would like to read a statement of Chairman Dingell, who will be with us later in midday.

The subject of today's hearings is title I, part B, of H.R. 6813, the proposed amendments to the appliance energy efficiency program established in the Energy Policy and Conservation Act of 1975.

Under the current provisions of that act, the Federal Energy Administration must develop procedures to test the energy efficiency of consumer products other than automobiles. The Federal Trade Commission is charged with administering a program to require the energy efficiency labeling of all such products in accordance with the test procedures. The Federal Energy Administration must also establish targets for the improvement of each appliance industry. If the Administrator finds that the industry is not likely to meet the target, he is authorized to establish minimum efficiency standards for the product.

The proposed amendments would eliminate the target approach and require the Administrator to set minimum efficiency standards for refrigerators, freezers, water heaters, room air-conditioners, kitchen ranges and ovens, central air-conditioners and furnaces. The Administrator would retain discretion in deciding whether to set standards for other appliances.

The appliance program has shown little progress to date. No test procedures have been finalized, and no targets have been set. I am encouraged that after recent correspondence between myself, meaning Mr. Dingell, and Mr. O'Leary and the addition of some personnel, FEA has begun to proceed more expeditiously. However, I am concerned about the program's progress and the possibility of future delays.

The decision to eliminate the target-setting procedures and move directly to minimum standards-setting may put this program back on the track. However, we must be certain that in redesigning the program, past efforts will not be duplicated, causing additional delays.

We will also hear testimony today concerning the development of test procedures by FEA and the National Bureau of Standards. These test procedures often build upon commercial standards developed by the industry. While such cooperation may be laudable, we intend to find out whether thse standards, and the appliance program in general, are sufficiently responsive to the small businessman, and do not hamper competition.

Partly because of the slowness by FEA in carrying out its duties in this program, several States have either promulgated appliance efficiency standards or are considering such actions. In the absence of Federal standards, such State actions are understandable and commendable.

The act now provides for preemption of State regulation in most cases. The associations of home appliances and other manufacturers are raising the question whether the preemption provision is adequate from their point of view. We want to hear their views and those of FEA and the States on their concerns.

We begin our hearings this morning with two panels of appliance manufacturers and their trade associations. In the afternoon we shall hear from representatives of FEA, FTC, the National Bureau of Standards, and the State of California.

We would appreciate it now if the first panel would come forward and make themselves known for the record.

Mr. Baumgart, if you will go ahead. As you know, we are operating under fairly stringent constraints as we always say. We would appreciate it if you could keep your presentation to five minutes and we will restrict members of the panel to questioning for five minutes.

We thank you for your cooperation.

**STATEMENT OF GUENTHER BAUMGART, PRESIDENT, ASSOCIATION OF HOME APPLIANCE MANUFACTURERS, CHICAGO, ILLINOIS; ACCOMPANIED BY DONALD W. LYNCH, CHAIRMAN, ENERGY COORDINATING COMMITTEE; FRED J. BERKENKAMP, ROPER CORPORATION; KARL WARE, WHITE CONSOLIDATED INDUSTRIES; AND THEODORE F. T. CROLIUS, GENERAL COUNSEL, AHAM**

Mr. BAUMGART. My name is Guenther Baumgart, president of the Association of Home Appliance Manufacturers. With me are several of AHAM's member officers: Donald W. Lynch of the General Electric Company, chairman of our Energy Coordinating Committee; Fred J. Berkenkamp of the Roper Corporation; Karl Ware of White Consolidated Industries, and Theodore F. T. Crolius, AHAM's general counsel. Other officers and directors are in the audience. All are available to help in your deliberations.

The members of AHAM manufacture nearly all of the major and portable appliances produced in the United States—this includes

importantly today: refrigerators, refrigerator-freezers, freezers, room air-conditioners, ranges, dishwashers, clothes washers and driers, humidifiers, dehumidifiers, and portable space heaters. Lists of the companies and the products are attached.

The appliance industry is, by the very nature of its market, a consumer-conscious industry with a long record of developing public service programs—our consumer education efforts date back to 1921, our recommended advertising practices program dates from 1960, and our major appliance consumer action panel was developed in 1969 to resolve consumer complaints.

Our members have been working diligently for nearly four years now to develop an effective energy conservation program, first in a program of our own, then with the National Bureau of Standards voluntary program, since December 1975 with the National Bureau of Standards, Federal Energy Administration and the Federal Trade Commission under the Energy Policy and Conservation Act.

AHAM has in the past favored targets based on weighted averages because it has been the feeling of most of our members that this would be the most effective and economically sound way of accomplishing the objective of saving energy in appliances. However, AHAM will support President Carter's proposals for energy standards if (1) the standard values are accompanied by strong Federal preemption applying not only to products listed in proposed new section 325(a)(1)(B), but also to all the other products listed in section 322(a) of the current law; and (2) the standard values are determined in procedures involving significant industry participation and are economically sound, technically feasible and reasonable of accomplishment.

Strengthening of preemption would necessarily include:

automatic full preemption by Federal law of existing and future appliance energy laws and regulations by State and local governments;

preemption for both specified and discretionary products covered by proposed new section 325(a)(1);

responsibility to reside with States to petition for exemption, to demonstrate exceptional local need, and to demonstrate no interference with interstate commerce.

The sine qua non of an effective, successful national appliance energy program is Federal preemption of inconsistent or different State regulation of appliance efficiency. This requirement is critical; without it the U.S. appliance industry cannot deliver on its commitment to itself, to consumers, and to government to achieve energy conservation.

We urge on this committee and on the Congress the importance of facing up to this issue squarely and at the outset. Our industry cannot serve more than one master, and if the Congress does not recognize this hard fact right now, no cognizant government authority ever will. The result will be chaos, a jumble of conflicting nontariff barriers around the respective States, each State competing against the others to see which can be the most protectionist on behalf of its citizens. Our national industry as we know it today will be radically reshaped, surely less efficient, surely less diverse, surely higher-priced. We do not think the Constitution contemplates that result. We think U.S. consumers agree with us.

Partial preemption or ambiguous preemption is of no use to us. The congressional purpose should be clearly and boldly stated, and the scheme of Federal preemption comprehensively defined in support of a workable national program. Ideally, of course, there should be total preemption, an absolute prohibition on States to act where the Federal Government has occupied the field.

Assuming, however, that Congress will not opt for absolute preemption, we believe that the Federal scheme must include, as a minimum, the following elements:

1. A strong presumption that Federal law preempts any State regulation. The burden of proof to the contrary must be placed affirmatively on the States. In order to prevail a State must establish that its regulation (a) does not burden interstate commerce, (b) is justified by a particular State interest which is significantly different from the national interest, (c) does not cause economic disruption to or burden on appliance manufacturers, (d) is not more stringent than Federal standards.

2. Inclusion of all appliances listed in section 322 of the act within the ambit of preemption. It is not enough to include only those appliances which the proposed amendments mandate minimum efficiency standards. All appliances covered by the act are subject to regulation and if they are not protected at the outset they are vulnerable to balkanizing State regulation.

Reasonable and sound conditions for determination of energy efficiency standards include such characteristics as:

economically sound to assure that cost increases are not so great as to cause consumers to make do with older, less efficient products rather than newer, more efficient products;

technically feasible to give recognition to the inescapable limitations of the natural laws of physics, thermodynamics, electricity, et cetera, and to give recognition to the state of the engineering and manufacturing art for appliances;

reasonably accomplishable to recognize adequately the necessary lead time for designing, tooling, producing and distributing appliances;

suitable classification of categorization of product subgroups within each kind of appliance—that is refrigerators with manual defrost, partially automatic defrost, and automatic defrost, or large, regular and compact washers;

identical classifications and subclassifications for energy efficiency standards (FEA) and for labeling (FTC);

energy efficiency standard values which include consumer options and other innovative energy-saving devices which are or may be developed.

We urge that the proposed amendments be acted upon quickly so that both the government agencies and the manufacturing industry may get down to the actual work of conserving energy rather than debating further how to do it.

We oppose the deletion of section 336(a)(2) and (b)(5) of the current act in order to protect industry's access to due process in FEA's development of energy-efficient standards; that is, we feel we should assure full industry participation.

In conclusion, we are filing a more extensive statement, including suggested wording, which we believe will accomplish our recommendations.

We offer our full cooperation in working with you, your staff, and with the Federal Energy Administration, Federal Trade Commission, and National Bureau of Standards.

Thank you for listening.

Mr. SHARP. Thank you.

[The AHAM prepared statement follows:]

AHAM WRITTEN STATEMENT ON
H.R. 6831, NATIONAL ENERGY ACT
TITLE I, PART B, SUBPART 1
CONSUMER PRODUCTS OTHER THAN AUTOMOBILES
MAY 20, 1977

The Association of Home Appliance Manufacturers respectfully requests that the following statement and supporting documents be included with the Association's oral testimony in the hearing record on H.R. 6831, National Energy Act -- Title I, Part B -- Energy Efficiency of Consumer Products -- Subpart 1.

The members of AHAM manufacture nearly all of the major and portable appliances produced in the United States -- this includes importantly today: refrigerators, refrigerator-freezers, freezers, room air conditioners, ranges, dishwashers, clothes washers and dryers, humidifiers, dehumidifiers and portable space heaters. Lists of the companies and the products are attached as Appendixes 1 and 2.

The appliance industry is, by the very nature of its market, a consumer-conscious industry with a long record of developing public service programs -- our consumer education efforts date back to 1921 -- our Recommended Advertising Practices program dates from 1960 -- and our Major Appliance Consumer Action Panel was developed in 1969 to resolve consumer complaints.

Our members have been working diligently for nearly four years now to develop an effective energy conservation program -- first in a program of our own; then in conjunction with the National Bureau of Standards voluntary program; and, since December, 1975, with the National Bureau of Standards, Federal

Energy Administration and the Federal Trade Commission under the Energy Policy and Conservation Act.

AHAM has, in the past, favored targets based on weighted averages because it has been the judgment of our members that this would be the most effective and economically sound way of accomplishing the objective of saving energy in appliances. However, AHAM will support President Carter's proposals for energy efficiency standards if: (1) the standards are accompanied by strong Federal preemption applying not only to products listed in proposed new Section 325(a)(1)(A), but also to the products listed in the new Section 325(a)(1)(B); (2) the standard values are determined in procedures involving significant industry participation; and (3) the standards are economically sound, technically feasible and reasonable of accomplishment.

ENERGY EFFICIENCY STANDARDS

Most of the members of AHAM have preferred averages to minimums as a more totally equitable, economically less disrupting and generally effective way of achieving appliance energy savings. However, our efforts to support this approach have been thwarted by an evident reluctance if not unwillingness by the FEA to preempt state regulations on the basis of pending average targets. Furthermore, there has been no specific decision on FEA's part to accept (even with the right to aduit any part of the reporting structure) industry reporting proposals. These utilize a third-party system already established and efficiently operating for the same basic purpose (e.g., the AHAM-Ernst & Ernst plan).

Thus, if the FEA made a prompt, precedent-setting example of the California

legislation through preemption, other state actions would have been discouraged. Similarly, accepting the more simplified reporting methods proposed by industry would have eliminated the real concern for potential misuse of confidential company data.

Failing these actions by the FEA, you now see most of the industry agreeing to minimums because they perceive this to be the only way to be assured of, first and most importantly, strong preemption and, second, less onerous reporting.

There does appear to be strong consensus among industry members that for two reasons minimums will take additional time to implement. First, it will take an estimated one year of additional time to change direction and develop technically feasible and economically sound minimums in a proper manner. Second, most of the change will occur among the lower-priced models of the various product lines because they are the least likely to meet the standard. In contrast, average improvement targets provide the flexibility to reduce energy anywhere in the line where it could be done fastest and most economically. Therefore, more time will be required to implement minimums.

Concerning the question of targeting a percentage improvement with minimums, this is difficult if not impossible to predict. Each minimum must be based on a multitude of considerations unique to each product line. In contrast, average improvements are based on applying better energy-saving techniques, materials or features across the entire line. Thus, compared to a base year (e.g., 1972), some percentage improvements can be rationally estimated.

Concerning effect on consumers, Congressman Stockman and the Sears' spokesman were correct when they stated that minimums strongly tend to put most of the energy improvement burden on the low-income consumer.

In the face of all this, AHAM has changed its support to minimums for the primary reason of getting a strong preemption action by the Federal government. Without preemption, we have economic confusion of the highest sort.

If the actions desired by industry, mentioned earlier, were taken by the FEA, you would probably find a majority still in favor of averages.

PREEMPTION

Strengthening of preemption would necessarily include:

-- Automatic full preemption by Federal law of existing and future appliance energy laws and regulations by state and local governments.

-- Preemption for both specified and discretionary products covered by proposed new Section 325(a)(1).

-- Preemption to take effect immediately upon enactment of H.R. 6831, i.e., not to have to await the promulgation of a Federal energy efficiency standard.

-- Responsibility to reside with states to petition for exemption, to demonstrate exceptional local need and to demonstrate no interference with interstate commerce.

The sine qua non of an effective, successful national appliance energy

program is Federal preemption of inconsistent or different state regulation of appliance efficiency. This requirement is critical; without it the U. S. appliance industry cannot deliver on its commitment to itself, to consumers and to government to achieve energy conservation.

We urge on this committee and on the Congress the importance of facing up to this issue squarely and at the outset. Our industry cannot serve more than one master, and if the Congress does not recognize this hard fact right now no cognizant government authority ever will. The result will be chaos -- a jumble of conflicting "non-tariff barriers" around the respective states, each state competing against the others to see which can be the most protectionist on behalf of its citizens. Our national industry as we know it today will be radically reshaped -- surely less efficient, surely less diverse, surely higher priced. We do not think the Constitution contemplates that result. We think U. S. consumers agree with us.

Partial preemption or ambiguous preemption is of no use to us. The Congressional purpose should be clearly and boldly stated, and the scheme of Federal preemption comprehensively defined in support of a workable national program.

Ideally, of course, there should be total preemption, an absolute prohibition on states to act where the Federal government has occupied the field. Language to accomplish this end is proposed as Appendix 3, Part I.

If, however, Congress judges that there is important reason to allow the states to seek exception with good reason, we recommend that the Federal scheme include, as a minimum, the following elements:

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1. A strong presumption that Federal law preempts any state regulation. The burden of proof to the contrary must be placed affirmatively on the states. In order to prevail a state must establish that its regulation

   (a) does not burden interstate commerce,

   (b) is justified by a particular state interest which is significantly different from the national interest,

   (c) does not cause economic disruption to or burden on appliance manufacturers,

   (d) is not more stringent than Federal standards.

2. Inclusion of all appliances listed in Section 322 of the present Energy Policy and Conservation Act within the ambit of preemption. It is not enough to include only those appliances for which the proposed amendments mandate minimum efficiency standards. All appliances covered by the Act are subject to regulation and if they are not protected at the outset they are vulnerable to balkanizing state regulation.

Language to accomplish this purpose is proposed as Appendix 3, Part II.

DEVELOPMENT OF ENERGY EFFICIENCY STANDARDS

Because energy efficiency standards will have such a fundamental impact on all appliance manufacturers we urge the use of reasonable and sound procedures for developing such standards that include such characteristics as:

-- Economically sound to assure that cost increases are not so great as to cause consumers to make do with older, less efficient products rather than newer, more efficient products;

-- Technically feasible to give recognition to the inescapable limitations of the natural laws of physics, thermodynamics, electricity, etc., and to give recognition to the state of the engineering and manufacturing art for appliances;

-- Reasonably accomplishable to recognize adequately the necessary lead time for designing, tooling, producing and distributing appliances;

-- Suitable classification or categorization of product sub-groups within each kind of appliance (e.g., large, regular and compact washers; manual, partial automatic and automatic defrost refrigerator-freezers);

-- Identical classifications and sub-classifications for energy efficiency standards (FEA) and for labeling (FTC);

-- Energy efficiency standard values which include consumer options and other innovative energy-saving devices.

We particularly oppose the deletion of Section 336(a)(2) and (b)(5) of the current Act. We believe industry should have access to full due process during FEA's promulgation of energy efficiency standards.

Finally, we note that proposed Section 325(a) eliminates the requirement

in the present law that the National Bureau of Standards participate in the regulatory process. We strongly urge that NBS be given continued authority and responsibility in order to retain the accumulated experience and knowledge of that agency.

Accordingly, AHAM recommends that H.R. 6831 be amended as outlined in Appendix 4 to this statement.

## FURTHER INFORMATION

During AHAM's oral testimony before the Subcommittee certain additional information was requested of the industry to assist Congress in its deliberations. Within the constraints of the time allowed and the availability of the information requested, we submit the following supplemental information.

### Estimated Energy Consumption

Appendix 5 provides energy consumption estimates for appliance products represented by AHAM and included within the scope of the Energy Policy and Conservation Act.

### Product Sales

Appendix 6 is a 5-year history of the factory shipments for those products mentioned in Section 322 of the Energy Policy and Conservation Act and included in AHAM's product scope as well as estimates of the percent of sales which are direct to builders for new housing, rather than through retail channels.

### Economic Impact of Energy Efficiency Standards

Congressman Brown requested information during the May 11 hearings on

the cost of improving appliance energy efficiency compared to the value of the energy conserved. AHAM has not been able to research this information in the short time between the hearing date and the closing date for written testimony.

However, the following information is excerpted from the record of the hearings on appliance minimum efficiency standards conducted by the California Energy Resources Conservation and Development Commission. It is submitted in an effort to help Congress understand the economic impact of such standards:

> In adopting its initial regulations the Commission estimated* the regulations would:
>
> - Cause 3,000 to 9,000 people (mostly in other states) to become unemployed.[1]
> - Increase the price of products by over $100,000,000.[2]
> - Cause decreased sales in the amount of $70,000,000 to $200,000,000 per year.[3]

*Other parties in the proceedings testified under oath that the estimates were grossly conservative, or so poorly based as to have no significant meaning.

1. State of California Energy Resources Conservation and Development Commission, Socio-Economic Impact Study, July 29, 1976, as modified in written testimony of Scott W. Matthews, Environmental Planner, California Energy Resources Conservation and Development Commission, dated September 23, 1976, page 4.
2. Ibid. page 3.
3. Ibid. page 9.

- Require additional consumption of non-renewable resources from the physical environment (mostly in other states) of 6,915 tons of steel, 1,000 tons of copper, and 2,557 tons of aluminum.[4]

- Require additional consumption of energy (mostly in other states) of 295 million kWh per year.[5]

4. State of California Energy Resources Conservation and Development Commission "Initial Study," dated July 29, 1976, page 12.

5. Written testimony of Gregg Newhouse, Energy Resource Specialist, Environmental Analysis Office of the Energy Assessment Division, California Energy Resources Conservation and Development Commission, dated September 23, 1976, page 3.

ASSOCIATION OF HOME APPLIANCE MANUFACTURERS

APPENDIX 1

## MAJOR APPLIANCE MEMBERS

Absocold
Addison
Arvin
Blackstone
Boston Stove
Broan
Carrier
Design & Manufacturing
Ebco
Fedders
  Airtemp
  Norge
  Fedders Refrigeration
Friedrich
General Electric, Major Appliance Business Group
General Motors
  Frigidaire Division
Gerling Moore
Glenwood Range
Hardwick Stove
Hoover
In-Sink-Erator Division of Emerson Electric
Jenn-Air
KitchenAid-Hobart
Litton
Magic Chef
  Gaffers & Sattler
Maytag
McGraw-Edison
  Air Comfort
  Modern Maid
  Speed Queen
  Intl. Metal Products
Natl. Union Electric
  Emerson Quiet-Kool
Preway
Revco
Rockwell International
  Admiral
Roper
Tappan
  Anaheim
  O'Keefe & Merritt
Vernco
West Bend
Whirlpool
White Consolidated Industries
  Athens Stove Works
  Franklin-Freezer Division
  Franklin-Laundry Division
  Gibson Products
    Belding
    Gibson Appliance
    Greenville Products
  Kelvinator
    GR Manufacturing
    Kelvinator Appliance
    Kelvinator Intl.
    Kelvinator Comm. Prods.
  White-Westinghouse
    White-Westinghouse Appl.
    Columbus Products
    Mansfield Major Appliance
    Edison Products

## PORTABLE APPLIANCE MEMBERS

Aluminum Specialty
American Electric
Arvin
Capitol Products
Clairol
Conair
Farberware
General Electric
Gillette
Hoover
Intermatic
KitchenAid-Hobart
Markel Electric
McGraw-Edison
  Port. Appl. & Tool
  Time Products
Metal Ware
Mirro Aluminum
National Presto
Regal Ware
Richmond Cedar
Rival
  Titan
Salton
SCM Corporation
  Proctor-Silex
Scovill
  Dominion
  Hamilton Beach
Son-Chief
  Black Angus
Sperry Remington
Sunbeam
  Oster
Superior Electric
Vita Mix
Waring
Wear-Ever
West Bend

APPENDIX 2

## MAJOR APPLIANCE PRODUCTS

Compactors
Dehumidifiers
Dishwashers
Disposers
Clothes Dryers
Food Freezers
Humidifiers
Microwave Ovens
Ranges
Refrigerators
Room Air Conditioners
Clothes Washers

## PORTABLE APPLIANCE PRODUCTS

Air Heaters
Blenders
Broilers
Can Openers
Clocks
Coffeemakers
Drip Coffeemakers
Coffee Mills
Coffeemaker Urns
Cookers - Egg
Cookers - Multi-Purpose
Corn Poppers
Curling Styling Wands
Fans
Fondues
Fry Pans (Skillets)
Griddles
Hair Dryers
Hair Setters
Hamburger/Sand. Grills
Heating Pads
Hot Lather Machines
Hot Plates
Ice Cream Freezers
Ice Crushers
Irons (Dry)
Irons (Steam & Spray)
Juicers
Kettles
Knives
Lighted Mirrors
Manicure Sets
Massagers
Mixers (Portable)
Mixers (Stand)
Shavers
Slow Cookers
Steam Clothes Wands
Styling Combs
Timers
Toasters
Waffle Irons
Warming Trays

APPENDIX 3

AHAM RECOMMENDED AMENDMENT
OF H.R. 6831
CONCERNING PREEMPTION

Part I. Complete Preemption

AHAM recommends that Part B, Subpart 1 of H.R. 6831 be amended to include the following Section 201(d):

*Section 201(d)(1) Strike current Section 327(a), (b) and (c) and substitute the following:*

*Section 327. (a) This part, upon enactment into law supersedes any State regulation insofar as such State regulation may now or hereafter provide for (i) test procedures, (ii) labeling requirements, or (iii) energy efficiency standards or any similar requirement with respect to any covered product.*

*(2) Redesignate current Section 327(d) and (e) as Section 327 (b) and (c).*

PURPOSE OF AMENDMENT: (1) to preempt any existing or future state regulation of "covered" appliances insofar as test procedures, labeling and minimum efficiency standards are concerned; (2) to make it clear that the Federal law has totally occupied the field with respect to both (a) appliances mandated to be subject to a minimum standard immediately (proposed Section 325(a)(1)(A)), and (b) appliances subject to the Administrator's discretionary authority (proposed Section 325(a)(1)(B)); (3) to have preemption take place immediately upon enactment into law, i.e., not to make preemption await the promulgation of a Federal efficiency standard.

DISCUSSION: All covered appliances under the Energy Policy and Conservation Act are subject to Federal regulation respecting test procedures, labeling and energy efficiency improvement targets. The Congress, having thus spoken in behalf of a national program, has occupied the field and the states should be compelled to step aside. Unfortunately, however, FEA, apparently with some Congressional support, has been reluctant to invoke the Federal average efficiency improvement target program as the basis for preempting state minimum efficiency standards.

The H.R. 6831 amendments to the current Act, as supplemented by AHAM's proposed Section 327 amendment, should be interpreted as laying down two important preemption mandates:

First, all Section 322 covered appliances remain exclusively under Federal jurisdiction. These appliances are still subject to Federal test procedures and labeling requirements (Sections 323 and 324); and they all will be subject to Federal minimum efficiency standards under proposed Section 325(a). Although the promulgation of standards for Section 325(a)(1)(B) appliances depends on the Administrator's discretion, Congress will not be relinquishing full control over all covered appliances. It will merely state two categories of priority, with the Administrator to determine the timing of promulgation for the second category (Section 325(a)(1)(B)). State regulation of appliances in this second category would be an interference with and preemption of the Administrator's statutory discretion. The Administrator's decision not to promulgate a

standard for any category two appliance would constitute a determination by him that there is no energy conservation purpose to be served by issuing a standard and, therefore, that such appliance, if it moves in interstate commerce, may not be regulated by the states.

Second, Federal preemption for all covered appliances occurs upon passage of the H.R. 6831 amendments, not when a final Federal minimum standard is promulgated. It is likely that no final Federal standard will take effect until late 1978 or even 1979. During the period Federal standards are being developed the states must be stayed from substituting their regulatory schemes for the Federal scheme. To permit otherwise would place an onerous and inequitable burden on appliance manufacturers. The objective of having a national industry gear up to comply with a national program would be frustrated; production and distribution would be distorted and disrupted; and both consumers and the appliance industry would be needlessly penalized in product choice, availability and cost.

Part II. Preemption with State Appeal

Amend Section 327(a)(1) of the Energy Policy and Conservation Act to insert the phrase "upon enactment into law," after the word "part."

Strike current section 327(a)(2) through Section 327(c) of the Energy Policy and Conservation Act and substitute the following:

327(a)(2) "Any energy efficiency standard or similar requirement with respect to energy efficiency or energy use of a covered product, unless the State prescribing such standard demonstrates to the satisfaction of the Administrator and the Administrator find, by rule, that:

(A)(i) There is a compelling State or local need which is sufficient to justify such State regulation; and

(ii) such State regulation does not unduly burden interstate commerce.

(B) When there is a Federal energy efficiency standard applicable to such a product under section 325, the Administrator, for the purposes of determining whether a State regulation unduly burdens interstate commerce pursuant to this subsection, shall additionally, by rule, make appropriate findings in regard to the following criteria --

(i) the technological feasibility of complying with such regulation while, at the same time, complying with a corresponding Federal standard;

"(ii) the economic feasibility of complying with such regulation while, at the same time, complying with a corresponding Federal standard;

(iii) the additional cost, if any, to the manufacturer in complying with such State regulation;

(iv) the extent to which the national interest will be best served by a national uniform energy efficiency program for appliances; and

(v) the possibility of other States applying for an exemption from preemption under this section for a State energy efficiency standard or similar requirement."

APPENDIX 4

AHAM RECOMMENDED AMENDMENTS
TO H.R. 6831
CONCERNING DETERMINATION OF ENERGY EFFICIENCY STANDARDS

The Administrator of the appliance program has the heavy responsibility of establishing energy efficiency standards. These standards, which will eliminate from the marketplace certain models of appliances, strike at the very heart of appliance manufacturers' business operations.

Therefore, AHAM believes it is imcumbent upon the Congress to establish clear, unambiguous guidelines on criteria for energy efficiency standards to the Administrator, provide for close consultation with the businesses, consumers and others affected by these standards, and maintain due process safeguards in standards promulgation procedures. These need not be lengthy if properly administered. They must be thorough and of adequate depth to bring out relevant factors involved.

To this end AHAM suggests the following language be incorporated into Section 201 of H.R. 6831*:

"(a) Section 323(c) of the Energy Policy and Conservation Act is amended to delete '90' in the first line and insert 'for units manufactured 180' in lieu thereof."

"(b) Section 324(c)(2)(A) of the Energy Policy and Conserva- Act is amended to add the sentence 'Identical categories or sub-categories of products shall be used for labeling, required in

*AHAM language is underscored (___) or indicated by slashes (///) through words in H.R. 6831.

this section, and for standards, required in Section 325.' at the close of this paragraph."

"(~~b~~c) Section 325(a) of the Energy Policy and Conservation Act is amended to read as follows:

"(a)(1)(A) Except as otherwise provided in paragraph (3), the Administrator shall, by rule, prescribe an energy efficiency standard for each type or class of covered product specified in paragraphs (1), (2), (5), (6), (9), (12), and (13) of section 322(a). The Administrator shall direct the National Bureau of Standards to develop the energy efficiency standards specified in this subsection.

"(B) The Administrator may, by rule, prescribe an energy efficiency standard for any type or class of covered products of each of the types specified in paragraphs (3), (4), (7), (8), (10), (11), and (14) of section 322(a), except that the Administrator may not prescribe an energy efficiency standard for a type or class of covered product described in paragraph (14) of section 322(a) unless he determines that --

(A)(i) average per household energy use by products of such type exceeds 150 kilowatt-hours (or its Btu equivalent) per year;

(ii) aggregate household energy use by products of such type exceeds 4,200,000,000 kilowatt-hours per year; and

"(iii) substantial improvement in the energy efficiency of products of such type is possible.

"(2) No standard for a type (or class) of covered product shall be prescribed pursuant to paragraph (1) unless a test procedure has been prescribed pursuant to section 323 with respect to that type (or class) of product.

"(3) the Administrator shall not prescribe an energy efficiency standard for a type or class of covered product if he determines that the establishment of such standard is not technologically feasible or not economically justified.

"(4) Energy efficiency standards established pursuant to this section shall be designed to achieve the maximum improvement in energy efficiency which the Administrator determines is technologically feasible and economically justified, and may be phased in over a period of years through the establishment of intermediate standards. Effective dates for each energy efficiency standard, be it an ultimate or intermediate standard, shall be established to recognize reasonable lead-times necessary to allow manufacturers to accomplish the design, tooling, and production changes necessary to meet requirements of the standard.

"(5) In determining whether a standard is technologically feasible and economically justified pursuant to paragraph (3) or (4), the Administrator shall consider --

"(A) the state of the art of appliance engineering and manufacturing,

(AB) the economic impact of the standard,

(BC) the total projected amount of energy savings likely to result from the imposition of the standard,

(CD) the savings in operating costs throughout the estimated average life of covered products in the type or class, compared to any increase in the price of or in initial charges for, or maintenance expenses of, the covered product which is likely to result from the imposition of the standard,

(DE) any lessening of the utility or the performance of the covered product likely to result from the imposition of the standard,

(F) product features which provide the consumer with energy-saving options,

(EG) any negative effects on competition likely to result from the imposition of the standard,

(H) the impact of increases in initial cost of the product so as to preclude discouraging consumers from replacing inefficient appliances with more efficient models,

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"(~~F~~I) the need of the Nation to conserve energy, and

(~~G~~J) any other factors he considers relevant.

"(6) A rule prescribing an energy efficiency standard for a type or class of covered product may, for not more than two years, exempt, in whole or in part, from its requirements manufacturers of covered products whose gross revenues from all operations (including but not limited to the manufacture and sale of covered products) do not exceed $8,000,000 per annum, as determined by the Administrator, and with respect to the standard may result in a substantial lessening of competition.

"(7) A rule prescribing an energy efficiency standard for a type or class of covered product ~~may~~ shall specify different minimum levels of energy efficiency for covered products within such type or class based upon:

(A) the kind of energy consumed by such covered products and

(B) shall specify different minimum levels of efficiency for covered products based upon:

(i) size or capacity differences,

(ii) utility or performance,

(iii) fundamental design differences of such covered products.

"Identical categories or subcategories established under this section shall be used for product labeling under section 324.

"(8) The Administrator shall, not later than five years after promulgation of an energy efficiency standard, conduct a reevaluation in order to determine whether such standard should be modified. In conducting such reevaluation the Administrator shall take into account such information as he deems relevant, including technological developments with respect to the manufacture of the type or class of covered product involved and the economic impact of the standard."

"(~~b~~d) Section 325(b) of the Energy Policy and Conservation Act is amended by redesignating paragraphs (2) and (3) as paragraphs (3) and (4) respectively, and inserting a new paragraph (2) to read as follows:

"(2) With respect to covered products of each of the types specified in section 325(a)(1)(A), an advance notice of proposed rulemaking with respect to such type or class of covered product shall be promulgated by the Administrator not later than 30 days after a test procedure with respect to that type or class of covered product has been prescribed, or 30 days after enactment of the National Energy Act, whichever is later."

"(~~c~~e) Part B of Title III of the Energy Policy and Conservation Act is further amended as follows:

"(1) Section 324(c)(5) is amended by inserting ', including instructions for the maintenance use, or repair of the covered product,' after 'energy consumption' in the matter following subparagraph (C).

"(2) Section 325(d) is deleted.

"(3) Section 326 is amended by adding a new subsection (d) and (e), to read as follows:

"(d) The Administrator may require each manufacturer of covered products to submit such information or reports with respect to energy efficiency of such covered products as the Administrator determines may be necessary to establish standards under section 325.

"(e) Upon a showing satisfactory to the Federal Energy Administrator by any person that any energy information obtained under this section from such person would, if made public, divulge methods or processes entitled to protection as trade secrets or other proprietary information of such person, such information, or portion thereof, shall be confidential in accordance with the provisions of section 1905 of Title 18; except that such information, or part thereof, shall not be deemed confidential for purposes of disclosure, upon request, to (i) any delegate of the Federal Energy Administrator for the purpose of carrying out this chapter, (ii) the Federal Trade Commission, when necessary to carry out that agency's duties and responsibilities under this and other statutes, and (iii) the Congress, or any committee of Congress upon request of the Chairman."

"(4) Section 336(a)(1) is amended by (A) striking out '(1)' and (B) by striking out '325(a)(1), (2), or (3)' in the first sentence thereof and inserting in lieu thereof the following: '325(a)'.

"(5) Section 336(a)(1)(B) is amended by striking out 'paragraph (1), (2), or (3) of' in the first sentence thereof.

"(6) Section 336(a)(2) is ~~deleted~~ amended by striking out the parenthetical phrase '(other than subsections (a)(1), (2), and (3))'.

"(7) Sections 336(b)(1) and (2) are amended by striking out 'section 323 or 324' and inserting in lieu thereof 'section 323, 324, or 325'.

"(8) Section 336(b)(5) is ~~deleted~~ amended by striking out the parenthetical phrase '(other than subsections (a)(1), (2), and (3))'.

"(9) Section 339(a) is amended to read as follows:

"(a) There are authorized to be appropriated to the Administrator to carry out his responsibilities under this part not to exceed $1,700,000 for fiscal year 1976, not to exceed $3,056,000 for fiscal year 1977, and for each fiscal year thereafter such sums as may be necessary."

APPENDIX 5

# TOTAL NATIONAL AND DIRECT CONSUMER ENERGY CONSUMPTION[1]

## 1968 and Estimated 1973 (Usage in Trillions of BTU's)

| End Use | 1960-1968 Average Annual Growth Rate | 1968 Usage | 1968 % of Nat. Total | Estimated 1973 Usage | Estimated 1973 % of Nat. Total |
|---|---|---|---|---|---|
| Total National Usage | 4.3 | 60,527 | 100.0 | 74,709 | 100.0 |
| Direct Consumer Usage | | 17,523 | 29.0 | 21,631 | 29.0 |
| Commercial, Industrial & Government Usage | | 43,004 | 71.0 | 53,078 | 71.0 |
| Total Consumer Usage | | 17,523 | 29.0 | 21,631 | 29.0 |
| Private Transportation | 4.1 | 8,335[2] | 13.8 | 10,190 | 13.6 |
| Space Heating | 3.6 | 6,388 | 10.6 | 7,624 | 10.2 |
| Water Heating | 5.4 | 1,348 | 2.2 | 1,753 | 2.3 |
| Cooking | 1.2 | 470 | 0.8 | 499 | 0.7 |
| Refrigeration | 6.5 | 255 | 0.4 | 349 | 0.5 |
| Air Conditioning | 16.0 | 157 | 0.3 | 330 | 0.4 |
| Lighting | 5.6 | 150 | 0.2 | 197 | 0.3 |
| Television | 10.1 | 128 | 0.2 | 207 | 0.3 |
| Clothes Dryers | 10.7 | 118 | 0.2 | 196 | 0.3 |
| Food Freezers | 13.0 | 80 | 0.1 | 147 | 0.2 |
| Dishwashers | 18.8 | 13 | 0.02 | 31 | 0.04 |
| Clothes Washers | 6.6 | 15 | 0.02 | 21 | 0.03 |
| Other | 5.6 | 66 | 0.1 | 87 | 0.1 |
| Major Appliance Usage[3] | | 1,038 | 1.7 | 1,426 | 1.9 |
| Maximum Estimate of Portable Appliance Usage[4] | | 66 | 0.1 | 87 | 0.1 |

[1] Based on "Patterns of Energy Consumption in the United States" by Stanford Research Institute; 1973 usage was projected on the basis of the 1960-68 Growth Rates. Heat waste in electricity production included in commercial, industrial and government usage.

[2] Based on 1972 estimate by the Office of Emergency Preparedness that 55% of energy used in transportation is used by private autos.

[3] Major appliance usage includes cooking, refrigeration, clothes dryers, food freezers, dishwashers, clothes washers and 55.2% of air conditioning. Central air conditioning systems use 44.8%.

[4] Maximum estimate of portable appliances usage includes portable appliances and all other miscellaneous consumer uses.

AHAM Association of Home Appliance Manufacturers • 20 North Wacker Drive • Chicago, Illinois 60606

APPENDIX 6

FACTORY UNIT SHIPMENTS
(Add 000)

| PRODUCT | 1972 | 1973 | 1974 | 1975 | 1976 |
|---|---|---|---|---|---|
| Room Air Conditioners | 4,508 | 5,346 | 4,564 | 2,670 | 2,961 |
| Dehumidifiers | 461 | 646 | 586 | 392 | 444 |
| Dishwashers | 3,199 | 3,702 | 3,320 | 2,702 | 3,140 |
| Built-In | 2,357 | 2,721 | 2,460 | 1,947 | 2,337 |
| Portable | 842 | 981 | 860 | 755 | 803 |
| Refrigerators | 6,315 | 6,774 | 5,982 | 4,577 | 4,817 |
| Freezers | 1,577 | 2,415 | 3,219 | 2,457 | 1,541 |
| Upright | 846 | 1,402 | 1,892 | 1,076 | 710 |
| Chest | 731 | 1,013 | 1,327 | 1,381 | 832 |
| Electric Ranges | 3,232 | 3,430 | 2,925 | 2,082 | 2,463 |
| Free-Standing | 2,422 | 2,624 | 2,279 | 1,568 | 1,762 |
| Built-In | 810 | 806 | 646 | 514 | 701 |
| Automatic Washers | 4,824 | 5,234 | 4,713 | 4,032 | 4,288 |
| Dryers | 3,925 | 4,256 | 3,584 | 2,870 | 3,173 |
| Electric | 2,989 | 3,330 | 2,845 | 2,198 | 2,466 |
| Gas | 936 | 926 | 739 | 672 | 708 |
| Portable Elec. Heaters | 2,925 | 3,170 | 3,625 | 2,990 | 2,748 |
| Humidifiers | 1,150 | 1,225 | 1,100 | 1,031 | 1,246 |

Data Sources: Merchandising Magazine for portable electric heaters and humidifiers. Association of Home Appliance Manufacturers for all other products.

PERCENT OF 1976 DOMESTIC UNIT SALES
THROUGH BUILDER/CONTRACTORS

| | |
|---|---|
| Room Air Conditioners | 4% |
| Dehumidifiers | 0 |
| Dishwashers | 20 |
| Refrigerators | 22 |
| Freezers | 3 |
| Electric Ranges | 7 |
| Washers | 2 |
| Dryers | 2 |
| Portable Electric Heaters | NA |
| Humidifiers | NA |

Date Source: Merchandising Magazine

## ASSOCIATION OF HOME APPLIANCE MANUFACTURERS

### MAJOR APPLIANCE MEMBERS

Absocold
Addison
Arvin
Blackstone
Boston Stove
Broan
Carrier
Design & Mfg.
Ebco
Fedders
  Airtemp
  Norge
  Fedders Refr.
Friedrich
General Electric
  Maj. Appl. Bus. Grp.
General Motors
  Frigidaire Div.
Gerling Moore
Glenwood Range
Hardwick
Hoover
In-Sink-Erator
  Div. of Emerson Elec.
Jenn-Air
KitchenAid-Hobart
Litton
Magic Chef
  Gaffers & Sattler
Maytag
McGraw-Edison
  Air Comfort
  Modern Maid
  Speed Queen
  Int'l. Metal
    Prods. Div.
Nat'l. Union Elec.
  Emerson Qt. Kool
Preway, Inc.
Revco Inc.
Rockwell Int'l.
  Admiral
Roper
Tappan
  Anaheim
  O'Keefe & Merritt
Vernco
West Bend
Whirlpool
White Cons. Inds.
  Athens Stove Wks.
  Franklin-Frz. Div.
  Franklin-Ldry. Div.
  Gibson Products
    Belding
    Gibson Appl.
    Greenville Prods.
  Kelvinator, Inc.
    GR Mfg. Co.
    Kelvinator Appl.
    Kelvinator Int'l.
    Kelvinator Com. Prods.
  White-Westinghouse Corp.
    White-West. Appl.
    White-West. Cons.
    Columbus Prods.
    Mansfield Maj. Appl.
    Edison Prods.

### PORTABLE APPLIANCE MEMBERS

Aluminum Specialty
American Electric
Arvin Industries
Capitol Products
Clairol Inc.
Conair Corp.
Farberware
General Electric
Gillette
Hoover
Intermatic, Inc.
KitchenAid-Hobart
Markel Electric
McGraw-Edison
  Port. Appl. & Tool
  Time Prods.
Metal Ware
Mirro Aluminum
National Presto
Regal Ware
Richmond Cedar
Rival
  Titan
Salton
SCM Corporation
  Proctor-Silex
Scovill
  Dominion
  Hamilton Beach
Son-Chief
  Black Angus Div.
Sperry Remington
Sunbeam
  Oster
Superior Electric
Vita Mix
Waring
Wear-Ever
West Bend

ASSOCIATION OF HOME APPLIANCE MANUFACTURERS

MAJOR APPLIANCES

| | | |
|---|---|---|
| Compactors | Ranges | Humidifiers |
| Disposers | Microwave Ovens | Refrigerators |
| Dishwashers | Clothes Dryers | Food Freezers |
| Dehumidifiers | Clothes Washers | Room Air Conditioners |

PORTABLE APPLIANCES

| | | |
|---|---|---|
| Air Heaters | Fondues | Knives |
| Blenders (2 pc. unit) | Fry Pans (Skillets) | Lighted Mirrors |
| Broilers | Griddles | Manicure Sets |
| Can Openers | Hairdryers | Massagers |
| Clocks | Hair Setter | Mixers (Portable) |
| Coffeemakers | Hamburger/Sand. Grills | Mixers (Stand) |
| Drip Coffeemakers | Heating Pads | Shavers |
| Coffee Mills | Hot Lather Machines | Slow Cookers |
| Coffeemaker Urns | Hot Plates | Steam Clothes Wands |
| Cookers-Egg | Ice Cream Freezers | Styling Combs |
| Cookers-Multi-Purpose | Ice Crusher | Timers |
| Corn Poppers | Irons (Dry) | Toasters |
| Curling Styling Wands | Irons (Steam & Spray) | Waffle Irons |
| Fans | Juicers | Warming Trays |
| | Kettles | |

Mr. SHARP. We will hear from all our witnesses and then open the panel to questioning. I believe Mr. McConnell is second on our list.

**STATEMENT OF DAN McCONNELL, VICE PRESIDENT, PLANNING DIVISION, AMANA REFRIGERATION, INC., AMANA, IOWA, ACCOMPANIED BY RICHARD D. MAXWELL, SENIOR VICE PRESIDENT, ENGINEERING**

Mr. MCCONNELL. Thank you. We have prepared a fairly lengthy written statement and submitted it for the record, but if I may just verbally summarize what we have had to say.

My name is Dan McConnell, vice president of planning with Amana. With me today is Mr. Richard Maxwell, who is our senior vice president of engineering.

Mr. MCCONNELL. In short, Amana is now and has been for some time in favor of mandatory minimum efficiency standards.

For some five years our company has been pursuing a development program, an engineering program to develop more efficient appliances in all the categories in which we manufacture. That includes a number of covered categories, including room and central air-conditioners, refrigerators, freezers and ranges.

We have favored minimum efficiencies and we do favor it on a Federal level. We have worked with the people in California very closely and have not opposed their activity, but we would certainly and clearly prefer to see that the minimum efficiencies would be enacted on a Federal level, for obvious reasons. With the prolifera-

tion of different standards in different States it becomes clearly impossible to distribute product on a national basis.

However, the reasons that we have proposed that minimum efficiency standards should be enacted are that from an engineering point of view it provides a clear goal, a clear target for which people can work. It provides a clean-cut administrative basis.

We have not been in favor of the sales-weighted average approach, partly because of the amount of sales data that has to be submitted and the sensitivity of that data and the difficulty in administering it. We have very simply decided to cut a path and, in every new product that we develop, take a strongly energy-efficient orientation in the development of those products.

We think that the standards, when they are developed, and we assume they will be, should be based on performance and not design. It should leave latitude for innovations because there will be significant changes in technology.

We think that technological advances are certain to occur in the next few years. We would like the opportunity to incorporate as much of that new technology as possible. The standards should be reasonable in attainment but ambitious, so that the national goal of energy conservation is attained.

Thank you.

[Mr. McConnell's prepared statement follows:]

STATEMENT OF DAN MCCONNELL, VICE PRESIDENT, PLANNING, AMANA REFRIGERATION, INC.

My name is Dan McConnell and I am Vice President, Planning of Amana Refrigeration, Inc. I am accompanied this morning by Mr. Richard D. Maxwell, Amana's Senior Vice President, Engineering. We are delighted to have an opportunity to express our views on H.R. 6831 which we consider to be one of the most important pieces of legislation facing this Congress in view of the energy crisis confronting our nation. Before outlining our position for the Subcommittee on this bill, we would like to very briefly identify our company and the products it manufactures.

Amana Refrigeration, Inc. was founded in 1934 and is a manufacturer of quality appliances for the home. In our Amana, Iowa plant we manufacture refrigerator-freezers, chest and upright freezers, and Radarange® microwave ovens. In our Fayetteville, Tennessee plant we manufacture room air conditioners, central heating equipment, compactors, dehumidifiers, and microwave ovens. Late this summer we will begin manufacture of electric ranges, in a new facility in Fayetteville, Tennessee.

It is our understanding that H.R. 6831 proposes to amend the Energy Policy and Conservation Act so as to authorize the Federal Energy Administration to promulgate mandatory federal energy conservation standards for appliances. Amana supports this concept as embodied in H.R. 6831 and hopes that this Subcommittee will approve Part B Subpart 1. Only through the promulgation of federal mandatory standards would the appliance industry be able to manufacture its products uniformly for sale throughout the United States without the fear of varying state standards. Also only with federal mandatory standards will the consumer be able to purchase energy efficient appliances throughout the country irrespective of where the consumer lives. Such a mandatory approach by the federal government will be beneficial to both appliance manufacturers as well as consumers and will certainly result in energy efficiencies which is the main purpose of this legislation.

As a part of our basic belief in building a quality product, we have emphasized good design, construction and quality control in order to offer better performance and reliability. And for many years, we have promoted the benefits of better design, including lower electrical or gas consumption, hence lower operating cost versus a somewhat higher initial purchase price. In other words, we are quite familiar with the principle of promoting more efficient appliances, even when the cost of energy was relatively low.

For example, we have manufactured and sold electric heat pumps since 1956. We began development of central heat pumps in 1954. Although heat pumps offered dramatic reductions in electricity consumption over electric resistant heating systems, the high initial cost of heat pumps and certain early reliability problems inhibited the growth of the heat pump market. By the early 1970's even with major improvements in reliability there were only five remaining manufacturers. During this period Amana persisted in promoting the efficiency advantages of heat pumps. Today, of course, the increased cost of electricity has created a boom market for this product, and deservedly so.

In addition, Amana has since 1958 manufactured a line of window type air conditioner-heat pumps, a product that is manufactured by relatively few companies, and which offers genuine efficiency advantages especially in moderate climates.

Another energy saving product emphasized by Amana is the combination electric cooling-gas heating system for the home with the Heat Transfer Module ("HTM®"). This device has been called the first major breakthrough in heating technology in years. The HTM® is an advanced type of burner/heat exchanger, the basic technology of which was derived from aerospace research. On the basis of independent laboratory tests, gas fuel consumption can be reduced from 22% to 26% for various northern cities as compared to a conventional gas furnace. Amana began development of the HTM® system in 1966. After several seasons of field testing, we moved to full-scale marketing of HTM® systems in 1971. A recent improvement in these systems has raised the EER of the cooling side of these systems up to 8.9.

The HTM system incorporates direct spark ignition, thereby eliminating standing pilot lights. In addition we have manufactured a line of convention gas furnaces with direct spark ignition since late 1975. The elimination of the pilot light significantly reduces the annual consumption of gas.

In refrigerator-freezers, Amana introduced energy saver controls into the market in 1965. These controls, currently the subject of heavy market promotion, permit the user to switch off antisweat heaters when they are not necessary to prevent condensation. In most climates, and for most of the year, humidity conditions are not great enough to require that these heaters be energized, hence the logic, pioneered by Amana, that a control be provided to switch them off when they are not needed.

Also, in 1965 Amana introduced a new line of Deepfreeze® Chest Food Freezers with polyurethane foam insulation. These chest freezers were so well insulated, that the entire Amana line will meet the new California minimum efficiency standards without change.

In 1973, Amana began work on a radically new refrigerator-freezer design that incorporated all of the latest technology in refrigeration such as thick wall polyurethane foam liners, radiant shell condensers and low wattage fan motors. This design was virtually identical to that proposed in a study published by the Massachusetts Institute of Technology in 1974. The Amana design concept was presented in a technical paper before an ERDA sponsored conference in May 1976. The new design was put into full scale production in August 1974.

In late 1974, Amana began development work on a further refinement of this concept and a massive retooling of refrigerator-freezers, and upright freezer production lines. This activity has led to the introduction in January 1977 of our new "2 plus 2½" line of refrigerator-freezers and freezers. These models in a wide selection of capacities incorporate 2 inches of foam insulation around the refrigerator section and 2½ inches around the zero degree freezer where it is needed the most. All of these models represent a major reduction in electricity consumption over conventional refrigerators.

Similarly, we have undertaken wide-scale development programs in central air conditioning and room air conditioning products to produce air conditioners with EER's from 7.7 to 10.1, all of which are considered to be in the high efficiency category.

In microwave ovens, which are an inherently efficient cooking product, Amana has shown the highest efficiencies of any brand tested in independent laboratory tests. Amana also undertook a large scale study of the comparative efficiency between microwave ovens and conventional electric ranges in 1973. The technical report describing this study was chosen as the best microwave paper of 1974 by the International Microwave Power Institute.

In briefly describing our overall corporate program for the design of more efficient appliances, we do not mean to imply that the task is not difficult. To incorporate all of the latest technology in appliance efficiency, while creating a product that fulfills the needs of the consumer, and to do so for a reasonable cost, is a formidable task indeed. It is being accomplished at Amana primarily because we started with

basically efficient designs many years ago, and because we have pursued a comprehensive plan to improve all of our product efficiencies for the past five years. We still have a great deal of work ahead of us and we are pursuing it diligently.

The investment is very great. The new "2 plus 2½" line of refrigerator-freezers alone required an investment in excess of 9.5 million dollars. And Amana is not the largest manufacturer of refrigerators and freezers.

Prior to addressing the subject of federal minimum efficiency regulations for appliances, we would like to make reference to the minimum efficiency standards recently enacted by the State of California. These standards, which apply to refrigerator-freezers, freezers, room air conditioners, and central air conditioners—can be met, but not without difficulty, when the standards go into effect in November 1977. We expect to meet the California standards with few exceptions. When our industry filed suit against the State of California to overturn these standards, we chose not to participate. In fact, we have resigned from our industry association.

Amana Refrigeration, Inc. favors mandatory federal efficiency standards for appliances, as long as the standards are based on performance criteria that are feasible to attain.

Amana encourages continuing progress in the current program to issue test procedures based upon current industry test methods. These test procedures provide a uniform method by which engineers may evaluate the efficiency for an appliance, and they provide a sound data base on which progressive improvement can be measured.

Amana respectfully suggests some reconsideration of the format on appliance efficiency labels as set forth in §324 of the Energy Policy and Conservation Act. §324 delegates to the Federal Trade Commission the authority to prescribe labeling rules. §324(c)(1)(B) requires that the rule must require the label to disclose "information representing the range of estimated annual operating costs for covered products . . .". Amana requests that Congress amend the Energy Policy and Conservation Act so as to delete §324(c)(1)(B) so that the requirement for range labeling will be removed. The reason that Amana suggests that deletion of the range requirement is that we would opt to begin labeling our appliances as soon as the labeling format were finalized by the Federal Trade Commission, thus implementing the Act as early as possible. But we can not do so. Under the current method we must wait for all of the industry figures to be filed and authenticated so that the official range of values can be established for each appliance category, before we could proceed. In addition, every time a manufacturer of the worst or best model in a category, makes a design change, the label will be incorrect and obsolete. This concept appears unnecessarily complex and counterproductive. The label could be simplified and the program stepped up to requiring that a manufacturer show his own consumption figures on the label and not the industry range.

Even though Amana opposes the label which contains the range of estimated annual operating costs, Amana does support the cost of operation concept as the basis for energy efficiency labeling. Cost of operation permits the consumer a means of calculating the "payback" on any initially higher cost that might be paid for a more efficient appliance. However, there are many products that would benefit by adding another measure, such as EER or kilowatt hours, to the label to avoid misleading the consumer. Therefore, we would urge that both cost of operation and a measure of consumption be stated on a label.

Amana favors the minimum efficiency proposal. It provides a simple clear-cut target toward which the design engineers can work. It is administratively simple, dispensing with the necessity for filing sales figures, a matter of some controversy due to the sensitive nature of such company figures. Furthermore, a minimum standard is inherently fair snce it provides the same objective to all parties. And finally, the federal minimum standard promises uniform national criteria which permits an orderly program of product development and efficient investment of equipment and facilities. The only requirement, to assure the accomplishment of the effective conservation of energy, is that minimum efficiency standards be based upon attainable technologies reasonably applied.

The task of improving appliance efficiencies is not as simple as some would maintain. Sound engineering principles must be applied so that the resulting product is reliable and performs satisfactorily for the consumer. And the end product must be reasonably priced.

In addition, there are some important components that affect appliance efficiency that are not always under the direct control of the appliance manufacturer. In these areas, we can only attempt to convince suppliers that efficiency improvement should be made in the products that they supply to us. For example, Amana does not

manufacture motors such as fan motors, evaporator motors and the like that are used in neary every appliance. By working with one motor manufacturer over several years, we were able to reduce the consumption of an evaporator fan motor from 54 watts to only 12 watts. We need cooperation and investment from compressor manufacturers and motor manufacturers, and we need technological improvement in insulation and refrigerants. Any breakthrough in these universally used products would have enormous leverage in reducing energy consumption by the entire industry.

Our country's need for conservation of energy is clear. And a federal minimum efficiency standard for appliances is a straightforward step in its accomplishment. Amana Refrigeration, Inc. is in favor of this program.

Mr. SHARP. Thank you.

Mr. Davis, you are next on our list.

## STATEMENT OF HOWARD C. DAVIS, PRESIDENT, DELMARCO MANAGEMENT LTD., LANGLEY, BRITISH COLUMBIA

Mr. DAVIS. My name is Howard Davis and I prepared a rather lengthy statement as well. What I would like to do is leave that with the committee, but I will summarize my material.

Mr. SHARP. We will make all those statements a part of the record.

Mr. DAVIS. We are a firm, Delmarco Management, Limited, Vancouver, British Columbia, that is significant in the housing field in Canada. We are land developers, housing contractors, and responsible for marketing.

We have been interested in the thermal efficiency of homes and building technology and its interface with appliances and how the two systems relate, the appliance system, the inputs of energy in the house, as well as the house itself as a structure.

We have worked closely with the National Research Council in Ottawa to develop solar energy building standards in Canada. We have now a contract to do a solar housing project and we are currently negotiating for a Federal provincial large subdivision to demonstrate alternative technologies both in building and in heating systems for the 1980s.

I would like to comment on some work that we did at Boeing, the commercial airplane company, on clothes driers and the reception of the industry, particularly in the United States, the relationship with the National Bureau of Standards, and make some suggestions so that perhaps some of the loopholes that seem to have arisen, which more or less excludes viable technologies to increase the efficiences of an appliance, could be closed in your legislation.

We noticed, starting in 1975, that the clothes drier caused a great deal of exhaust loss to the house when the furnace is heating the house up. The clothes drier sends out about 150 cubic feet of the house's air in a minute. In an 1,100 square foot house there is complete air change forced on the house in the heating season, where all of the interior of the house air in one hour is blown outside and the house has to absorb that heat again.

What we wanted Boeing Air Flow Engineering's section to do was to design a way so that the house would not have to absorb that loss. So we had Boeing do an air flow analysis of new General Electric, Westinghouse, Whirlpool, Frigidaire, Speed Queen, Maytag, and Kelvinator driers, all American driers.

We in Canada have all of our major appliances supplied by the manufacturers of appliances in the United States. So we in Canada are concerned that the American standards will not necessarily be set at minimums which will then be recycled through Canada, because we will have to wind up pretty much living with the American standards in a de facto sense, having to have the same kind of energy efficiency for appliances that are down here.

So what we did was, we participated with hearings at the Federal Energy Administration. I would like to make a compact statement on certain concepts about the importance of appliance efficiency to utility planning in Canada and in terms of being able to preserve the discretionary income of people, both in the United States and in Canada, when energy prices, passed along by utilities, begin to increase.

The short-term inflationary impact of increased prices for more efficient household appliances is far outweighed by the billions of dollars consumers could save each year in operating costs. The money saved will be spent by American and Canadians, creating more jobs in our respective economies. Without a significant improvement of appliance efficiency now, the doubling of gas and electric costs to the homeowner in the next five to seven years will lower his discretionary income and impair his ability to even buy new apppliances.

During this period, today's inefficient appliances will cause tens of billions of dollars to be lost in consumer purchasing power. Perhaps of equal importance, public or private utilities could save billions in capital equipment expenditures because the appliance load at peak demand would be considerably less with more efficient appliances drawing on the system.

Although appliance manufacturers claim only a small amount of the Nation's total energy consumed is caused by appliances, up to 40 percent of the peak load of a utility is caused by the residential appliance draw. Appliance efficiency improvement is of critical importance for utility planning for the peak loads of the 1980s.

For Ontario Hydro each new kw. of output in generating capacity cost $1,000 to $1,400. Last winter at peak load, Ontario Hydro had 400,000 kw. draw caused by residential clothes driers. This meant $400 million dollars of generating capacity necessary to meet the drier demand. That meant $400 million dollars capital outlay or capital equipment investment in the Province of Ontario alone just to close the clothes drier exhaust.

If Ontario's one million driers were 25 percent more efficient by 1985, the utility could save $100 million in capital costs to meet the drier load at peak demand. By that time new plant costs could be 50 to 75 percent higher.

There are 40 times more driers in the United States than in Ontario. When the whole range of appliances are considered, Canadian utilities could potentially save billions in generating equipment outlays if appliances were 20 percent more efficient, and it would appear tens of billions could be saved by American utilities. Of course, all of these costs are going to be passed on to the consumer.

Now, what I would like to say in terms of the National Bureau of Standards' proposed test procedures—and they are the people responsible in the United States—and in a real sense it is being passed along to Canada for developing the test procedures which will determine what the technological base is to improve appliance efficiency.

Unfortunately, the National Bureau of Standards appliance efficiency section has become involved in compromising the legislative procedures for testing appliance efficiencies establishing targets and offering technical assistance to FEA. The EPCA program will have circumscribed effectiveness if something is not done.

By supporting only limited definitions of energy efficiency, arbitrarily using the systems approach to the analysis of one appliance but not another, and expressions of concern that the program should maintain each manufacturer's market shares, the appliance industry has effectively convinced their former employees now working for the National Bureau of Standards to use the test procedures suggested by AHAM whenever possible and take a circumscribed view of potential efficiency improvements.

Hopefully the comments of the people on this panel indicate that the industry is moving to rectify this situation. But I would like to caution this committee and those in Congress responsible for this legislation that it is well-known that if the industry can control the criteria for the test procedures, it can control the amount of technological innovation it must absorb later in setting efficiency standards.

In Canada, we face the prospect of having the same industry arguments toward test procedures and efficiency standards recycled through United States subsidiary companies. Ontario Hydro suspects the objectivity of the American programs administered by the National Bureau of Standards—and Ontario Hydro is one of North America's largest utilities, having jurisdiction over the whole Province of Ontario, and sells great amounts of electricity to the State of New York, for instance. It so suspects the objectivity of American programs administered by the National Bureau of Standards test procedures that it has set up its own complete laboratory to evaluate the energy consumption of all major appliances marketed by American subsidiary companies in Canada.

In light of these comments, we recommend the following congressional action to correct the inequities under the present EPCA program. These recommendations are consistent with the advice of Virginia Knauer, adviser to the President under the former administration, in her comments of June 1976 regarding the efficiency targets:

One, define the intent of Congress by the use of the term "energy efficiency." Is the reduction of energy waste as well as energy consumption caused by each appliance?

Two, define whether Congress intends that all energy systems necessary for the efficient operation of an appliance should be evaluated in the test procedures. Without this provision, important technological options are circumscribed.

For instance, in the clothes drier, the manufacturers before did not want, and NBS did not think it was wise, to include the energy

consumption in the air going through the drier, heated by the drier in the heating season, as an energy input that was going to be tested in the test procedures.

They claim that that would be the systems approach. At the same time, they will evaluate the water temperature and try to cut that down on clothes washers, going into the clothes washer, and that is a systems approach, because the water does not, you know, get directly heated by the appliance. So that is a systems approach. So consistently apply the systems approach if it is going to be used at all with an appliance.

Three, that Congress maintain effective oversight of the National Bureau of Standards which has technical responsibility in establishing test procedures because so far the group basically in NBS, which has been responsible for the day-to-day decisionmaking on what sort of approach they are going to take toward the appliance test procedures has been made by former employees of the appliance industry now working for NBS.

Four, that Congress mandate standards for all the products listed in EPCA, whenever viable technologies can be used to reduce energy consumption and/or waste. Only then will options such as the exhaust-diverter for clothes driers be used by manufacturers in marketing more efficient appliances.

[Mr. Davis' prepared statement follows:]

DELMARCO MANAGEMENT LTD., WESTERN CANADA, LANGLEY, B.C.

Headquartered in Vancouver, British Columbia, Canada, Delmarco Management Ltd. is a member of a corporate group involved with subdivision development, housing construction, and marketing. We are joint participants with government in demonstrating solutions to current residential energy waste, under a solar housing contract with the National Research Council, Ottawa, and negotiating with provincial and federal governments to do a large scale demonstration of alternative residential building and heating technologies which may later become the basis for legislation.

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TESTIMONY

Delmarco Management Ltd. is committed to provide solutions to residential energy waste. One focus of our attention has been energy consumption and waste pattern of household appliances: heating equipment (gas, oil, electric, solar), hot water heating and usage (clothes washers, dishwashers), and clothes dryers.

Delmarco identified each American and Canadian clothes dryer as an appliance which causes $18 to $50 loss of useable heat each heating season by blowing furnace heated air outside and also by wasting useable heat and humidity generated by the dryer itself. There are about 40 million dryers in homes in the U.S. and about 4 million in Canada. Over 70% of these dryers are located in heated areas of American and Canadian homes either in heated basements or upstairs, causing a net energy loss equivalent of over 150,000 barrels of oil daily in the heating season. A conservative estimate of electric heating would be $250 million.

Delmarco sought to provide a simple and low cost solution to give the consumer the option of stopping the consumption of furnace energy being blown outside and saving the additional useable heat and humidity generated by the appliance. Two years ago, 1975, we discussed solutions to this problem with the senior engineering departments of the American subsidiary appliance manufacturers in Canada. They had done no research into this problem and through the appliance industry controlled Canadian Standards Association Clothes Dryer Subcommittee where American subsidiary companies are represented, they stated "the matter is closed."

Delmarco then commissioned the Boeing Airplane Company Air-Flow Engineering Section in Seattle to test American clothes dryers for energy loss rates caused by

exhausting in the heating season. Boeing analyzed flows of new GE, Westinghouse, Whirlpool, Frigidaire, Speed Queen, Maytag, and Kelvinator dryers. Each of these dryers causes about 150 cubic feet of air to be pushed outside the house during each minute of operation—in one hour forcing outside the total volume of furnace heated air of an 1100 sq. ft. house (the average size of a new American or Canadian housing unit in 1976).

We also commissioned Boeing to refine a simple exhaust-diverter device which the consumer could place in the vent structure to stop the consumption and waste of energy in the heating season but could resume air flow outdoors easily with the simple turning of a switch. This diverter refined at Boeing would retail for less than $15.00, could be simply installed by the consumer, would more than pay for itself the first season, fail-safe if neglected by the consumer, and could be used effectively in at least 50% of American homes.

Exhausting the dryer through a filter in the heating season back into the house to stop unnecessary energy consumption and waste is recommended by major American and Canadian utilities, the National Research Council of Canada's Division of Building Research, and the Department of Energy in Ottawa. Consumers often fail to do this however because the dryer manufacturers do not offer any simple option to take advantage of the opportunity in either Canada or the U.S.

There is no national code prohibiting the uses of dryer energy in the U.S. Further, there is no substantive data on file with the CPSC, EPA, or state and provincial fire and health authorities indicating any hazard to health associated with exhausting indoors in the heating season.

Unfortunately, we have reason to believe there may be a movement among dryer manufacturers to use their dominating control of the subcommittees of the American National Standards Institute to exclude the use of exhaust diverters. This action would be one way to discourage the American and Canadian federal governments from requiring exhaust diverters with new clothes dryers to meet mandatory appliance efficiency standards.

Opposition to the introduction of this technology has never been accompanied by definitive documentation by appliance manufacturers and is symptomatic of opposition to the appliance provision of EPCA, 1975 and the provisions for mandatory standards under the Carter Plan.

The effective carrying out of mandatory energy efficiency standards for all major household appliances under President Carter's Energy Plan is a matter of grave concern to Canadian utilities as well as those companies responsible for delivering energy efficient housing. The following comments and suggestions have the endorsement in principle from the B.C. Energy Commission, B.C. Hydro, and Ontario Hydro which is Canada's largest and one of the continent's largest utility companies.

The short term inflationary impact of increased prices for more efficient household appliances is far outweighed by the billions of dollars consumers could save each year in operating costs. The money saved will be spent by American and Canadians creating more jobs in our respective economies. Without a significant improvement of appliance efficiency now, the doubling of electric and gas energy costs to the homeowner in the next 5 to 7 years will lower his discretionary income and impair his ability to buy new appliances. During this period, today's inefficient appliances will cause tens of billions loss in consumer purchasing power.

Perhaps of equal importance, public or private utilities could save billions in capital equipment expenditures because the appliance load at peak demand would be considerably less with more efficient appliances drawing on the systems. Although appliance manufacturers claim only a small amount of the nation's total energy consumption is caused by household appliances, up to 40% of the peak load for a utility is caused by the residential draw. Appliance efficiency improvement is of critical importance for utility planning for the peak loads of the 1980's.

For Ontario Hydro, each new kw of output in generating capacity cost $1,000 to $1,400. Last winter at peak load, Ontario Hydro had 400,000 kw draw caused by residential clothes dryers. This meant $400,000,000 of operating capacity necessary to meet the dryer demand. If Ontario's 1,000,000 clothes dryers were 25% more efficient by 1985, the utility could save $100,000,000 in capital cost to meet the dryer load at peak demand. By that time, new plant costs could be 50 to 75% higher. There are 40 times more dryers in the U.S. than in Ontario. When the whole range of appliances are considered, Canadian utilities could potentially save billions in generating equipment outlays if appliances were 20% more efficient. It would appear that tens of billions could be saved by American utilities.

In the past, appliance manufacturers have claimed that the free market and their own voluntary efforts to improve efficiency would solve the problem of inefficient

equipment.Both reason and experience indicate that this approach is not in the best interest of public. It does not work.

There is not a "free market" in the classic sense of the term in the appliance field in North America. There are a relatively few very large major household appliance manufacturers which dominate and control the consumer options. The consumers are continually bombarded with heavy advertising by companies whose marketing strategies at any point in time may stress reliable service, initial price only, various features, the appliance color, status appeal, and usually in the guise of the best deal in town. In this confusion of 'best deals', the millions of purchasers of major appliances cannot be expected to sort the many competing priorities and buy more efficient appliances.

Since the passage of EPCA, the major white goods manufacturers have consistently down played the significance of appliance efficiency at FEA hearings here in Washington and in similar forums in Canada. Before EPCA passed, I was told by AHAM in Chicago that the manufacturers opposed the legislation and Delmarco was told by North America's largest retailer of laundry appliances a few days before FEA hearings that our testimony would be opposed not on its substance but "because we don't want the targets set high and options shoved down our throats."

In this climate, manufacturers are reluctant to introduce new technologies which the government may later require. A consensus has formed through the manufacturers trade assocation which to a remarkable degree determines the amount of technological innovations any one company will introduce. It is fearful of introducing new options.

Unfortunately, the National Bureau of Standards appliance efficiency section has become involved in compromising the legislated procedures for testing appliance efficiency, establishing targets, and offering technical assistance to FEA. The EPCA program will have circumscribed effectiveness. By supporting only limited definitions of energy efficiency, arbitrarily using the systems approach to the analysis of one appliance but not another, and expressions of concern that the program should maintain each manufacturer's market shares, the appliance industry has effectively convinced their former employees now working for the National Bureau of Standards to use the test procedures suggested by AHAM whenever possible and take a circumscribed view of potential efficiency improvements. It is well known that if the industry can control the criteria for the test procedures, it can control the amount of technological innovation it must absorb.

In Canada, we face the prospect of having the same industry arguments recycled through U.S. subsidiary companies. Ontario Hydro so suspects the objectivity of American programs administered by the National Bureau of Standards (test procedures) that it has set up its own complete lab to evaluate the energy consumption of all major appliances marketed by American subsidiary companies in Canada.

In light of these comments, we recommend the following congressional action to correct the inequities under the present EPCA program. These recommendations are consistent with the advice of Virginia Knauer, advisor to the President under the former administration in her comments of June 1976 regarding the efficiency targets.

1. Define the intent of Congress by the use of the term "energy efficiency". Is it the reduction of energy waste as well as energy consumption caused by each appliance?
2. Define whether Congress intends that all energy systems necessary for the efficient operation of an appliance should be evaluated in the test procedures. Without this provision, important technological options are circumscribed.
3. That Congress maintain effective oversight of the National Bureau of Standards which has technical responsibilities in establishing test procedures.
4. That Congress mandate standards for all of the products listed in EPCA whenever viable technologies can be used to reduce energy consumption and waste. Only then will options such as the exhaust diverter for clothes dryers be used by manufacturers in marketing more energy efficient appliances.

Mr. SHARP. Thank you, Mr. Davis.

Mr. Hudelson.

## STATEMENT OF GEORGE D. HUDELSON, VICE PRESIDENT, ENGINEERING, CARRIER CORPORATION, SYRACUSE, NEW YORK

Mr. HUDELSON. I am George Hudelson. I am vice president of engineering for Carrier Corporation in Syracuse, New York, and director of the corporation's research division.

I am here today to offer some insights and opinions which may be useful in your discussion of energy-efficient standards for consumer products. I realize that the committee has a massive amount of work to be done and not much time in which to do it. Therefore, I will make my remarks as brief and concise as possible.

As background, let me tell you about the company that I represent. Carrier Corporation was founded in 1915 by Dr. Willis H. Carrier, who developed the first scientific air-conditioning system. Through the years the corporation has been the leader in technological development of air-conditioning and related equipment. It is by far the industry's largest producer, both in this country and abroad.

Carrier Corporation is a billion-dollar corporation employing some 24,000 people. We have 33 plants in 8 States and 10 foreign countries. Our products range from small window air-conditioners to huge 10,000-ton refrigerating machines.

For the past few years, the air-conditioning industry has undergone a considerable amount of turmoil for lack of a comprehensive national energy policy. As you know, a number of State and local governments have taken the initiative in proposing or adopting energy efficiency standards for air-conditioning. A continuing multiplicity of State and local standards could result in massive confusion and higher costs in the marketplace.

Therefore, Carrier Corporation welcomes the prospect of minimum standards of efficiency, so long as these standards are national and preempt all others, whether higher or lower. Strong Federal preemption will prevent conflicting situations which will be impossible for manufacturers to meet when their products are marketed nationwide. It will also assure lower cost to consumers, since a single product could be marketed in all 50 States.

It is the position of Carrier Corporation that minimum standards are needed to help achieve national energy conservation goals. However, these standards should be used as a floor to stimulate improvement of energy use in heating and cooling. They should not interfere with marketing and engineering development efforts to reach even higher efficiencies.

In other words, such standards should ban the energy guzzlers. At the same time, they should leave manufacturers free to design even higher efficiency equipment which can be sold at a higher first cost in areas where climate and utility rates make it possible. Too high a standard could be destructive to our industry and would discriminate by income class and geographical area.

The establishment of standards also should take realistic account of the time required to develop and produce higher efficiency models. The time periods may range from three years for modification of existing models to five years or more for major developments. It is also important to allow sufficient time for manufacturers to make sure that newly developed equipment is reliable and cost-justified.

Of course, there are a number of ways in which minimum standards may be set. The most obvious, and perhaps the simplest, is the establishment of minimum energy efficiency ratios, or EERs. This is the approach that several States have taken.

We believe it is also important to consider the seasonal performance of heating and air-conditioning equipment, which is a much more meaningful way of measuring true operating costs and efficiency. Efficiency ratings currently are established at one prescribed set of test conditions. Seasonal performance allows consumers to take into account the actual conditions under which their heating and cooling equipment must operate. Seasonal energy use will vary widely throughout the United States, depending on climate, geography and hours of operation.

Seasonal performance is of special importance in connection with heat pumps, which can cut energy consumption by as much as 50 percent when compared to electric resistance heat.

Granted, seasonal performance is a more complicated means of measuring energy efficiency. But much of the work toward establishing test procedures already has been done. The Federal Energy Administration and the National Bureau of Standards are completing development of test procedures which will enable a realistic determination of seasonal performance.

Seasonal performance also is the best way of measuring the efficiency of heating products. The steady-state method of testing gas furnace efficiency, for example, does not take into account such energy-saving devices as automatic flue dampers and intermittent pilot lights. A seasonal performance method, however, would include these energy-saving features as a part of the test and thereby encourage their widespread use.

With regard to standards for room air-conditioners, seasonal performance could be taken one step further to the life-cycle cost method, which is now being used by the GSA and other government agencies. Through this approach, the standards are higher in areas where the weather is hottest and the cooling season the longest.

We would suggest that the Nation be divided into several zones, with a different standard for each zone. This technique recognizes wide variation in energy usage that exists and would not impose a substantial economic hardship on those who live in areas with mild summers.

Carrier Corporation and its research division, which I head, stand ready to assist the committee in any way possible.

I might mention that Carrier Corporation is involved in a wide range of creative activities dealing with the way energy is used, the kinds of energy used and the development of new sources of energy.

Long before the energy crisis became a problem of crisis proportions, the corporation launched a major research and development effort on a new family of residential air-conditioning equipment with much higher efficiencies. These products have been a part of our offering for several years. We also are the leader in the production of heat pumps.

Carrier's energy systems division has a department which is in the business of lowering energy use in large buildings. Another department has been established to design, construct and operate systems to convert solid waste into energy, either heating or cooling or electrical energy. A third department is involved in developing products for the use of solar energy.

Carrier's Elliott division has supplied turbine generators for the geothermal power plant near San Francisco which is developing electricity from steam from hot water emerging from deep in the earth. Elliott research is designing power recovery turbines to tap wasted power in heat-intensive industries such as petroleum refineries. Elliott also is involved in developing equipment for coal gasification and uranium enrichment.

Carrier Corporation spends some $25 million per year on research and development activities, most of it devoted to improving energy efficiency of our products and developing new sources of energy. We have the largest and most sophisticated research facility in the industry at our Syracuse headquarters devoted to air-conditioning.

We have made it a policy to be completely candid with government agencies responsible for standards. We look forward to working with the committee's staff in establishing rational and realizable standards.

Thank you for the opportunity of speaking before you here today. I would be pleased to respond to any questions you might have.

Mr. DINGELL. Gentlemen, the committee thanks you for your assistance to us and for your very helpful statements.

The Chair will recognize my good friend and colleague, Mr. Brown, for the purpose of asking questions.

Mr. BROWN. Mr. Baumgart, do you believe that the language in H.R. 6831 with respect to requiring standards that are technologically feasible and economically justifiable is sufficient to insure that your second condition for supporting the bill, that standards be reasonable, will be met?

Mr. BAUMGART. I believe that the language could be improved upon. We would like an opportunity to suggest improvements.

Mr. BROWN. Have you something prepared that would improve the language in that regard?

Mr. BAUMGART. We will have. I think that the improvement proposed by the Carter-proposed amendments, the ones which specify a number of characteristics that economically feasible and technically sound standards should have, helps a lot. It is in the right direction.

Mr. BROWN. Is that adequate?

Mr. BAUMGART. I would like a chance to study that further. We have had a relatively short time to prepare, as you know.

Mr. BROWN. We have a relatively short time to pass the bill.

Mr. BAUMGART. I understand that.

Mr. BROWN. So after a certain point it will be moot.

I wonder if the industry, AHAM, speaking for the industry or the individual manufacturers through the good offices of AHAM, could provide us with information as to the energy consumption of appliances over their average life by type and relate that to the cost of manufacture of the appliance under the modified standards that might be adopted by the Federal Government?

The point I am getting at here is that we are looking at the mote in the eye of the energy problem apparently. I think appliances and their consumption account for, what, two and a half percent of all energy consumed?

Mr. BAUMGART. About that.

Mr. BROWN. So whether we succeed or fail, the energy conservation effort is not going to be decided in the appliance area?

Mr. BAUMGART. That is correct.

Mr. BROWN. What I am curious about is whether or not we set the standards for the functioning of appliances that modify their manufacturing requirements to a degree that more energy is consumed in the modified manufacturing of the appliances than is saved by the life of the appliance.

In other words, what I want is how much energy it takes to manufacture the various appliances and what that appliance consumes in energy usage over its lifetime. We were told yesterday by, I have forgotten the name—we will supply the name for the stenographer—a member of the National Academy of Sciences, and also an industry spokesman, working for one of the insulation companies, that some of the recommended savings for which tax credits would be given would be counterproductive.

I want to be sure we are not doing that in the appliance industry. If you would supply that for the record as soon as possible, it will be appreciated.

Mr. BAUMGART. We will supply what we can, but it is difficult to give precise figures because of the wide variation in consumer usage and the number of variables involved.

Mr. BROWN. Mr. Hudelson, you testified that the standards establshed by the Administrator should be required to take into account seasonal and geographic differences with reference to air-conditioning. I assume that the air-conditioners in Maine have different demands on them than the air-conditioners in use in Tucson. Can you elaborate on that with reference to other appliances?

Does it vary with things like water heaters and furnaces and so forth, or is the only thing we have to worry about here air-conditioners?

Mr. HUDELSON. The specific reference that I made in my presentation was aimed at room air-conditioners. By nature a room air-conditioner is more sensitive to that type of consideration than, say, a central air-conditioner or a heat pump or a furnace. Frankly, other than in the case of room air-conditioners, which in our jargon would be more nearly in the nature of an appliance, we do not consider central air-conditioning equipment or furnaces or heat pumps as appliances in the sense as has been described here.

Mr. BROWN. Should they be?

Mr. HUDELSON. No, sir, I do not believe they should be.

I would not make the point that I made relative to room air-conditioners for the other categories that I just mentioned. I think what is important to consider here is that when a standard is set that it be a standard which would be reasonably uniformly applicable throughout the geographic United States.

Mr. BROWN. Does that standard need to be varied for refrigerators, for stoves, for hot water heaters?

I want to go back to your suggestion about systems approach, Mr. Davis.

You suggested that we ought to take into account what happens to the exhaust from a clothes drier for instance, or a dishwasher.

That in effect heats the room, does it not, and has some impact on reducing the demand placed on the furnace or increasing the demand placed on the room air-conditioner?

It seems to me if we are going to set those standards, we ought to take all that into account in the determination of combinations of things that are used in the way of appliances.

Now apparently I sense some dichotomy between the two of you here.

Mr. DAVIS. Yes. Would you like me to comment?

Mr. BROWN. I would like for you to comment. I would like to ask one other question and my time will be up and we can conclude with your comment.

I would like to have from the industry the amount of cost added to the purchase price the consumer must pay as a result of the product redesign and standards that we will have to set here for this two and a half percent of energy consumption.

Go ahead.

Mr. DAVIS. Specifically, in the area we looked at, clothes drier exhaust-diverter could save between $18 and $50 worth of heat energy per heating season at current utility rates in the United States, and roughly the same in Canada. Mr. BROWN. Can you quantify that in Btu's?

Mr. DAVIS. In Btu's per cycle, it is around 18,000 Btu's, every time you operate a clothes drier for an hour. This causes a drain on the furnace and the additional usable energy created by the drier itself.

In terms of the normal life cycle cost vis-a-vis the cost of this little technological improvement that could simply be installed by the consumer, it would cost $25 or less, probably at the manufacturing level we would have it out for $5, and then whatever the markups would be.

I am sure that in quantities like the three to four million driers produced in this country every year, with 40 million clothes driers in this country, we are looking at equivalent savings of—if say 50 percent of the people use it—perhaps 150,000 barrels of oil a day, Btu equivalent.

Now the appliance industry has consistently maintained that it is very insignificant, the energy consumption to the appliance, allocated or ascribed to appliances is insignificant with regard to total energy consumption.

That is not really the picture; this is what I was making, from at least the utility standpoint, at least Canadian. There seems to be some difference between a public and utility policy in this regard. At peak load where you have to gear up all your capital outlays to support that peak load, just the household appliance drain in the middle of winter in Ontario can be 40 percent, and the same in New York. This means across the board the big users, the refrigerator, the drier, the clothes washer, all these things, if there was a 20 percent across-the-board reduction in energy, and you could plan on that for the 1980s, it would literally be billions in terms of capital outlays that could be saved to meet the peak demand.

So we are talking about significant amounts. But if you do not take the systems approach you can circumscribe—you will not even get that factor involved in your test procedures, the quantifiable energy due to that test factor in the test procedure.

For instance, in the drier you just measure the current going into the heating coil. If you do not try to recycle waste then that would be inefficient.

Mr. McCONNELL. There is a current contract that the Energy Research and Development Administration has let with Arthur D. Little, and it is progressing, on the use of waste heat from various appliances to recover it for various other economically beneficial purposes, like heating hot water, for instance.

It is probably premature and I could not speak for them as to the outcome of the study, but some of these recovery processes that get into the combination effects of appliances appear to have some economic merit and some of them clearly do not. But the Federal Government is spending money for that right now.

Mr. BROWN. When do we get that information?

Mr. McCONNELL. I would presume from ERDA or Arthur D. Little.

Mr. BROWN. Not where, when?

Mr. McCONNELL. I am not sure. We are not participating directly in it. We have related with it. I think they are no more than 90 days away from the completion of the contract. They have already done a lot of work. There is information from it presently.

Mr. DINGELL. The time of the gentleman has expired.

The Chair recognizes the gentleman from Indiana, Mr. Sharp, who graciously presided over the subcommittee this morning for the Chair while I was detained elsewhere.

Mr. SHARP. Thank you, Mr. Chairman. I am sorry I missed some of the questions.

Is everybody agreed you would rather have a performance standard than more specific design standard?

Mr. BAUMGART. Yes.

Mr. McCONNELL. No question.

Mr. SHARP. Also the same with the State exemption, you want to rule out the possibility of the individual States setting different standards?

Mr. BAUMGART. Strongly.

Mr. SHARP. How about the question I think Mr. Brown raised as to whether or not the Federal Government might set regional standards based on different climates? Is there a difference on that, that there ought to be—I realize we are dealing with different products so it may not be applicable universally. It may not make a difference climate-wise.

Mr. McCONNELL. There are some products where it clearly would not be appropriate. Refrigerators, ranges, products that we manufacture don't have significant regional variations. Subtle, perhaps but minor, not worth incorporating. I think we as a company, speaking for our company alone, would prefer to see more uniform standards just from a design and an administrative point of view, nationwide rather than regional standards, although obviously the point that the gentleman from Carrier raised is pertinent. In the case of heating and cooling equipment, that is.

Mr. SHARP. Let me ask you then in terms of the systems approach, do any of the rest of you have a comment on what Mr. Davis has recommended in trying to set a standard that relates to the use as well as just the operation?

Mr. HUDELSON. I would like to comment on that with a bit of a preface as to my comments.

First of all, there is one point that I want to have clearly understood. I am speaking now in an area that relates to what you would describe as the appliance industry and I do not regard myself as a representative of the appliance industry. I am a member of a corporation which is in the air conditioning and refrigeration industry.

One of our products, window air conditioners, room air conditioners, is in the category of appliances. I want to call to your attention that some things could be accomplished, that from the standpoint of achieving energy conservation might be possible. From the standpoint of what you do to the person for whom you achieve that energy conservation, it would be a tragedy and I can't think of a better example than dumping the vent from a clothes drier into a space where a person is expected to live.

Mr. BROWN. I have a grouch for lint. I think there is testimony on that.

Mr. HUDELSON. That can be answered. What you have to recognize is the comfort of a space. The air conditioning involves things other than temperature control. One of the most important is humidity control. A clothes drier is a very major producer of humidity.

If this is the purpose, there are other ways to accomplish that same end result, like instead of taking the air into the drier from the occupied space, bring it from outdoors, heat it and discharge outdoors. But don't impose on a space where people are going to live the discharge from a clothes drier. I am speaking as an engineer here, not as a member of the appliance industry.

Things like that are going to have to be considered in terms—you are not getting into prescriptive type things rather than performance and I would encourage you to think along those lines. Similar points can be made with regard to furnaces, do we bring air for combustion in from out of doors rather than take air from a space already heated for combustion purposes, and some justification can be made for doing that. But we have never considered dumping the exhaust of the furnace into an occupied space instead of dumping it outside for purposes other than humidity concerns.

Mr. SHARP. Did you wish to comment on the systems approach? You looked as if you were going to a moment ago.

Mr. MCCONNELL. Mr. Maxwell might, but again as an engineer by background, having worked on standards development, I think there has been a sincere effort on the part of the people participating in the standards committees, whether AHAM, or ANSI, or others, to develop sound standards. These, of course, apply strictly to a given appliance and not as a general "systems approach" in a home. But nonetheless the very process is one of compromise.

One could take almost any narrow technical point of view and argue against the way a certain standard is written. But there is in the end a need to compromise, have a reasonable standard that does not limit technical development and then get on with it. We could debate the permutations and combinations of standards for years and having participated in that process, it takes, unfortunately,

years. If we were to rewrite all the standards we have now, we would never get there.

Mr. DAVIS. Yes, Mr. Sharp. What is interesting here is that the National Research Council in Canada, to building contractors, as well as the Energy, Mines and Resources Department in its energy conservation book, suggests that people have the flexibility, for instance, with the clothes drier; in the heating season when you need humidity you exhaust it indoors and this is what Boeing did for us, they created a failsafe device. You had the option of using it when you wanted to. It is the heating season when humidity is needed. Most of the year you don't want it. But it is well known and could be done in Canada and in the Upper Midwest, for 5 years.

We checked with the Consumer Product Safety Commission, major utilities. They actually suggest you save the humidity instead of from a humidity standpoint, instead of spending more Btu's on inputting water into your air in the heating season, almost everybody has humidifiers in Canada and certainly in the main part of the Midwest in the United States, use what normal processes in the house create humidity first.

We have done work with the University of Minnesota, Honeywell and what-not: Is it okay? Can the house absorb? That kind of thing. It is the flexibility we are talking about, first of all, analyzing what the total energy consumption of appliance is and then the flexibiity to see what kind of design options with a minimum of consumer education can do. And really the appliance industry's approach to us has been, when we have brought them to these various technical considerations, we don't like the legislation in the first place, we don't want to be regulated, quite frankly, if anyone of us steps out and offers any particular technological improvement, it might be shoved down our throats. That is the reality in the marketplace.

We are looking at the thermal efficiency of the house, yes. This is not our bread and butter. But things can be done. There are always the trade offs. There can be engineering solutions with consumer education.

Mr. SHARP. Thank you.

Mr. DINGELL. The time of the gentleman has expired.

The Chair recognizes the gentleman from Michigan, Mr. Stockman.

Mr. STOCKMAN. Mr. Davis, you had a very clever argument, maybe not quite clever enough, regarding the share of total energy attributed to appliances.

The industry in the past has tended to use the de minimis argument, "We are only 2 or 5 percent, so don't hassle us." I think you made a valuable point when you say look at the demand made on the peak load of the system, up to 40 percent in Ontario, lower percentages elsewhere but still up in that range. Then you talk about a particular range of energy savings that could be important. But you have implied this should be done through product efficiency improvement.

I think you would agree with me, because you seem to have a very sophisticated understanding there, that any approach we follow ought to use the least-cost strategy. In other words, if we

identify a problem, we ought to look for the total research least-cost strategy in the implementation.

Wouldn't a change in utility pricing policy, particularly peak load pricing, which would shift the time of day at which appliances are used, probably be far less costly in terms of its draw on total resources than would very stringent appliance product standards and if that is the problem you are concerned about, at least from that angle, that respect, wouldn't a utility pricing strategy be better than an appliance efficiency strategy?

Mr. DAVIS. I think that it is really a combination of both strategies. No. 1, there is controversy from one utility to another in that area. Private American utilities, I can't speak for American utilities, but I have had discussion with the senior management people at the Edison Institution in New York, I had a meeting with them in February in their offices on Park Avenue, and they suggested that we would rather look at perhaps a combination of both.

The point is you are going to have to impact people's living style, and we don't know if people are willing to turn their clothes drier on and turn it off in reality in the 1980s at any particular point in time.

Mr. STOCKMAN. We could debate that and discuss it. The point I am trying to make is if you identify the problem there are various ways to get at it.

Mr. DAVIS. Definitely.

Mr. STOCKMAN. We shouldn't assume that the entire burden of relieving that peak load problem which you have pretty thoroughly identified should fall on a product efficiency standard.

Mr. DAVIS. It also means there is less energy consumption going through in a total and aggregate sense.

Mr. STOCKMAN. There you get back to the 2.7.

Mr. DAVIS. Right.

Mr. STOCKMAN. I don't know where you got the 150,000 barrels a day.

Mr. DAVIS. From your subcommittee report.

Mr. STOCKMAN. I will have to look at that figure because it seems unrealistic to me in terms of the total energy consumption. I would like to ask the whole group here a question.

One thing that bothers me about this section of the bill is that it is very vague and elastic. It is kind of an enabling act which tells of the FEA to adopt an energy efficiency program for appliances.

Do you have any idea of what kind of reductions we are looking for at some base level in terms of energy consumption? It really doesn't give us any idea of what time frame we are dealing with. It doesn't give us any idea of how soon industry would be expected to comply, what the interim standards would be, and what the final standards would be and so forth.

Do you feel that this committee ought to elaborate on the language in this legislation in order to provide some clear guidance as to when we want ultimate standards to be achieved, how soon interim standards could be required of industry after they have been published in final form by the FEA, and then finally and most importantly, what do you consider to be realistic ranges for reduction from some base level?

I think all of you know in April of 1976, I think it was, FEA published some target reduction ranges, and to just give you a couple of figures for the mandatory items included in this bill, under standard conditions of utilization and so forth, for freezers they indicated a target range of 33 to 40 percent; for electric ranges it was 8 to 20; for gas ranges it was 43 to 50; for refrigerators and freezers, 43 to 50. I am sure all of you are familiar with these published targets.

Do you think those are realistic; if they are realistic, in what time frame, taking a series of interim standards to get to it and so forth? Could any of you respond to that?

Mr. BAUMGART. The Association of Home Appliance Manufacturers and many of its members presented testimony on that in hearings FEA had in connection with those proposed targets. The trade offs, the advantages, the consequences were discussed in a great deal of detail then.

I believe that the 20 percent overall from the 1972 base to 1980 listed in the voluntary Department of Standards program was thought to be tenable by most of the industry, and that they were working toward it.

Now there have been so many other things and so many developments that we have lost time.

Mr. STOCKMAN. For the mandatory items indicated in the bill, most of the target ranges they specified last year are twice that.

Mr. BAUMGART. Yes.

Mr. STOCKMAN. This is what I am trying to get you to respond to.

Mr. BAUMGART. They were within wide ranges as I remember them.

Mr. STOCKMAN. Thirty three to forty for freezers.

How does that sound? Does that sound economically or technologically feasible and economical?

Mr. BAUMGART. I would urge upon you the testimony that we presented at that time, because they are from men who had done research at the time, and I believe that the testimony is still sound and current.

Mr. MCCONNELL. The two concepts of proposed goals and minimum efficiencies are difficult to translate from one to the other. The goal program provided, of course, a range, and it was intended to show industry sales weighted average improvement over a 1972 base year.

Mr. STOCKMAN. By product?

Mr. MCCONNELL. By product, right.

In a specific case of a freezer, it is certainly technically feasible to achieve that goal range. Our comments at the time, and I think the AHAM comments were similar, was that somewhere in between, depending on the product, somewhere between the proposed minimum and maximum the goal was reasonable to achieve, but that work has not been finalized.

Mr. STOCKMAN. We will take a look at that material but what I am getting at here is the question that Mr. Brown asked earlier.

Are you satisfied with that language? It seems to me that technologically feasible and economically realistic and possible can mean anything that the administering agency wants it to mean. Even

some of the definitions we have in the act in terms of what it means are pretty elastic and vague.

Do you think we ought to do more to tighten that up? Should we include target numbers, for instance, indicating ranges?

Mr. BAUMGART. We will attempt to submit additional language. I think that to try to be specific for each product at this time would be quite difficult without more research than we have done. I would recommend against numbers.

Mr. BROWN. Will you yield at that point? They are going to get specific.

Mr. BAUMGART. That is right.

Mr. BROWN. Are you saying that the research has not been done, that nobody is going to know how to get this job accomplished?

Mr. LYNCH. I am with General Electric.

I think you are asking a question that is incapable of being answered. You are asking that since we have targets on the averages, why shouldn't we have some understanding of what kind of equivalent accomplishment could be done with minimums?

The problem is that some of the accomplishment on the averages occur because of efficiency gains at the higher end of the spectrum, and some occur at the middle and some occur at the low end. When you move into the minimum standard process you are in a totally new category. You are trying to truncate that which you produce, and you are saying these are the products below which we don't want to go, and it is not possible to imply that the average improvement level is going to be the minimum.

You are in a whole new sphere of opportunity here, opportunity or problem, whatever you want to call it. This has to be totally developed. There is no way to answer your question because part of the improvement on averages are up in the higher efficiency areas.

Now we are presented with a problem with minimums of trying to determine what is an equitable minimum to cut out the so-called guzzlers. It is a different concept entirely.

Mr. STOCKMAN. Thank you.

Mr. DINGELL. The time of the gentleman has expired.

The Chair has questions here that trouble me.

We have two statements, one from Sears and one from Whirlpool in wide variation from each other.

Sears says as follows: "Sears does not agree that mandatory minimum standards is the best way to implement an efficiency program. Rather, Sears would prefer to have a program that averages the energy from the low cost, less efficient units to the higher cost, more efficient units. This would be in the best interest of the consumer."

They go on to say "It is feared that if minimal standards were set, some consumers would be deprived of the choice of buying a low priced, less efficient product that better fits their needs."

Whirlpool says as follows—and throughout their statement I encountered at least four instances where they say "endorses minimum" . . . "Whirlpool believes minimum standards approach to energy savings is the proper solution combined with our recommendations."

Gentlemen, the industry apparently does not have a consensus on this matter. Am I right?

Mr. McCONNELL. Neither of those companies are on this panel.

Mr. BAUMGART. Neither of those spokesmen are on the panel. I believe they are in the room but they have not presented their testimony.

Mr. DINGELL. What I am trying to do is see how we resolve this broad dichotomy that exists in the industry. We want to write you a responsible bill which is possible for you to achieve.

What is the counsel that is given by the industry to the committee with regard to a choice of where we go?

Mr. BAUMGART. The manufacturing industry for which I spoke is essentially in agreement. Each company, of course, may speak for itself and give its own variations but they are essentially in agreement to support the minimum standards, the specific standards, providing the conditions of preemption and economically feasible, technically sound are met. The manufacturing industry is essentially in agreement, and the others should speak for themselves.

Mr. DINGELL. The bill in its terms requires—I don't have the particular language here before me—that the standard be essentially technologically feasible and economically justified.

Does that part of the legislation at the top of page 27 meet the concerns of the industry?

Mr. BAUMGART. We would like to propose additional wording as we mentioned earlier.

Mr. DINGELL. I think that would be helpful, but it would also be useful if you gave us a little bit of interpretive work because I am not quite sure I understand what it means.

Mr. Brown advises, in which I concur, that we should understand what this means now rather than later, so that we may avoid vast controversy and litigation later and I suspect confusion and anger before the regulatory agency, the FEA.

Gentlemen, on the following page I find language relating to two items that concern me. One is the exclusion of manufacturers or products of manufacturers whose gross revenues from all operations including but not limited to the manufacture and sale of covered products do not exceed $8 million per annum.

Can you comment on what that means in terms of administration and what that means in terms of manufacturers, suppliers and that sort of thing? Are those big ones or little ones?

Supposing you have a guy who is a giant who manufactures, say, about $6 million worth of a product. With all respect, let's say, one of the really big ones of the industry were to manufacture $7 million worth of a product. He would be excluded from the standards.

Mr. BAUMGART. I don't think so.

Mr. McCONNELL. All operations.

Mr. DINGELL. I beg your pardon, he would not be excluded. Well, I would appreciate your comments.

Mr. DINGELL. Then we have some other language which appeared here.

"Aggregate household energy use by product if such type exceeds 4,200,000,000 kilowatt hours per year."

Can you tell me what those would be?

Mr. BAUMGART. The products that would be excepted?

Mr. DINGELL. The products that would be included.

Mr. BAUMGART. May I ask our energy chairman, Mr. Lynch, to comment on that?

Mr. LYNCH. You are asking what product would be included above 150?

Mr. DINGELL. We have two items. You have inclusion of items whose average per household energy use exceeds 150 kilowatt hours. I would like to know what that is, or what those would be, and how would that work, and then under subparagraph (ii), we find"Aggregate household energy use by products if such type exceeds 4,200,000,000 kilowatt hours."

This is discretionary, but how would that be identified, and what would that mean?

Mr. LYNCH. I can talk to the 150. I think that was an attempt to be responsive to the fact there were many appliances in the portable category. This proliferation as far a numbers is concerned should not be included because of their small energy use.

Mr. DINGELL. You are talking about night lights.

Mr. LYNCH. Right.

Mr. DINGELL. And electric clocks and that sort of thing.

Mr. LYNCH. Mixers and that type of thing some of which ran nominally over 100. I think the intent here in that 150 kilowatt hour category, raising that from 100, which was in the previous public law bill, was an attempt to eliminate that great proliferation of de minimis products.

As far as the aggregate household energy use by products if such type exceeds this huge number of kilowatt hours per year, I don't know what was the intent there.

Could I respond to one of your earlier questions about where does the industry stand? Are they pro or con on this?

I am not speaking totally on behalf of the industry as far as the definitive point. I am trying to give you some clarification to the question.

The industry, by and large, in the past has been for averages because it could respond to the issue of how much improvement could we make over a base year, and the general trend of the industry to move to support this minimum approach, which is not unanimous as you have indicated, is a function of the great concern of industry for the lack of action in the preemption issue, and there is a very strong feeling on the part of industry that preemption is paramount. Without that, nothing, because we cannot respond to 50 potentially different State regulations.

So the swing of industry to support minimums is prompted primarily, although not exclusively, primarily by the huge concern that with averages preemption will not occur, but with the minimums this will indeed happen, and I think what you are seeing is a transition that may be confusing to you, and I hope that clarifies it.

Mr. DINGELL. It helps substantially. I am not sure it tells us where the industry lies in toto but you are getting me to appreciate that industry generally favors minimums if they get preemption; is that right?

Mr. LYNCH. Right, a conditional approval, by and large, by the majority. There are some that do not favor it.

Mr. DINGELL. I see a great number of heads nodding affirmatively in the room. I assume that means we have a consensus.

Mr. BAUMGART. Yo have a substantial representation of the industry present.

Mr. DINGELL. I do appreciate that comment.

I wonder can we have a proposal of this kind with minimums and preemption without a deadline for the setting of the standards, I mean a reasonable deadline?

Mr. LYNCH. You can if you want it.

Mr. DINGELL. I am of the view that a deadline for arriving at the standards is probably essential because the record of the government in this regard is not good. I am not going to be critical of the industry but I am going to castigate the government in this area.

Mr. LYNCH. I think you should understand in regard to that question that because you have not reestablished a different basis for determination of efficiency improvement, that you are now going to have to revisit this area on minimums as opposed to continuing what had been underway. I am simply indicating that the 1980 goals depending upon what minimums are determined may not be realistic as far as when those minimums should be met. You are in a different ball game now.

Mr. BROWN. Mr. Chairman, would you yield?

Mr. DINGELL. I am not sure I have any time to yield. I have exceeded the time, but I will recognize the gentleman briefly.

Mr. BROWN. I am not sure what you have said. We have already switched the determination of standards from one Federal agency to another——

Mr. LYNCH. Yes.

Mr. BROWN. —which seems to me to have been unwise because it has delayed the setting or the arrival of the standards, but are you saying that if we switch the method now by which those standards are being arrived at, that we will further delay the accomplishment of any standards at all?

Mr. LYNCH. You are certainly going to further delay, to answer your question specifically. The averages have been worked on for the past several years beginning with the voluntary program. Switching to minimums will add delay. I am not trying to say that that is undesirable in total. I am simply responding to your question. It definitely will delay.

Mr. BROWN. There is no implication in the question. I was just curious.

Mr. DINGELL. The Chair thanks the gentleman.

The Chair's time is expired.

The Chair recognizes counsel, Mr. Finnegan, for the purpose of asking questions.

Mr. FINNEGAN. Thank you, Mr. Chairman.

Mr. Baumgart, in your position on this legislation you indicated that AHAM has asked FEA to allow data collection through an industry-sponsored, third-party reporting system to insure against disclosure of proprietary information.

Why is that necessary?

Let me put it another way.

Would that be necessary if we made the confidentiality provisions of section 11 of the Energy Supply and Coordination Act applicable in order to protect proprietary information?

Mr. BAUMGART. I doubt that it would be necessary with adequate protection.

Our counsel is present. Mr. Crolius, do you want to say something on that?

Mr. CROLIUS. I agree.

Mr. BAUMGART. We still have the advantage to the government and the industry of using existing channels of data collections and consolidation. These have been made available, offered by the industry at no cost to the government, with all the checks and balances, auditing that the government feels is necessary, so that this could be done. I believe that the kind of thing that you are talking about, however, would not be anywhere nearly as extensive or necessary for minimums as it would be for the averaging process which is weighted averaging using as weights sales data that are highly sensitive and highly confidential, and very important that they remain confidential, important to the competition that they remain confidential.

Mr. FINNEGAN. You also indicate that AHAM has urged FEA to use existing, recognized test procedures, and to recognize that some of the deadline dates for the test procedures may not be realistic.

On the first point on "existing," what do you mean by "existing" test procedures? Whose test procedures?

Mr. BAUMGART. The industry has in various stages of existence and development energy consumption test procedures which are industry standards that have been developed over the years. Some of them have been in effect for 14 or 15 years. Some of them we are just developing for this application. They are recognized American National Standards, most of them, or are in the process of becoming that. These are sound standards with all possible interests, consumers, industrial and commercial interests involved so that these standards can indeed be depended upon as not self-serving but as genuinely objective, desirable standards.

Mr. DINGELL. Let me raise a question here if I may, please.

First, we have found rather remarkable reluctance on the part of the standard making organization to present standards in a timely fashion. Standards for flue constriction, flue damper devices, burner controls which would save enormous amounts of gas were not developed ostensibly because the industry was not interested in achieving this. If this be the situation with regard to standards of this kind how are we able to turn over broad national policy questions of this kind to a private standard making area where they have shown this reluctance to move forward?

Mr. BAUMGART. I can't speak for the examples because they are outside of product scope I represent. I am not familiar with them.

Mr. DINGELL. We know.

Mr. BAUMGART. We have offered texts of standards which have been accepted and processed through the process that I mentioned, so we do have and we can furnish you texts if you would like although I don't think you would want to read all of the bulk—

Mr. DINGELL. No, no.

Mr. BAUMGART. We can furnish you standards that exist and are being used and are technically sound.

Mr. DINGELL. You will concede though that such an approach is unwise if we can't get standards of this kind on line without undue delay. The history doesn't appear to indicate that the private standard making area is working.

Mr. BAUMGART. It is working to the extent that we have been able to furnish them to you.

Mr. DINGELL. But we ask for others and don't get them.

Mr. BAUMGART. If you ask us, we will furnish them. I just can't speak for the others, you see.

Mr. DINGELL. Let me go down here. We have examined the members of the AHAM committees. For example, we have got one here and this has been a long source of concern to me. AHAM Dishwasher Engineering Committee. Chairman, A. R. Keyes, Design Manufacturing; then the members are representatives of the following corporations: Design Manufacturing, Fedders, General Electric, Kitchen Aid, Maytag, Whirlpool, Westinghouse. No consumer representative, no small business, no judicial review. In my experience a highly undemocratic way of arriving at standards which often have been used in my experience, and I have held extensive hearings on this in other committees to divide up the market, to foreclose market participation by small business, and to do other undesirable things without judicial review and in a very undemocratic process.

How do I justify this?

Mr. BAUMGART. That is the Standards Drafting Committee that you mentioned there. It is the Engineering Committee of the association I represent. When these are submitted to the American National Standards Institute there is a canvas list of from 100 to 150 representatives of consumers, of other commercial interests, of governmental agencies, Consumers Union, for instance, and even individual consumers, who review these standards, and raise objections. The objections are resolved, so the introduction of the consumer input exists. You are talking about a technical drafting committee in the standards structure in the committee you mentioned there. That is the way we do it in AHAM, and again I speak authoritatively only for that.

Mr. DINGELL. We have elsewhere in our hearing records some rather dark evidences of curious behavior that continues to trouble me, and I just want you to be clear on that.

The Chair recognizes counsel again.

Mr. FINNEGAN. Thank you, Mr. Chairman.

Most of you have recommended that the Magnuson-Moss type procedures, which involve cross-examination and so forth in the development of these standards be continued in the bill even though the administration has recommended it be deleted and that you not follow the normal procedures of the Administrative Procedure Act.

Could you explain to us why? Why not use the APA type procedures that have been utilized in most Federal agencies rather than this? What is the difference? What are the distinctions?

Mr. BAUMGART. It was my understanding that this was a deletion without the inclusion of the other, and therefore the procedures were lost.

May I ask our counsel, Mr. Crolius, to speak on that?

Mr. CROLIUS. Yes. My response to that would be that you are now talking about an activity which is fundamental and basic to the lifeblood of any given corporation in this industry. You are talking of matters that go right to competition, to their basic reason for being. That being so, I think it is very important that the utmost procedural safeguards be afforded in any rulemaking proceeding. I think Magnuson-Moss does provide that better.

Mr. FINNEGAN. Can you tell us exactly why, what the differences are so we will have them on the record?

Mr. CROLIUS. Opportunity for cross-examination is the principal one. Also the test for judicial appeal is capricious and arbitrary on the one hand, substantial evidence on the other.

Mr. FINNEGAN. But isn't the APA procedure normally used in most Federal agencies affecting other industries?

Mr. CROLIUS. Yes, but I think there should be a rule of reason here. What is the activity under consideration? This is a fundamental activity, rulemaking, with respect to the efficiency of appliances.

Mr. FINNEGAN. Is that true of automobiles and others too?

Mr. CROLIUS. I guess it is a matter of philosophy then, sir. I would urge that in this one it is so important that maximum—

Mr. FINNEGAN. Isn't it true that FEA under APA procedures could provide for cross-examination?

Mr. CROLIUS. Yes, that is true. Then it is a question of how much you modify the two basic approaches. You can get a compromise version anywhere in between.

Mr. FINNEGAN. Does the Magnuson-Moss procedures delay or stretch out the procedure for getting efficiency standards on board?

Mr. CROLIUS. That is an often asked question, of course, and I think it is a legitimate question.

My answer to that usually is if you have got a hearing examiner that really knows how to run a hearing, you are not going to have delay.

Mr. FINNEGAN. Have you any evidence of that in other agencies? My experience with hearing examiners has been pretty long.

Mr. CROLIUS. I would differ with you there. I have seen some hearing examiners that really run their show and they don't brook delay and they don't brook digression, and they are getting better all the time, I might add.

Mr. BROWN. For the record, I think it ought to be made clear APA is not a matter of right, but you are suggesting that it be a matter of right under Magnuson and Moss; is that correct?

Mr. CROLIUS. That is correct.

Mr. BROWN. With cross-examination?

Mr. CROLIUS. Yes, sir, but I think that other point on judicial review is equally important.

Mr. FINNEGAN. You want to apply the Magnuson-Moss, what is the standard for judicial review?

Mr. CROLIUS. Substantial evidence on the record.

Mr. FINNEGAN. That is all the questions I have.

Mr. DINGELL. The Chair thanks counsel.

Gentlemen, you have been very helpful to the committee. We appreciate your courtesy and assistance to us. We are grateful to you for your kindness. Thank you all very much.

Our next panel is composed of Andrew Takacs, Director, Government Affairs, Whirlpool Corporation; Anthony J. Kloska, Group Manager from Sears Electromechanical Laboratories; and Mr. Harry Paynter, President, Gas Appliance Manufacturers Association.

Gentlemen, we are very pleased that you would be with us.

Gentlemen, would you identify yourselves for the record from left to right? We will recognize you then for your statements in that same order.

**STATEMENTS OF ANTHONY J. KLOSKA, GROUP MANAGER, RANGE AND COMBUSTION SECTION SEARS ELECTROMECHANICAL LABORATORIES, ACCOMPANIED BY PHILIP M. KNOX, JR., VICE PRESIDENT, GOVERNMENT AFFAIRS, SEARS, ROEBUCK AND COMPANY; HARRY PAYNTER, PRESIDENT, GAS APPLIANCE MANUFACTURERS ASSOCIATION, ACCOMPANIED BY JACK LANGMEAD, DIRECTOR, TECHNICAL SERVICES, GAMA, AND STANLEY SCHROEDER, DIRECTOR, LEGISLATIVE SERVICES, GAMA; AND ANDREW J. TAKACS, DIRECTOR, GOVERNMENT AFFAIRS, WHIRLPOOL CORPORATION, ACCOMPANIED BY RAY WHITMAN, DIRECTOR, LAUNDRY GROUP MARKET PLANNING, AND AL ELDERS, DIRECTOR, REFRIGERATION AND VERTICAL FREEZER ENGINEERING**

Mr. KLOSKA. My name is Anthony J. Kloska with Sears Laboratories, a department of Sears, Roebuck and Company.

Mr. PAYNTER. Harry Paynter of the Gas Appliance Manufacturers Association.

Mr. WHITMAN. Ray Whitman with Whirlpool Corporation.

Mr. TAKACS. A. J. Takacs, Whirlpool Corporation.

Mr. ELDERS. Al Elders, Whirlpool Corporation.

Mr. DINGELL. Gentlemen, we thank you for your presence.

Will you each now present your statement for the committee starting with Mr. Kloska?

**STATEMENT OF ANTHONY J. KLOSKA**

Mr. KLOSKA. My name is Anthony J. Kloska. I am the Group Manager of the Range and Combustion Section of the Sears Laboratories. Appearing with me today is Mr. Phil Knox, Vice President of Sears, Roebuck and Company who is in charge of Sears Government Affairs Office in Washington, D.C. We appreciate the opportunity to present our recommendations on the proposed amendments to the Energy Policy and Conservation Act of 1975.

We received notification of this hearing late last week with the receipt of Appendix I issued by the FEA and have not had an opportunity to review the entire text. Therefore, our comments will be brief. However, we would like to reserve the right to submit, at a later date, a more detailed summary of Sears' position. [See letter dated June 2, 1977, p. 678.]

To begin, I would like to restate some energy usage information as it pertains to household appliances. It is essential to note that the total amount of energy consumed for residential purposes is less

than 20 percent of all energy consumed by the Nation as a whole. After subtracting the energy consumed by large appliances such as water heaters and furnaces, this figure is reduced to probably less than 5 percent. Therefore, an overall gain of 20 percent energy utilization on all appliances would result in only an approximate 1 percent savings of all the energy used in this country. Moreover, the improved efficiency for new products would not even be realized for approximately 15 years since millions of existing products would continue in operation.

These figures are meant to put the appliances into proper perspective with respect to the overall energy problem and should not be construed to mean that Sears is against improving appliances with respect to energy usage. We are not. We are concerned, however, that appliances seem to be receiving more attention than their relatively low energy consumption warrant.

To illustrate this point, a clothes washer in a typical household of four could operate for one full year on the energy consumed in burning 3½ gallons of gasoline. Yet it would obviously be more beneficial to the energy problem, and more acceptable to the average America household, to conserve 3½ gallons of gasoline than it would be to sacrifice doing completely without the clothes washer.

We have a number of specific suggestions which we would like to make as follows:

1. Sears does not agree that mandatory minimum energy standards is the best way to implement an efficiency program. Rather, Sears would prefer to have a program that averages the energy from the low cost, less efficient units to the higher cost, more efficient units. This would be in the best interest of the consumer, particularly low income families, yet still achieve overall energy savings. It is feared that if minimal standard were set, some consumers would be deprived of the choice of buying a low priced, less efficient product that better suits their needs.

While this lower cost, less efficient relationship would not be true for all appliances, it is most certainly true for many products. Air conditioners are a good example. In addition, there is also the strong possibility that if minimum efficiency standards are adopted it could soon become the maximum efficiency standard since there would then be little incentive to improve minimum levels. In contrast, use of an average energy figure ranging from low cost, low efficiency units to higher cost, more efficient units could result in an overall energy gain.

2. The amendment of the act requires that all products using 150 kilowatt hours per year or more be covered under this amended act. While this is a major improvement over the recently proposed level of 100 kilowatt hour per year, Sears would prefer the original limit of 200 kilowatt hours per year. I would like to point out that the lower annual usage figures would require efficiency figures for such products as electric blankets, coffeemakers, frypans, et cetera. This would be more of a nuisance than an aid to the consumer and yet would only have an infinitesimal effect on the overall energy program.

3. Sears enthusiastically supports the concept of promulgating test procedures before establishing product standards.

4. Sears has serious concerns regarding the establishment of "the estimated average life" of a product. Such concern becomes even more serious when an entirely new product is introduced into the marketplace which does not allow the manfacturer to revert back to previous product experience in estimating the product life. This concept of "estimated average life" continues to be included in all energy efficiency programs and presents one of the major shortcomings to implementation of a meaningful program. We will elaborate further on this point in our forthcoming full statement.

5. The life cycle cost information regarding maintenance, use, or repair should be deleted from the program at this time. We would recommend that additional work be conducted in this area and that after the standard has been in existence for some time, that the life cycle cost be introduced. To introduce the life cycle information at the same time in the appliance energy program would be confusing to the consumer and could significantly delay implementation of the program

6. The amended energy policy recommends a reevaluation within 5 years after the promulgation of the standard. It appears that a review within 2 to 3 years would be an adequate time lapse to generate sufficient information upon which to make changes if required and Sears, therefore, recommends such a review.

7. It is not clear why the manufacturer is required to report energy efficiency data to the FEA periodically. Rather, the information on the energy label should stand on its own merits and, if challenged by the government or any other interested party, substantiation should be required by the manufacturer. This procedure would be wholly in keeping with existing listing programs.

8. Sears assumes that the original act continues to include a clause preempting State and local communities from generating their own energy efficiency labeling programs. It must be emphasized that practical production and merchandising problems involved with meeting numerous conflicting labeling requirements and test methods would truly be enormous. The cost of complying with such a system could be significant and obviously would be passed onto the consumer.

Therefore, Sears strongly supports language that would clearly establish that energy efficiency standards preempt any State or local government standards, save for peculiar environmental problems to a particular region.

In conclusion, we appreciate the opportunity to present Sears' position and will be available to assist the committee in whatever way possible.

[The following letter was received for the record:]

Sears, Roebuck and Co.
1211 Connecticut Avenue
Washington, D. C. 20036

June 2, 1977

PHILIP M. KNOX, JR.
VICE PRESIDENT
GOVERNMENTAL AFFAIRS

Area Code 202
223-5840

The Honorable Harley O. Staggers
Chairman
Interstate and Foreign Commerce Committee
U. S. House of Representatives
Washington, D. C. 20515

Dear Mr. Chairman:

On May 11, 1977, Anthony J. Kloska, Group Manager of the Range and Combustion Section of Sears, Roebuck and Company, testified before the Energy and Power Subcommittee of the Interstate and Foreign Commerce Committee in opposition to the proposed amendments to the Energy Policy and Conservation Act of 1975. Sears, having carefully reviewed its position in formulating its more detailed statement on H.R. 6831, Title I, Part B, as promised, wishes to reaffirm its opposition to the establishment of mandatory minimum energy standards.

Sears has consistently and vigorously supported efforts in this country to reduce overall energy consumption and to improve the energy efficiency of energy-using appliances. Thus, Sears actively participated in the voluntary energy efficiency programs developed by the Department of Commerce several years ago. These programs, involving energy efficiency labeling of appliances, were aimed at increasing consumer awareness of energy consumption levels in different categories and models of appliances. Subsequent to this voluntary action, the Energy Policy and Conservation Act of 1975 was enacted, thereby mandating the essential elements of the Department of Commerce's voluntary programs. Sears supported the passage of the Energy Policy and Conservation Act.

Sears believes the Energy Policy and Conservation Act, enacted less than eighteen months ago, should be afforded the opportunity to achieve its purpose of reducing the energy consumption of designated appliances, rather than be drastically amended as proposed in Section 201 of H.R. 3816.

In contrast to permitting industry to attain energy efficiency

targets by 1980 by improving the average efficiency of certain appliances as the current law permits, the proposed amendments would result in the issuance of mandatory minimum energy efficiency standards by the Federal Energy Administration. Sears does not believe that such minimum standards would be the best way to implement a workable appliance energy efficiency program.

If mandatory minimum standards were to be imposed, some appliance models would inevitably be eliminated from the marketplace, thus substantially restricting a selection of products from which the consumer could choose. Primarily to avoid this result, Sears has favored the achievement of lower energy consumption by requiring sellers to improve the average efficiency of all products in a given class. Through such an averaging approach, appliance marketers could continue to offer a number of models with a variety of features at a range of prices, thereby continuing to satisfy the varied needs and desires of consumers. In short, an averaging approach of balancing out sales by selling low cost, low energy efficient appliances as well as high cost, high energy efficient appliances would satisfy the diverse needs of consumers while simultaneously achieving an overall gain in energy efficiency. The President's proposals, as contained in Section 201 of H.R. 6831, would eliminate this flexibility in achieving energy efficiency and conservation.

To further illustrate the negative impact of minimum efficiency standards on consumers' freedom of choice, attached herewith is a copy of Sears' statement to the California Energy Resources Conservation and Development Commission on proposed California efficiency standards on refrigerators, freezers, and air-conditioners. This statement outlines the models and features which would be either wholly eliminated or adversely affected by California's proposed standards. In addition, it includes estimates of resulting price increases on covered products.

The end result of the loss of flexibility of achieving energy efficiency standards by adhering to minimum standards rather than using an averaging method would be a consequential significant reduction of product choice to consumers. This would be a serious financial blow to low-to-moderate income consumers. Such persons would either have to invest a significantly higher proportion of their incomes to new appliances subject to minimum energy standards or else retain their old, high-level energy using appliances! There is, additionally, the problem of particularly unique items, such as small apartment air-conditioners, in which factors such as size and portability are crucial, being withdrawn from the retail market altogether. Again, consumers would be the losers.

An averaging approach has the benefit of establishing an incentive to design a very efficient "top of the line" unit to offset the less efficient "low end of the line" unit. In contrast, if minimum standards were established, it is quite likely that they would soon become maximum figures that manufacturers would strive toward to be competitive.

This is likely since it usually costs more to improve a performance characteristic such as energy efficiency, and, without customer demand for higher efficiency, the incentive for such a characteristic would be lacking. Hence, the net result would actually be veritable stagnation of energy efficiency standards!

Another important reason for maintaining a low-to-high efficiency product mix is to be found in the replacement market. If there are physical limitations involved in replacing certain products, it would be in the best interest of the consumer to be able to replace that item of similar dimensions which could be installed in the existing connections. Air conditioners, water heaters, and gas ranges are examples of products which could have both size and utility limitations. For example, if a standard were to require elimination of pilots on all gas appliances, this could create a hardship on some consumers since it would become necessary to install electrical outlets where none existed in order to accommodate an automated electric ignition.

In addition to the above considerations, there are other difficulities in the proposed amendments to the Energy Policy and Conservation Act. For example, what would actually be the minimum standards on products? This is not a trifling question: if standards were set too high they might not even be technologically achievable and, if too low, would be of no value at all! Even more importantly, in an overall determination of economical and technological feasibility, exactly how much weight would each of the enumerated factors be given? The provisions of Section (a)(1)(B)(5) are devoid of any such reference to weight. These questions, and scores of others like them, certainly need to be addressed and adequately resolved.

Sears reiterates that it actively supports the efforts of this Congress and the Administration to tackle the energy problems confronting this Nation. Sears believes that such efforts, however, should proceed in the most reasonable and feasible manner possible. For this reason, Sears believes that mandatory minimum energy efficiency standards should not be established.

Our thanks to you and the Committee for this opportunity to restate Sears' view on the National Energy Act, Title I, Part B.

Respectfully submitted,

SEARS, ROEBUCK AND CO.

Philip M. Knox
Vice President
Government Affairs

PMK:mb

Enclosures

Mr. DINGELL. I guess our next witness is Mr. Paynter.

## STATEMENT OF HARRY A. PAYNTER

Mr. PAYNTER. Thank you, Mr. Chairman.

Gentlemen, I am Harry A. Paynter, President of the Gas Appliance Manufacturers Association. With me are Jack Langmead, GAMA's Director of Technical Services, and Stanley Schroeder, GAMA's Director of Legislative Services.

GAMA is a nonprofit national trade association representing approximately 300 firms that produce in excess of 90 percent of the gas transmission and utilization equipment sold in the United States. The energy bill is 283 pages long. We have sent the pertinent portions to our members and are awaiting their comments. There are a few remarks which I believe we can make at this time, based on our general knowledge of the industry. More detailed comments and suggestions will be passed on to you as soon as GAMA develops them.

1. Preemption Necessary.

As representatives of a part of the American free enterprise system we would normally be expected to oppose any Federal mandatory energy efficiency system. I believe our industry has displayed the ability to respond to national calls for new priorities—the last few years has seen a focus on safety, and our members have participated in the development of, and produced too, new safety measures in their product standards.

However, with the new emphasis on energy conservation, we have begun to observe the development of a patchwork quilt of differing State solutions. Left at its present pace, this undoubtedly well-intentioned State effort could conceivably result in 50 different State energy conservation requirements for the producers of gas appliances—with the obvious disastrous consequences for anyone marketing nationally. It has become increasingly clear that some form of clear-cut Federal preemption must be provided for in the national energy law for those products that are encompassed in a Federal program to provide national minimum energy efficiency standards where they are appropriate. While GAMA has believed that the existing Energy Policy and Conservation Act contains such basis for preemption, Congress' language apparently was not clear enough. We hope that a strong preemption will be added to the bill before you. Without it, frankly, some of our members will be unsure of whether they will, or will not, want their products to be covered by Federal energy efficiency standards. Solution of the preemptive question early in the legislative process would give all of our members an opportunity to express their views on how specific products should best be handled in the legislation.

In wrestling with any preemption provision, may we suggest that it would be desirable to include the entire appliance industry, so that those products with which the new energy agency has not yet dealt specifically, or those which have been examined and declared to be inappropriate for energy efficiency standards, would not be vulnerable to State regulation. Unless the congressional intention to preempt is made crystal clear the whole appliance energy conser-

vation program could become a shambles because our manufacturers, particularly the small ones, cannot manufacture to multiple standards for the same product. And if we tried, it would result in increased costs that would be unbearable to the consumer. It would be a shame to lose manufacturing capability of energy-conserving gas appliances because of a failure of the Congress to solve this problem. GAMA members want to do their share. Attached is a copy of a telegram I sent to the President back on April 21. We expect to continue our support of minimum energy efficiency standards for products where substantial energy savings are achievable.

2. Intermediate Standard Concept May be Inappropriate.

This brings me to my second point. Everyone has referred to the appliance standards to be proposed as minimum efficiency standards. I am a little bit apprehensive of the tenor of the language in section 201(a)(4) which specifies that the energy efficiency standard shall be designed to achieve the maximum improvement in energy efficiency—which may be phased in over a period of years through the establishment of intermediate standards.

I hope this does not reflect the concept of setting a standard at the highest level of possible technical performance—which is not economically feasible—in the hopes of working toward economic feasibility by using intermediate standards. At this time, I do not know how our different members would feel about intermediate standards, but I am sure that our smaller members would say that they can't afford to be shifting retooling gears unnecessarily—forcing them to incur capital expenditures for design, engineering, and production change costs that can't be paid off in the shortened production runs and probably would mean higher prices to the consumer if the manufacturer tries to add the extra tooling costs to the smaller number of products in the shortened production run. With appropriate consultation of industry, we believe that appropriate standards can be worked out in one step, so that reasonable minimum standards, that will serve well the Nation's energy conservation needs, will be available. If a company can do better, let it be in a position to reap the marketing benefits, aided and assisted in the marketplace by labels showing comparative costs of operation as presently provided in the Energy Policy and Conservation Act.

3. Anticompetitive Effect of Life Cycle Based Standards.

Inasmuch as the sale of GAMA members' products depends upon their acceptance in the marketplace, we applaud the bill's direction that considerations of economic feasibility determinations must be weighed very carefully in evaluating possible standards. Yet, with the prominent inclusion of the life cycle concept among the factors to be considered in proposed section 325(a)(5)(c), the gas appliance industry has well-founded concern that its ability to compete in the marketplace with its electric counterpart products may be endangered, ironically, because of the high energy saving potential of appliances using gas vis-a-vis those using electricity. If these energy cost savings over the life of gas appliances are thought to make affordable a high initial cost to meet highest possible standards, any differential created in price would almost certainly drive consumers away from gas appliances to electric appliances—because in the realities of the marketplace, the consumer invariably focuses on

initial cost, and looks for a payback in 3 years, not over the life of the product—even though with a gas appliance he would be saving more money and more of the Nation's energy in the long run. Our members expect gas and electrical appliances to be competing hard in the marketplace. We ask only that our government not inadvertently stack the deck against us by use of the life cycle concept in setting standards. I believe the country, in its attack on the total energy problem, can ill-afford to discourage the use of energy saving gas appliances.

4. Need for Industry Input and Review on Retrofit Programs.

While the procedures in the standard setting process are fairly explicit, we have some concern about procedures in the many portions of the proposed legislation dealing with the retrofitting programs for existing residences, schools and hospitals through various approaches such as State plans, utility programs and the residential tax credits. Each program will involve a list of sanctioned energy conservation measures and the decisions and pronouncements that will be made by any branch of the government regarding various possible retrofit measures are certain to be given great weight in other sectors within and outside the government. Frankly, our industry does not have the manpower to cover each of those areas. We therefore suggest that:

a. One centralized procedure be developed to decide what does, or does not, go onto the list of acceptable home retrofit measures. We suggest that the energy agency that results from the pending reorganization be designated to make such decisions, with the results transferrable to the Secretary of the Treasury so that no new proceeding would be necessary for the residential tax credit, and that other government agencies, such as the Department of Housing and Urban Development, also be required to rely on such list.

b. The procedure by which the Administrator develops rules to be followed by the State regulatory agencies or nonregulated utilities in implementing residential energy conservation plans should be formalized so that input from the affected parties will be guaranteed, especially if rules are expected to identify the suggested measures for residential buildings by climatic region and determine categories on the basis of type of construction or other factors such as standards for general safety and effectiveness, and installation. These considerations, I submit, will importantly affect a product's ability to compete in the marketplace. These rules will become just as important as standards and it would be appropriate also to have some advance notice of proposed rulemaking, an opportunity for public hearing, and judicial review of the rules prescribed.

5. List of Energy Conservation Measures Should be Open-Ended.

The various lists of energy-conserving components or measures, whether or not consolidated as we suggested above, should be expandable to include both other products or measures available today and those that might be in the process of development or even created from start in response to the encouragement of the National Energy Act. We cite, for example, the energy-saving potential of adding to the lists an option for the consumer to retrofit his home by purchasing a new furnace that includes one or more of the

"suggested energy conservation measures," and offers also the energy-saving bonsuses that may be possible in a new furnace. The costs of a new furnace are comparable, if not cheaper than, the cost of retrofitting an old furnace. We are talking about the comparison of original equipment manufacture (OEM) costs of retrofit measures versus new furnaces. The most obvious of the advantages is that a properly sized furnace can be installed where the present furnace size may be inappropriate. Other energy-saving features include the integration of energy-saving devices in the design of the furnace, the relative simplicity of installing the furnace unit by servicemen who need less training than the highly trained technicians that will be required for proper analysis of the old furnace and its compatibility with retrofit devices.

In conclusion, I believe that there are many areas in which the Gas Appliance Manufacturers Association can be of help. We look forward to working with the Congress and the administration to assure that the law and its implementing regulations help achieve this Nation's needs for energy conservation.

I will be glad to respond to any questions.

[The telegram referred to follows:]

WESTERN UNION MAILGRAM, *April 25, 1977.*

GAS APPLIANCE MANUFACTURERS ASSOCIATION N VENO
*1901 North Fort Myer Drive*
*Arlington, Va*

This mailgram is a confirmation copy of the following message:
703529565 TDMT Arlington Va 150 04-21 0536P EST
PMS President Carter
White House
Washington DC 20500

The Gas Appliance Manufacturers Association enthusiastically endorses your proposed energy conservation program aimed at making home appliances more efficient, and will support legislation to that end. The setting of mandatory minimum efficiency standards on furnaces and water heaters which consume the bulk of residential energy will be a welcome relief to the plethora of State legislation now being enacted and which would, if not preempted, impose an intolerable burden on inter State commerce because of their substantial differences. Further, because of long delays that have been experienced in establishing approved methods of test and goals there was no longer any real expectation that an overall industry goal of 20 percent efficiency improvement coulc have been met. Members of this association look forward to the opportunity of working with the responsible agencies in developing minimum standards that are economically feasible and practical.

HARRY A. PAYNTER, *President,*
*Gas Appliance Manufacturers Association.*

Mr. DINGELL. We have three witnesses.

Who speaks on behalf of Whirlpool?

## STATEMENT OF ANDREW J. TAKACS

Mr. TAKACS. My name is Andrew J. Takacs. I am director of government affairs for Whirlpool Corporation, a manufacturer and marketer of major home appliances.

With me today—to respond to any technical questions you may have—are Ray Whitman, director of laundry group market planning, and Al Elders, director of refrigeration and vertical freezer engineering.

Whirlpool's product line includes automatic washers and dryers, refrigerators, refrigerator-freezers, freezers, room air conditioners, dishwashers, electric ranges, microwave ovens, food waste disposers, trash compactors, dehumidifiers, commercial icemakers, vacuum cleaners and residential central heating and cooling equipment.

In 1976, Whirlpool Corporation had consolidated net sales of approximately $1.6 billion. We have nine manufacturing plants located in the Midwest and Southwest, and presently employ about 23,000 people. With the exception of the electronic organs manufactured by our majority-owned subsidiary, Thomas International Corporation, home appliances comprise our total business.

We are pleased to have this opportunity to comment on the proposed National Energy Act recently submitted to Congress. As you will readily understand, it is a matter of considerable importance to Whirlpool, since a vital segment of the act deals specifically with the products that we manufacture and market.

My comments today will be confined to the subject of energy efficiency standards as they relate to major home appliances.

We fully concur with President Carter that our Nation is faced with the prospect of serious energy shortages in the immediate future, and that a comprehensive program of national scope to conserve conventional energy resources and to develop new ones is essential to the continued well-being of our country.

We are here to offer our full cooperation in the development of a program that will result in reduced energy consumption by major home appliances.

We therefore endorse the administration's basic plan to establish minimum efficiency standards for major home appliances.

Furthermore, we strongly recommend the minimum efficiency standards not only be established for those product types or classes specifically identified in the proposed legislation, but for such classes of products as automatic washers, dryers and dishwashers as well.

We believe that the inclusion of all such products in a minimum efficiency standards program now will, in the long run, benefit both consumers and the appliance industry by providing a common manufacturing and marketing base for all major home appliances built and/or sold in the United States.

In our support for the administration's basic plan for appliances, there are two major improvements which in our estimation, are absolutely essential to achieve a workable, effective Federal minimum efficiency standards program.

First, there is the matter of preemption of individual State efficiency standards.

The language in section 327 of the Energy Policy and Conservation Act should be restated so as to more clearly and firmly establish that minimum energy efficiency standards promulgated by the FEA preempt any current or future State or local energy efficiency standards.

Our reason for urging preemption is not difficult to explain.

The task of meeting a single set of minimum efficiency standards will be a difficult and costly one at best. The prospect of having to deal with a number of different standards, and test procedures, is absolutely overwhelming.

Presently, one State, California, has its own set of minimum efficiency standards for appliances, while approximately 20 more are seriously considering appliance energy standards legislation.

If the Energy Policy and Conservation Act is not amended so as to provide total preemptive relief on minimum efficiency standards, every manufacturer in the appliance industry could literally find itself having to build a special line of products for each State in which it wants to do business—an extremely unwieldy and costly proposition.

The impact on the appliance industry—and on the consumer's pocketbook—would be dramatic. The historical ability of our industry to minimize cost increases—as clearly evidenced by the Consumer Price Index over the past 20 years—would be severely diminished by the resulting reduction in manfacturing economies of scale.

Physical distribution costs—already a significant factor in product pricing—would be increased significantly in order to provide the additional control dictated by individual State requirements.

In short, the lack of strong preemptive language in Federal minimum efficiency standards legislation could result in a greatly increased burden on interstate commerce—the cost of which would ultimately be borne by the consumer.

We are presently in the process of developing recommended language for the modification of section 327 of the Energy Policy and Conservation Act—language that will firmly establish that minimum energy efficiency standards promulgated by the FEA preempt any current or future State or local government energy efficiency standards.

With your permission, Mr. Chairman, we will submit this recommended language to the committee very soon.

Our second major concern deals with product types or classes as currently set forth in section 322 of the Energy Policy and Conservation Act.

Here, we would strongly recommend that the types, or classes, of consumer products be further divided into multiple categories or subgroups, and that minimum energy efficiency standards be defined and established for each category subgroup within a type or class of product, thus accommodating inherent difference between categories of appliances that fall into the same product classification in section 322.

For example, due to basic differences in usage patterns, installation and basic design factors, separate minimum effficiency standards need to be established for conventional ovens, cook tops and microwave oven categories within the kitchen range and ovens classification. Likewise—and this is a very crucial point—product capacity and fundamental design differences must be considered as an integral part in establishing minimum standard categories for all home appliances covered in the proposed act—as well as laundry equipment and dishwashers.

This general subject is dealt with in section 201(a)(7), lines 14 through 18, page 28, of the proposed National Energy Act. However, for the reasons just noted, we believe further definition of establishing differing efficiency standards is necessary. We must go beyond

the "kind of energy consumed" parameter in establishing product categories within product classes.

In summary, then, Whirlpool believes that the administration's minimum efficiency standards plan for appliances represents the most effective and workable approach to achieving meaningful energy savings—with the addition of language to insure total preemption of State or local government minimum efficiency standards, and the expansion of section 201(a)(7) to provide for the establishment of minimum efficiency standards for categories or subgroups of products within types or classes of products as defined in section 322 of the Energy Policy and Conservation Act.

We are pleased to note that the proposed legislation specifically calls for "energy efficiency standards . . . designed to achieve the maximum improvement in energy efficiency which the administrator determines is technologically feasible and economically justified"—we consider this to be a practical restraint that will do much to assure the establishment of reasonable and achievable minimum efficiency standards. We urge you to retain this provision.

We would also recommend careful review of proposed changes in section 336 of the Energy Policy and Conservation Act noted on page 34 of the proposed National Energy Act.

Section 336 deals with the area of administrative procedure and judicial review, an area of importance in rulemaking procedures.

We are concerned that the proposed changes could have the effect of diminishing the availability of due process.

It is our belief that to assure the best possible results, the appliance industry's considerable expertise should be utilized to the fullest extent in the development of both minimum efficiency standards and test procedures. Therefore, full due process must be accorded in the law.

We feel compelled to bring to your attention that any new energy efficiency program will be costly and inflationary. However, we believe the recommendations we have made will help provide both a more effective program and a lessened inflationary impact.

In conclusion, we stand firm in our fundamental belief that more government control is neither the most effective or efficient method of achieving desired goals. However, in view of the urgency of the current energy situation, we offer our full cooperation in developing a program that will result in reducing the amount of energy consumed by home appliances.

Once again, we want to express our thanks for this opportunity to comment on the proposed National Energy Act, as it is our sincere hope that our support will contribute to the overall success of a very necessary program.

[The Whirlpool Corporation's supplemental statement follows:]

SUPPLEMENTAL STATEMENT OF WHIRLPOOL CORPORATION

Whirlpool Corporation respectfully requests that the following statement be included in the hearing record on H.R. 6831—Part B—Energy Efficiency of Consumer Products. This statement is supplemental to and an amplification of Whirlpool's oral testimony before the Committee on May 11, 1977.

Whirlpool reiterates its support for the establishment of minimum energy efficiency standards for major home appliances. However, in order to make the program effective and workable in achieving energy conservation objectives, it is crucial that

H.R. 6831 be amended to include 1) strengthened pre-emption of individual state efficiency standards, and 2) guidelines for the establishment of product categories within product classes.

We have analyzed the benefits and shortcomings of both the current efficiency target (averages) program and the minimum efficiency standard program as contained in H.R. 6831. It is our opinion that the latter approach is preferable to both Whirlpool and its consumers when accompanied by strengthened pre-emption and the establishment of categories within product classes for the purpose of establishing energy efficiency standards.

Whirlpool envisions the benefits of minimum efficiency standards for categories within product classes as follows:

A. Ensures that differing consumer market segments will not be penalized for products that may be eliminated by the establishment of a single minimum standard for a product class.

B. Enables manufacturers to more effectively plan product lines, tool manufacturing plants and make capital investments in order to produce an efficient line of appliances.

C. Recognizes that differing products within product classifications are identified by the energy consumed as related to the amount of work performed.

We invite the Committee's attention to the fact that the State of California, as a part of their appliance efficiency program, has promulgated rules recognizing differing energy efficiency standards for multiple refrigerator categories. The California program illustrates that overall energy consumption objectives can be attained through the development of differing standards within product classes.

The establishment of differing levels of minimum energy efficiency standards by category within appliance "types or classes" is both necessary and justifiable. Each product type, as described in Sec. 322(a)(1)(2)(3)(4)(6)(9)(10) of EPCA will be individually discussed, focusing upon the technical need for differing minimum standards. Additionally, potential problem areas, such as excessive price/cost inflationary impact and difficulty in providing products for all segments of the consumer market, will be discussed, as appropriate.

### Laundry Equipment

Automatic washers can best be categorized by capacity (i.e., compact, intermediate, regular and large) as each is developed to satisfy a differing product need in the marketplace. For example, differing family unit sizes—young marrieds, singles, families with many children—have differing requirements relative to the size (or capacity) of the automatic washer needed to do the job. It is critical to recognize that for each category of washer, the amount of energy consumed must be related to the amount of work performed. That is, it is more efficient to launder a load of clothing from a family of six in a large capacity automatic than in a compact machine. Conversely, a single person would be making inefficient use, from an energy consumption standpoint, of a regular size automatic when a compact unit may be more appropriate.

Another consideration that must be noted is the physical storage space that may be available. Most apartment units do not provide either the space or the plumbing required for regular or large capacity machines. Therefore, the limitations make the compact washer the only size alternative available to the consumer.

It is important, therefore, that Sec. 201 be amended to recognize the need for establishing differing minimum standards based upon the direct relationship between machine capacity and the amount of energy consumed. Without the stipulation that product categories be identified by capacity and/or utility, consumers may, in the short run, lose the freedom of choosing the size machine most appropriate to their family configuration—therefore possibly increasing the amount of energy consumed in order to do a given amount of laundry.

The above comments can be equally and appropriately addressed to clothes dryers and dishwashers. Like automatic washers, these products must also have differing minimum standards categories so as not to restrict marketplace choice or increase energy usage.

Appendix A contains Whirlpool's recommendations for defining product categories within product classes.

### Refrigerator-Freezers/Freezers

Fundamental design differences and product capacity must be recognized in establishing differing minimum standards in order to avoid unnecessary reduction in the utility of refrigerator-freezers required by consumers.

Appendix B includes not only a discussion of proposed product categories, but also dramatizes the relationship between capacity and energy consumption.

### Air Conditioners

Differing size (capacity) characteristics of air conditioners must be considered when establishing energy efficiency minimum standards. As pointed out by the FTC in their testimony before the Committee more energy is consumed by an air conditioner that is too large for a consumer's need. Conversely, energy consumption can also be excessive if the unit is too small for the size of the room to be cooled. For instance, if a single standard is established for air conditioners, possibly eliminating large BTU models—necessitating reliance upon a smaller unit to do the job—performance (cooling) would be marginal. In other words, the product will consume energy without optimum performance return.

The definition of categories would also have to recognize fundamental design differences between heat pumps and regular air conditioners. With heat pumps, the heating side of the unit can be inefficient from an energy consumption standpoint depending upon mildness or severity of the winter season.

Specific category energy efficiency standards recommendations are contained in Appendix C.

### Kitchen Ranges and Ovens

Three basic range and oven categories—cooktops, ovens, and microwaves—are needed because of the intrinsic design differences and utilities of these categories. For example, each category is designed to accomplish a certain task (i.e., boiling water, cooking a roast, etc.). Minimum standards should therefore be developed for each category so as not to dictate extremely complex efficiency rules for range units made up of several category combinations. The configurations could include - oven, cooktop/oven, cooktop, microwave/or two ovens, cooktop.

In summary, Whirlpool hopes the above product narratives effectively dramatize the need for an amendment to Sec. 201(a)(7) which would define product categories beyond "kind of energy" consumed. The common thread woven into our discussion of product categories within classes has been one of relating energy efficiency to the amount of work performed by an appliance of a given capacity. We invite the committee's attention to Sec. 321(a)(5) of EPCA which defines "energy efficiency"—"the term 'energy efficiency' means the ratio of the useful output of services from a consumer product to the energy use of such product—". We imply from this definition that the intent was to ensure that the energy consumed by an appliance should be related to its capacity, performance, and design differences.

Appendix D contains our recommended amending language to establish categories within product classes for the purposes of developing efficiency standards. It also reflects our recommendation to include laundry appliances in the minimum efficiency standards program—thus ensuring that the program is uniform in nature.

Appendix E is our written response to Mr. Finnegan's question relating to replacement unit vs. original purchase sales statistics.

APPENDIX A

## 1. AUTOMATIC WASHERS

| Capacity | Basket Volume - Cubic Feet* |
|---|---|
| A. Compact Capacity | 1.0 cu. ft. or less |
| B. Intermediate | Over 1.0 cu. ft. but less than 1.6 cu. ft. |
| C. Regular Capacity | 1.6 cu. ft. but less than 2.3 cu. ft. |
| D. Large Capacity | 2.3 cu. ft. and over |

## 11. CLOTHES DRYERS

| Capacity | Drum Volume - Cubic Feet | Load Size |
|---|---|---|
| A. Compact Capacity | 3.0 cu. ft. or less | 3# |
| B. Intermediate | Over 3.0 cu. ft. but less than 4.4 cu.ft. | 3# |
| C. Regular Capacity | 4.4 cu.ft. but less than 6.5 cu.ft. | 7# |
| D. Large Capacity | 6.5 cu.ft. and over | 7# |

## 111. DISHWASHERS

| Capacity | Rack Area - Square Feet |
|---|---|
| A. Compact Capacity | Less than 4.8 sq. ft. |
| B. Regular Capacity | 4.8 sq.ft. but less than 7.0 sq. ft. |
| C. Large Capacity | 7.0 sq. ft. and over |

*Measured at high water level in basket, agitator in place.

APPENDIX B

I. Proposed Categories

A. Refrigerators - Manual Defrost

A basic type product generally made only in smaller sizes the frozen food space is normally operated at 10-15° F., which is proper for only short term storage. The cooling surfaces collect frost and must be manually defrosted -- generally with warm air or water. Practical energy rating test procedures do not permit testing with a layer of frost on the cooling surfaces, but it can be shown that substantial frost will cause warming of the food and/or increased power consumption. This product is generally low priced and provides basic refrigeration to low income people, but it does not provide long term storage or meet the needs of those who can not or will not defrost manually.

B. Combination Refrigerator-Freezer - Partial Automatic Defrost:

A combination refrigerator-freezer in which the frozen food compartment must be manually defrosted, but the fresh food compartment defrosts automatically. The freezer compartment does provide 5° F. temperatures for long term food storage. Practical energy rating test procedures do not permit testing with a layer of frost on the cooling surfaces, but it can be shown that substantial frost will cause warming of the product and/or increased power consumption.

C. Combination Refrigerator-Freezer - Automatic Defrost

A combination refrigerator-freezer in which all refrigerated surfaces are automatically defrosted. These products ensure that cooling coils remain relatively free of frost and at optimum efficiency. The freezer compartment provides 5° F., long term food storage. The rate of cooling of warm foods is faster in an automatic defrost combination than in other products ---helps perserve food quality.

D. Chest Freezers - Manual Defrost

A food freezer in which the top opens as a door. The walls of the interior are refrigerated surfaces. These must be manually defrosted. Practical energy rating test procedures do not permit testing with a layer of frost on the cooling surfaces. It can be shown that substantial frost on the cooling surfaces will cause warming of the food and/or increased power consumption. The product provides 0° F., long term food storage.

E. Vertical Freezers - Manual Defrost

Like the Vertical Freezer - Manual Defrost, it uses less floor space than the chest. In addition, the cooling coils are automatically defrosted to ensure that they remain relatively free of frost and at optimum efficiency. The rate of cooling of warm foods is faster -- helps perserve food quality.

II. Capacities

Consumers have differing storage capacity needs depending upon family size, working spouses shopping habits, etc. It can be shown that larger refrigerators and freezers are more efficient (cubic feet per kilowatt hour per day) but would consume more power than smaller products.

For example:

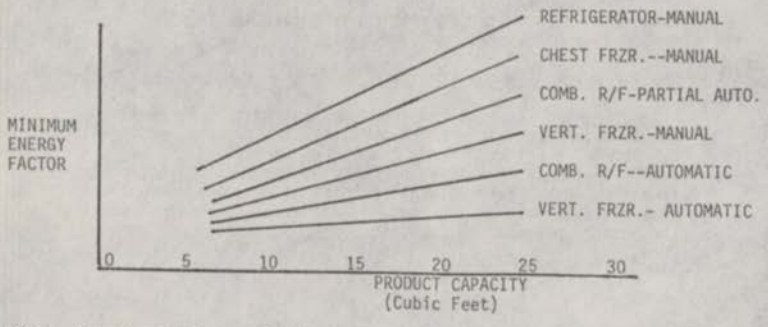
| | 10 cubic feet | 20 cubic feet |
|---|---|---|
| Power Consumption (Kwh/Mo.) | 90* | 140* |
| Efficiency (Energy Factor in Cu. Ft./Kwh/Day) | 4 | 5.1 |

*Products meeting California 1979 Requirements.

Note that for a family requiring 10 cu. ft., the smaller product would be better. However, a family requiring 20 cu. ft. would consume less power with one 20 cu. ft. model than with two 10 cu. ft. models.

III. Recommendation

For the reasons stated above, we recommend that minimum standards for refrigerators and freezers should take the form illustrated below.




NOTE: Actual positioning of lines is not significant, as this is drawn for illustration only.

APPENDIX C

We believe the number of categories will depend on the value established for the minimum standard:

1. The basic minimum standard is 8.4 EER or less and credit is allowed for power saving features:

   Category 1 -- Reverse cycle models (heat pump).

   Category 2 -- All other models.

   The minimum standard for Category 1 should be 2% less than for Category 2.

2. The basic minimum standard is greater than 8.4 EER and credit is allowed for power saving features:

   Category 1 -- Reverse cycle models with cooling capacity of 20,000 Btu/hr or less.

   Category 2 -- All other models with cooling capacity of 20,000 Btu/hr or less.

   Category 3 -- Reverse cycle models with cooling capacity greater than 20,000 Btu/hr.

   Category 4 -- All other models with cooling capacity greater than 20,000 Btu/hr.

   Category 2 would meet the basic minimum standard and Category 1 would be 2% less. Category 4 would be 8.4 EER minimum and Category 3 would be 8.2 EER minimum (2% less).

APPENDIX D

WHIRLPOOL CORPORATION

PROPOSED AMENDMENTS TO

H.R. 6831

PART B-ENERGY EFFICIENCY STANDARDS FOR CONSUMER PRODUCTS

SEC. 201. (a) Section 325 (a) of the Energy Policy and Conservation Act is amended to read as follows:

"(a) (1) (A) Except as otherwise provided in paragraph (3), the Administrator shall, by rule, prescribe an energy efficiency standard for each type or class, *and sub-group categories* of covered product specified in paragraphs (1), (2), *(3)*, *(4)*, (5), (6), (9), *(10)*, (12), and (13) of section 322 (a).

"(B) The Administrator may, by rule, prescribe an energy efficiency standard for any type or class of covered products of each of the types specified in paragraphs *[3]*, *[4]*, (7), (8), *[10]*, (11), and (14) of section 322 (a), except that the Administrator may not prescribe an energy efficiency standard for a type or class of covered product described in paragraph (14) of section 322 (a) unless he determines that-

"(7) A rule prescribing an energy efficiency standard for a type or class of covered product ~~may~~ *shall* specify different minimum levels of energy efficiency for covered products within such type or class: *(a)* based upon the kind of energy consumed by such covered products; *(b) based upon capacity as related to performance or utility; (c) based on fundamental design differences.*

APPENDIX E

In response to Mr. Finnegan's questions at the May 11, 1977, Congressional Hearings, the following is Whirlpool's estimates of the percentages of product replacement purchases and first and/or additional purchase.

| PRODUCT | REPLACEMENT PURCHASE | FIRST AND/OR ADDITIONAL PURCHASE |
|---|---|---|
| AUTOMATIC WASHERS | 75.0% | 25.0% |
| ELECTRIC DRYERS | 45.0% | 55.0% |
| GAS DRYERS | 65.0% | 35.0% |
| DISHWASHERS | 49.0% | 51.0% |
| REFRIGERATORS | 75.0% | 25.0% |
| TOTAL FREEZERS | 55.0% | 45.0% |
| ROOM AIR CONDITIONERS | UNCERTAIN | UNCERTAIN |
| ELECTRIC RANGES | 45.0% | 55.0% |
| GAS RANGES | 80.0% | 20.0% |

Mr. DINGELL. For the purposes of the record I note that the changes you suggest are at page 30 in the bill, are they not, because of the fact that you were probably working from the mimeographed copy of the bill which was released early?

Mr. TAKACS. Yes.

Mr. DINGELL. And we are probably dealing here with the printed copy which may require some changes in citation. This comment is not by way of criticism but simply by way of adjusting the record and recognizing that you worked from a different document than officially in the introduced legislation that lies before the committee; is that right?

Mr. TAKACS. We have the printed administration version.

Mr. DINGELL. In order to afford you clarity in the record, to make sure your position is clear, the Chair will ask unanimous consent that you have opportunity to correct the changes that are occasioned by the difference in the two working documents.

Mr. TAKACS. Very good.

Mr. DINGELL. Without objection, it is so ordered.

The Chair recognizes my colleagues for questions.

The Chair recognizes first the gentleman from Ohio, Mr. Brown.

Mr. BROWN. Gentlemen, I would like to ask this. We are talking about appliances of various types here, and the Secretary is given discretion beyond a certain level for appliances.

Do you think that there are things that we ought to prohibit altogether in the appliance field, for one reason or another? In other words, making a moral judgment on whether or not somebody should use their arm to brush their teeth with, as opposed to an electric toothbrush?

Mr. PAYNTER. I do not.

Mr. KLOSKA. On what basis would you eliminate some appliances?

Mr. BROWN. The Federal omniscience in this area.

Mr. KLOSKA. I mean on the basis of it being energy-consuming or being not utilitarian to the consumer?

Mr. BROWN. Perhaps frivolous, that is a frivolous appliance, without merit in terms of its benefits to society.

Mr. PAYNTER. I think your question is a—

Mr. BROWN. It is not a totally facetious question.

Mr. PAYNTER. It is not a facetious question because some of the States have dealt with it. I think it is an elitist view to try to prescribe what the consumer should and should not use.

Mr. BROWN. What about the question of processes here, because all these things we are talking about are processes. I guess if we eliminate the electric toothbrush we could also eliminate the agitator and the washer and let her go back to using the old washboard.

Mr. SHARP. Her?

Mr. BROWN. The gentleman makes a good point.

The question though is on such things as the little separate hamburger fryer or the use of the microwave to warm a cup of coffee.

Are these efficient uses for these products? Are we better off doing the cooking on a conventional stove top in terms of savings? How do we educate the consumer of electric power to what is the most efficient use of that power?

I don't know, for instance, whether warming a cup of coffee in a microwave oven as opposed to turning on the 8-inch burner on an electric stove to heat up the teapot is better or worse.

Can you advise me? Does anybody know? It is your business.

Mr. MCCONNELL. Better. In your example the microwave oven is definitely more efficient.

Mr. BROWN. The silence is deafening here on a couple of my questions. I am sorry I made a sexist remark earlier. Maybe that has thrown everybody off.

For instance, the design—and these decisions are going to have to be made I guess by somebody in the government—the design of the stove top that has an electric coil as opposed to that which is a ceramic top with the electric fibers in the ceramic top. Which of those is more efficient in terms of energy usage?

Mr. PAYNTER. Coil top.

Mr. BROWN. Are we going to get rid of the ceramic top?

Mr. PAYNTER. This will come out depending on your test methods and the standards that are developed.

Mr. DINGELL. If the gentleman will yield, wouldn't it also go into how the different appliances are broken down into categories?

Mr. PAYNTER. Yes.

Mr. BROWN. Where are the people going to come from that the Federal Government will hire to make these decisions?

Mr. PAYNTER. We hope that you will rely——

Mr. BROWN. Don't say "you." I won't have anything to do with it.

Mr. PAYNTER. We hope the government will rely on industry input, and the technical capability of people like the National Bureau of Standards to arrive at a reasonable test method and standards.

Mr. BROWN. The efficiency of a top opening washer for dishes or clothes as opposed to front loading dishwasher or clothes washer or dryer, is there any issue there involved in efficiency?

Mr. WHITMAN. Generally there is only one front loading washer currently manufactured in the United States because the consumers have elected to go with agitator type washers. We feel that since generally in the agitator washer you can put in great clothes load that it isn't technically less efficient. In terms of water usage, which is 95 percent of the power consumed in a washing machine, the front loading axis washer is in fact slightly more efficient.

Mr. BROWN. So we are up against consumer preferences versus efficiency.

Mr. WHITMAN. Correct.

Mr. BROWN. One final question.

With respect to preemption, are you asking for an across-the-board preemption for all products, both those required to have standards set by the Federal Government, and those for which standards may be set at the Secretary's discretion, and other appliances for which there is no provision for standards to be set?

Mr. PAYNTER. Yes.

Mr. BROWN. There are three categories and I am not clear where you want the preemption.

Mr. PAYNTER. Our feeling is——

Mr. BROWN. And why?

Mr. PAYNTER. —feeling is that it should be across the board. If an appropriate finding is made at the Federal level that they are not required on some appliances, we feel that this should be binding nationwide.

Mr. BROWN. You mean that no State can then require them beyond the Secretary's decision that they not be required?

Mr. PAYNTER. Correct.

Mr. BROWN. And why?

Mr. PAYNTER. Again if there is an appropriate finding and all voices are heard in making that determination initially, we don't feel that the States should be in a position of coming in and applying different standards than that nationally. It would, as a matter of fact, result in an intolerable burden on interstate commerce for us to have to deal with a multiple State approach.

Mr. BROWN. Are we going to make a finding in the case of each individual type of appliance in each category or not?

Mr. PAYNTER. I should hope so, in the category that they are made.

Mr. DINGELL. The time of the gentleman has expired, but before the Chair recognizes other members, Mr. Kloska, do you have a comment, and Mr. Takacs, do you have a comment on the preemption matter so we have that for the record here?

Mr. TAKACS. I think Harry has pretty much voiced this.

Mr. KLOSKA. Very well.

Mr. DINGELL. The Chair recognizes the gentleman from Indiana, Mr. Sharp.

Mr. SHARP. Thank you, Mr. Chairman.

Mr. Kloska, I believe, recommended that we deal with only those products that use more than 200 kilowatt hours of electricity a year; is that correct?

Mr. KLOSKA. Yes.

Mr. SHARP. And we have had other figures of 150 and 100, depending on what the President is recommending in the law. What I want to know is can you help us understand, any of you, what products would fall within that 100, 150, and 200 range? Can you give us some idea of what we would be including or excluding, if we take different cutoffs?

Mr. KLOSKA. I have here a listing of products and their usage, which is an excerpt from one of the appliance manufacturer magazines which is probably as good a composite as any.

Mr. SHARP. Would you have that available so our staff could make a copy of that and put it in the record?

Mr. DINGELL. I think that would be quite appropriate, and if that is available, without objection, it will be inserted in the record here.

[The document referred to follows:]

## Portable Electric Housewares Energy Consumption

| Product | Average operating wattage | Uses per year | Time/use (min.) | Hr/yr | Pct. actual "on" time * | kWh/yr |
|---|---|---|---|---|---|---|
| Baby Food Warmer | 165 | 1092 | 7.3 | 131 | 100 | 22 |
| Blender | 300 | 293 | 0.5 | 3 | 100 | 0.9 |
| Broiler | 1140 | 100 | 45 | 75 | 100 | 85 |
| Can Opener | 100 | 1000 | 0.2 | 3 | 100 | 0.3 |
| Clock | 2.5 | Cont. | Cont. | 8760 | 100 | 22 |
| Blanket | 150 | 250 | 480 | 2000 | 50 | 150 |
| Coffeemaker | | | | | | 138 |
| Brew Cycle | 600 | 600 | 15 | 150 | 100 | 90 |
| Warm Cycle | 80 | 600 | 60 | 600 | 100 | 48 |
| Coffeemaker Urn | | | | | | 15 |
| Brew Cycle | 1200 | 18 | 30 | 9 | 100 | 11 |
| Warm Cycle | 100 | 18 | 120 | 36 | 100 | 4 |
| Corn Popper | 575 | 100 | 9 | 15 | 100 | 9 |
| Curling Iron | 40 | 300 | 10 | 50 | 82 | 1.6 |
| Cooker-Fryer/ Dutch Oven | 1200 | 35 | 60 | 35 | 54 | 23 |
| Egg Cooker | 550 | 270 | 5 | 23 | 100 | 13 |
| Fondue/Chafing Dish | 800 | 25 | 60 | 25 | 46 | 9 |
| Fry Pan | 1200 | 180 | 45 | 135 | 62 | 100 |
| Griddle | 1200 | 100 | 30 | 50 | 76 | 46 |
| Hair Clipper | 10 | 200 | 10 | 33 | 100 | 0.3 |
| Hair Dryer - Sft. Bon. | 400 | 100 | 45 | 75 | 100 | 30 |
| Hair Dryer - Hard Bon. | 900 | 100 | 30 | 50 | 100 | 45 |
| Hair Dryer - Hand Held | 600 | 250 | 10 | 42 | 100 | 25 |
| Hair Setter/Curler | 350 | 156 | 15 | 39 | 100 | 14 |
| Heating Pad | 60 | 52 | 120 | 104 | 54 | 3 |
| Ice Cream Freezer | 130 | 6 | 45 | 5 | 100 | 0.7 |
| Ice Crusher | 100 | 100 | 3 | 5 | 100 | 0.5 |
| Iron | 1100 | 52 | 120 | 104 | 52 | 60 |
| Juicer | 90 | 400 | 1 | 7 | 100 | 0.6 |
| Kettle | 1500 | 600 | 5 | 50 | 100 | 75 |
| Knife | 95 | 90 | 5 | 8 | 100 | 0.8 |
| Knife Sharpener | 40 | 52 | 5 | 4 | 100 | 0.2 |
| Lighted Mirror | 20 | 650 | 10 | 108 | 100 | 2 |
| Massager-Hand Held | 15 | 104 | 10 | 17 | 100 | 0.3 |
| Mixer-Hand | 80 | 150 | 5 | 13 | 100 | 1 |
| Mixer-Stand | 150 | 75 | 8 | 10 | 100 | 2 |
| Roaster | 1425 | 12 | 360 | 72 | 58 | 60 |
| Rotisserie | 1400 | 26 | 120 | 52 | 100 | 73 |
| Shaver | 15 | 365 | 5 | 30 | 100 | 0.5 |
| Shaving Cream Dispenser | 60 | 365 | 1 | 6 | 100 | 0.4 |
| Slow Cooker | 200 | 104 | 400 | 693 | 100 | 139 |
| Table Range | 1100 | 175 | 35 | 102 | 100 | 112 |
| Table Clothes Washer | 95 | 104 | 24 | 42 | 100 | 4 |
| Toaster | 1100 | 700 | 3 | 35 | 100 | 39 |
| Toaster-Oven | | | | | | 93 |
| (Toasting) | 1500 | 500 | 3 | 25 | 100 | |
| (Oven) | 1500 | 280 | 30 | 140 | 26 | |
| Toothbrush | 1.1 | Cont. | Cont. | 8760 | 100 | 10 |
| Waffle Iron/ Sandwich Grill | 1200 | 52 | 30 | 26 | 80 | 20 |
| Warming Tray | 140 | 26 | 120 | 52 | 100 | 7 |

* Factor for the effect of on-off cycling in thermostatically controlled products.
Source: Association of Home Appliance Manufacturers

Mr. KLOSKA. It is March 1977, Appliance Manufacturer.

Mr. SHARP. Off the top of your head without having to follow through, can you give us just some idea of the size of the product? I guess I am not knowledgeable.

Mr. KLOSKA. In kilowatt hours per year, blankets are 150, coffeemakers are 138, frypans are 100, slow cookers are 139, tabletop ranges 112, toaster ovens 93. That gives you a pretty wide variation.

Mr. SHARP. On those products you have just mentioned, do you have enough familiarity with them or someone else on the panel to indicate whether there are dramatic differences in efficiency among the range of products that is on the market now?

Mr. KLOSKA. My feeling is that there is not a great difference, and there would probably not be a great opportunity for energy efficiency improvement.

Mr. SHARP. Is there anybody with knowledge.

Mr. TAKACS. We don't make small ones.

Mr. PAYNTER. Nor are they included in our association.

Mr. SHARP. I thank the chairman. I won't take any more time.

Mr. DINGELL. The Chair recognizes next the gentleman from Michigan, Mr. Stockman.

Mr. STOCKMAN. I would like to pursue this question of a minimum efficiency standard approach as opposed to an average efficiency improvement. I think I am beginning to see some angles on it which really raise a basic question.

One of you indicated that there seems to be some kind of stable relationship. It doesn't necessarily have to be linear but there is some kind of stable relationship between the price of the appliance and its energy efficiency. As you move into the higher price categories for a given appliance, you are likely to get more and more efficiency.

I am sure that there are other variables that go into the process of determining price and efficiency, but would you all agree that there is that kind of relationship there? In other words, I have drawn a chart and hold it up. On one axis you have efficiency and on another axis you have price.

Do you have a curve that would be somewhat the way that I have described it here? It seems to me that if this is correct, what you are doing with minimum efficiency standards is merely arbitrarily drawing a line down the price or cost axis, and saying that anything below that is ruled out of the market, which is a low cost item which the low income consumer is using, and anything above that stays in the market.

Is this a correct analysis of what the effect of the minimum efficiency standard approach would be?

Of course you could set it anywhere, the minimum efficiency line. We could set it off the chart so that nothing on market today would qualify but I imagine it would be set in there somewhere.

Could any of you comment on the basic outline that I am making here? Does it sound right?

Mr. ELDERS. I might make this comment. The inflection of the curve that you drew, Mr. Stockman——

Mr. STOCKMAN. It may be too steep, I don't know.

Mr. ELDERS. The point is that you get diminishing returns in energy through increased cost, that is, a point is reached somewhere off the curve where you are getting virtually no improvement for a great deal of cost.

Mr. STOCKMAN. I am saying of the products that are on the market now, could you give me an example of the range in terms of, let's take a conventional oven, if that would be a good product to use. A low priced one that has low efficiency—let's take a refrigerator because I know there are differences there, a refrigerator, or freezer. A low priced one has low capacity and low efficiency and a high priced one has high capacity, higher efficiency and a much higher price.

What are you talking about in terms of efficiency for products on the market today?

Mr. ELDERS. You included two variables there.

First of all, speaking just of the efficiency portion of the——

Mr. STOCKMAN. Under standard utilization.

Mr. ELDERS. With no changes in storage capacity.

Mr. STOCKMAN. Right.

Mr. ELDERS. Increases of $50 or more have been found in the marketplace for some of the high efficiency refrigerators that have been marketed. Some I have seen as high as $100 but at least $50 has commonly occurred.

Mr. PAYNTER. I believe our technical director can comment.

Mr. LANGMEAD. The curve you drew would be different for every appliance.

Mr. STOCKMAN. I know.

Mr. LANGMEAD. And it is going to go in steps.

Mr. STOCKMAN. Right. It won't be a linear curve. We are talking about this kind of basic relationshp.

Mr. LANGMEAD. One of the prime things in even developing such a curve is knowing the exact test procedure under which you are going to measure the efficiency against. Until the test procedures are finalized, it is impossible to relate numbers to a curve like that. After the test procedures are developed, and products are on the market that have hit various levels under that measurement, we can look back, but it is hard to develop that curve ahead of the fact. You can develop it after the fact, after products have been developed. To make accurate initial judgments on a curve like that you almost have to a have product on the market and look at what is existing today, not projecting out in the future.

Mr. DINGELL. Would the gentleman yield just for a brief moment?

The Chair will not count this against his time.

Gentlemen, the Chair advises that the full committee does need a quorum. It needs two members. I am not prepared to tell you who is going. I have got to stay here and run the hearings. The Chair will inquire if Mr. Moffett has a question.

Mr. MOFFETT. Does the Chair anticipate adjourning any time?

Mr. DINGELL. No, the Chair regretfully advises that we next have the Department of Housing and Urban Development, which has considerable to say with the insulation standards section of the proposal, and we will therefore hear them next. We are going to persist. We are going to get lunch I hope some time. The Chair gives no firm assurances on that matter.

With those apologies to the gentleman, the gentleman is again recognized.

Mr. KLOSKA. May I make two points?

The range of products that Sears handles, ranges in consumer price from $125 to $995. If we put any qualifying dollar value on the cost improvement at the low end, you can see the difference it will have percentage-wise to the low end of our product.

Mr. STOCKMAN. Could I stop you right there? I know there are all kinds of variables that go into it. What would be the approximate difference in effiency between the low end item that you mentioned——

Mr. KLOSKA. If we were just to address the efficiency of the oven with regard to heat loss, the higher end range products would probably have a self-cleaning oven. Those inherently have a lower heat loss than the low end product, which is a conventional type oven.

To try to move that type of design down into the lower cost product would add considerable cost to that product.

The second point I would like to make is regarding gas ranges, we talk about increasing the efficiency or lowering the energy usage, and one of the factors is that, by use of electronic ignition systems. The low-end product currently will not have an electronic ignition system, mainly because Sears is in the replacement business. We sell replacement ranges. I can't foresee an installation where a man would come to the store and buy a low-end cost, efficient unit with an electronic ignition system and then has no place to plug it in. These low-end ranges are strictly gas ranges. There is no electricity at all, and I don't think that he would go ahead and spend the $50 to $150 additional cost to put an electrical line in so that he can plug in his new high efficiency range.

Mr. STOCKMAN. He needs 220 volts?

Mr. KLOSKA. No, 110. The chances are in the older homes that electricity is not available in that area.

Mr. STOCKMAN. Couldn't he buy an extension cord?

Mr. KLOSKA. I can't make that recommendation, sir. You may. No, that is not an acceptable way to do it, but I just make those two points for clarification.

Mr. STOCKMAN. Okay. I think that we are getting to the point that I am after. That is when we go with the minimum efficiency standard approach, we are going to be moving a lot of low and middle range product off the market simply because the energy utilization standards will preclude those being sold; right?

Mr. KLOSKA. We may not move them off the market but we will surely pass this cost to the consumer.

Mr. STOCKMAN. The point is that initially you couldn't, and it might be very difficult to develop a product that you could get back into the low end and still meet the efficiency standard, so really what you are doing is putting the burden of the energy savings that we are going to get from appliance standards on the lower to middle income segment of the population.

Mr. KLOSKA. I woudd say that is a pretty fair assumption, yes.

Mr. STOCKMAN. Thank you.

Mr. DINGELL. The Chair thanks the gentleman.

The Chair recognizes the gentleman from Connecticut, Mr. Moffett.

Mr. MOFFETT. Thank you, Mr. Chairman.

Under the provisions of EPCA, the Energy Policy and Conservation Act, we require information on the label respecting the range of estimated annual operating costs for covered products, I would wonder whether the labeling of energy cost consumption either on an annual basis or over the operating life of a product can in any way take into account potential energy price increases, variations in homeowner's use of the product, climatic differences and so forth. Have you received any complaints along those lines? How do you anticipate handling the problem if it arises?

Mr. WHITMAN. We never put a label of that type on the machines as yet. It has never been defined by the FTC, but under the voluntary program originally under the Department of Commerce, it was proposed that a label on laundry appliances, as an example, for electric water heaters and gas water heaters, would include a range of costs, so that you could estimate the difference between what the label said, which was going to be based as an example on 4 cents per kilowatt hour, and whether yours may in New York be 8 or 10 or 6, something like that. There was going to be a range proposed, but where that stands we have no idea.

Mr. MOFFETT. We have seen with the EPA, for example, that mileage guidelines have drawn some criticism because people expected their cars to meet certain tests and they did not.

I wonder if we are going to have the same problem with regard to appliances?

Mr. PAYNTER. I think the purpose and the intent of those labels is to show the relative differences, one product to another, that you might see on the floor. If properly cautioned, the consumer will use it in that way, rather than trying to determine what his individual costs would be. He is merely looking at one water heater compared to another, seeing there is a substantial difference or minor difference, whatever that might be between those two.

Regardless of his fuel cost escalations, presumably that difference would remain.

Mr. MOFFETT. When you discuss the precautions needed it brings up the question of consumer education. I wonder whether it is possible to convey to people what they need to know, so that they do not have false expectations.

Mr. PAYNTER. This is one of the reasons for going toward annual operating costs rather than the life of the product, because in the life of the product you are affected by escalation of fuel costs.

Again, one of the reasons for giving this to the Federal Trade Commission was for the purpose of consumer education and indoctrination along with it. They felt that was very important, and I agree.

Mr. MOFFETT. On the subject of intermediate standards, my understanding is that GAMA has voiced its disapproval of intermediate standards. Is there any other witness here that would indicate that they think they can live with intermediate standards?

I realize that questions have been raised about the problems of retooling and designing. However, the Administrator has the authority to change standards in any case and you might then be faced with those same problems. Does Sears have an opinion on that?

Mr. KLOSKA. No, we do not at this time.

Mr. MOFFETT. Do we have general opposition here to intermediate standards or not?

Mr. WHITMAN. Not necessarily, depending on how reasonable, how logical and practicable they may be. You are right, though, that one of the concerns in the act is we may be working towards a standard, a target that is set up for 1980 and all of a sudden we get to 1979 and the target is raised. That could create great havoc. We just maybe could not do it in that time span, in terms of design and tooling.

Mr. MOFFETT. Does anybody else care to comment?

Mr. ELDERS. If we have a foreknowledge of what the ultimate standard will be, then the appropriate planning can be made.

Mr. MOFFETT. The ultimate standard, you say?

Mr. ELDERS. Within the design cycle of the manufacturer.

Mr. MOFFETT. So the predictability is important even if there are intermediate standards?

Mr. ELDERS. So there is not discontinuity from the intermediate to the ultimate.

Mr. MOFFETT. I see.

One final question. Mr. Paynter's testimony on page 5 indicates an opinion that the consumer invariably focuses on initial cost and looks for a pay-back in three years, not over the life of the product. Is there general agreement on that?

If so, what do we do about that, in terms of consumer education?

Mr. WHITMAN. We would tend to agree with that. In fact, most of our experience says two years, more likely. If it does not pay back in two years, forget it.

Mr. TAKACS. That is the time people normally take a loan out to pay for the appliance.

Mr. WHITMAN. Right, so much per month.

Mr. MOFFETT. Do you see any changes in attitudes by consumers? I know it is still early, but since the President's message and the momentum that was created by it, has there been any indication that consumer attitudes are changing at all?

Mr. WHITMAN. Yes, there is some data on laundry that shows that from 1971 to 1974 or 1975 that considerably more cold water is being used for washing than was hot and warm water in that period of time. So some reaction, some sensitivity to saving hot water has been demonstrated.

Mr. MOFFETT. Also, what do the retail people here find from their people in the field? What are consumers saying in the stores, for example?

Mr. KLOSKA. I cannot answer that now, but I would be more than happy to submit a separate document to you on that, if I can get the information.

Mr. MOFFETT. We see to some extent among constituents an increased awareness at least that there is an energy problem. I

wonder if this is reflected when they walk into your stores; in other words, just how much of an influence did the President's message and the attention focused on that create in the marketplace?

Mr. WHITMAN. Some market research that we have done to elicit that type of response indicates that in areas where the utility costs have skyrocketed and/or such as California, where we did some research recently, where water is a great problem, they are very conscious of it. But it seems to be local as opposed to national.

Mr. MOFFETT. Thank you.

Thank you, Mr. Chairman.

Mr. DINGELL. The Chair thanks the gentleman.

The Chair observes that on the questions here with regard to cost versus efficiency, I am aware of the fact that the folks who manufacture Amana appliances have had some particular concerns and problems with it.

I observe also that the folks from Carrier have too.

I wonder if Mr. Hudelson of Carrier would like to make a comment on this. He is not on this particular panel.

Mr. HUDELSON. Yes, sir.

There have been two types of questions raised here to motivate this comment, one by Mr. Stockman and one more recently by Mr. Moffett, I guess.

The first relates to what is achievable, what is attainable, what is the cost to the consumer of aiming for higher efficiencies?

What I would like to do, rather than get into the details of things that we do not have time to discuss here today is ask permission to enter on the record the results of a very extensive study specifically aimed at air-conditioning equipment, covering central air-conditioning equipment, heat pump equipment, and room air-conditioning equipment, which addresses that very question.

This is information which was developed at Carrier and it was submitted to the State of California Energy Commission when they were wrestling with the very same type of questions that you are.

The second point, which is also addressed in here, is the question of intermediate efficiency standards. We happen to believe this is a very feasible and practical way to go at the matter of improved efficiencies, simply because of the matter of timing to achieve what someone has referenced as the ultimate. It might or might not be the ultimate. But there are things that could be done short-range to achieve some of the objectives that you are driving at.

To go even beyond that, we have to recognize some things have to be done that cannot be done overnight. If we impose them too quickly, we are going to create some things we did not undertake to do. If we set it as a target and give time to achieve it, then in fact we can achieve our objectives, much more in detail than I can speak to here.

This story is addressed in these documents. These are submittals to the State Energy Resources Conservation and Development Commission of California from Carrier Corporation, and the documents are dated August 10, 1976, August 17, and October 5, 1976.

Mr. DINGELL. They would be useful. Without objection they will be retained in the subcommittee files.

I wonder if Mr. McConnell wanted to have a comment on this.

Mr. McConnell. On the subject of cost?

Mr. Dingell. Cost versus efficiency, yes.

Mr. McConnell. Yes. We have I think, as many know, taken a very strong orientation on developing the marketing of more efficient appliances. We have some product lines, whose whole reason for existence is that they are more efficient appliances. As a rule they do cost somewhat more.

So to Mr. Moffett's point, we have been very much in the business of trying to promote more efficient products and sell payback.

That is a very, very important concept. We would agree that the consumer response is in the area of two- to three-year payback. If it gets longer than that, they will not buy.

But there are some other variables. It is very much a matter of salesmanship, too, how to get across, dramatize the benefit of more efficient appliances and there would be a real benefit in the public education area of getting across the idea of payback. It does help us.

All the Federal efforts, the President's message, around our company we said, was a great benefit to our marketing program. But it does require some rather artful work to promote it properly, because people are not sensitized to a payback kind of a decision on buying.

Mr. Dingell. We can reach this last through labeling requirements, is that right?

Mr. McConnell. Yes, labeling requirements. For that reason, the quicker they come the better as far as we are concerned.

Mr. Dingell. They are rather overdue.

Our panel here, we have done you discourtesy. Do you have a comment as to this last point?

Mr. Paynter. Only to reemphasize what the last two were saying. We believe if the minimum efficiency is set at a reasonable level, given the opportunity for those who can make a more efficient appliance or make a top-of-the-line product substantially more efficient through their own merchandising efforts and again assisted by the labeling, this is an opportunity for them to sell that appliance and convince the consumer of the need for it.

Mr. Dingell. Gentlemen, thank you.

The Chair is going to recognize Mr. Henke, the minority counsel.

Mr. Henke. Thank you.

I just have one question with respect to the test procedures, labeling, and product redesign. This is for anybody on the panel.

How long, in your estimate, is it going to take for us to switch from the average concept to the minimum standards concept in terms of developing the test procedures for labeling that is involved with the FTC, and then also for the manufacturers themselves, to put their products into line with the standards?

Mr. Paynter. Test procedures and labeling will not be affected based on going from the average to the minimum efficient standards. It is developing the standard itself that will take the time.

Mr. Henke. How much?

Mr. Paynter. It will depend partly on the test procedures established, and on the level of efficiency that is set by the standards. We are not in a position to give an estimate on the time required.

Mr. TAKACS. The test procedures are presently in the proposed stages and the hearings I believe are in June or July, at which time we will be able to address the test procedures.

Mr. HENKE. The test procedures are applicable regardless of whether you go for an average or a minimum approach?

Mr. TAKACS. Yes.

Mr. WHITMAN. Depending on how reasonable they are, it could be a year.

Mr. HENKE. What could be?

Mr. WHITMAN. Going from average to minimums.

Mr. HENKE. So you disagree with what Mr. Takacs just said?

Mr. WHITMAN. No. He was talking about test procedures. In other words, the test procedure, all that has to be established before you can really evaluate a target.

The minimums, since it is going to require more definition of the different types of categories that they will apply to, I would have to guess would be someplace around six months to a year, although we will not have the averages yet anyway.

Mr. HENKE. That is in terms of developing the actual standard. Then once the standard has been developed, how long will it take the various manufacturers, in your estimation, or your company to implement the standards throughout your product line?

Mr. PAYNTER. It certainly would depend on what the standard was to be.

Mr. TAKACS. Yes.

Mr. WHITMAN. Yes. It requires major redesign; if that is so, it will require three years or more.

Mr. TAKACS. We are usually two to three years in advance planning as far as products are concerned.

Mr. HENKE. We are talking potentially a three- to four-year lead time in terms of actually having products with those standards in place in the market for the consumer.

Mr. TAKACS. Then addressing the inventories that may be on and as to when the target hits, I think that whole thing should be addressed as a system or a package, starting in the test procedures on.

Mr. ELDERS. An important element is the definition of the category and the reasonableness or the recognition to technology given in the standards within those categories.

Mr. WHITMAN. Right.

Mr. ELDERS. If the technology is recognized, that will facilitate it, the manufacturers' movement toward higher efficiency; whereas, if a design type is excluded because the technology is not readily available for it, the dislocation would be much greater.

Mr. HENKE. The gentleman from GE.

Mr. LYNCH. You are on a very pregnant point. I think the minumums affect the time in two areas.

One is the time to develop the minimum, targets, which would be on the order of six months to a year. I agree with the gentleman from Whirlpool.

Secondly, it will add time from the standpoint of adapting by industry, because we only have one degree of freedom in which to meet it, and that is the modification of low end product, whereas

the averages enable you to modify the whole range of products is more flexible. That means the difficulty of how to more significantly modify just that one end of the product line will add time.

Mr. HENKE. You would think that an average approach could be more readily achievable and therefore quicker in terms of getting the product that is more energy-efficient to the consumer. Is that a fair inference?

Mr. LYNCH. Yes.

Mr. HENKE. May I just ask one final question?

Is there any other way to achieve the goals of the program, i.e., more efficient appliances in a shorter time frame than going to the minimums approach?

That is addressed to the panel.

Mr. PAYNTER. The comment just made is the test procedure, if you can encourage the promulgation of the test procedures and the promulgation of the labels, that in itself will add substantially to the speed with which you can reach your objective.

Mr. DINGELL. If Mr. Henke will yield, the thought has been flowing through my mind that maybe if the dates are not met by the administrators, we just terminate the funds until the deadlines are met. I think that would encourage them towards "all deliberate speed."

Mr. BROWN. Mr. Chairman, I would like to remind this panel that I asked the other panel for cost information, the impact of the cost of the manufcturer in terms of energy efficiency or energy usage, in manufacture of new products, and I would like to ask the same of this panel, the question I asked the first panel.

Mr. DINGELL. The Chair thinks that is an excellent question.

Without objection on receipt that information will be placed in the appropriate place.

The Chair recognizes now counsel for the committee, Mr. Finnegan.

Mr. FINNEGAN. Thank you, Mr. Chairman.

Gentlemen, and maybe the previous panels, could you provide for the record—maybe you have these figures—the number of appliances listed in the bill for mandatory standards that were sold in 1975 and 1976, one as a replacement appliance and, two, as the first appliance for new residences, if you have any estimates of that kind?

You have made some statements, particularly I think Sears, that these requirements of minimum standards have an effect of encouraging people to maintain their existing appliances for a longer period of time.

Mr. PAYNTER. We can provide you with the record of manufacturers shipments, but we have no way of knowing the number that go in the replacement market and the number sold for the new construction market.

Mr. DINGELL. The Chair would say do your best.

Mr. WHITMAN. I might add that this information, there is a survey called Trendex, which is a very extensive telephone survey which is the basic—we use it I know—bible as to what share is retail, what share replacement, what share is first-time purchase.

That service is available to anybody who wants to buy it.

Mr. FINNEGAN. Can you provide the information for the files?
Mr. WHITMAN. Yes.
Mr. TAKACS. We will attempt it.
Mr. FINNEGAN. Thank you.
Going back to the preemption question, as I understand the present statute, it provides for complete preemption of all State standards in place; is that your understanding, gentlemen?
Mr. WHITMAN. Yes.
Mr. KLOSKA. Yes.
Mr. TAKACS. Yes.
Mr. PAYNTER. Yes.
Mr. FINNEGAN. Also that the statute provides for the opportunity for manufacturers to petition for preemption of State standards even if there is no Federal standard in place, provided that the manufacturer can prove two things: First that there is no State or local interest sufficient to justify such a regulation and second, that it does not unduly burden interstate commerce, is that correct?
Mr. TAKACS. Yes.
Mr. WHITMAN. Yes.
Mr. PAYNTER. Yes.
Mr. KLOSKA. Yes.
Mr. FINNEGAN. In that circumstance, why should State standards be preempted when there are not Federal standards in place, assuming the manufacturers can meet these two tests.
Mr. PAYNTER. This is one of the things we quarrel with, the apparent vagueness or the interpretation of the current preemption clause. We feel that preemption clause should be much stronger, broader, so there would be no question about whether or not the State law would be preempted.
Mr. FINNEGAN. Have you made any effort to have that interpreted? Have there been any petitions filed under that?
Mr. PAYNTER. Yes.
Mr. FINNEGAN. What is the status, what has happened to those petitions?
Mr. PAYNTER. The Gas Appliance Manufacturers Association, the Association of Home Appliances Manufacturers, and the Air Conditioning and Refrigeration Institute, have all petitioned for preemption of the California law and no ruling.
Mr. FINNEGAN. When were these petitions filed?
Mr. LYNCH. December 3.
Mr. FINNEGAN. 1976?
Mr. LYNCH. Yes.
Mr. FINNEGAN. Is there any indication how long before FEA will rule on this issue.
Mr. CROLIUS. AHAM counsel. Discussions with FEA attorneys indicate that they have significantly increased their consideration of the petitions, it is on the front burner, to use their words. There is some indication that there will be a ruling, a proposed rulemaking in the near future.
Mr. FINNEGAN. If the petition is granted in that case, would you still want the total preemption that you are seeking for this legislation.
Mr. CROLIUS. Yes, sir. We would not like to have to keep fighting off clusters of State regulations as they crop up.
Mr. DINGELL. The Chair observes Mr. Schooler has a comment.

Mr. SCHOOLER. In the statute it says there is a six-month period for review. To follow up on Mr. Finnegan's point, what is the additional clarity that GAMA or AHAM is expecting in section (b)(1)?

First, would you want to remove the entire petition process and have complete preemption, and second, assuming you do not have that, how would you change the language in the (b)(1), tests of "no State interest and unduly burdening interstate commerce"?

Mr. PAYNTER. We would like complete preemption without petition, the mood of Congress to very clearly show that intent.

Mr. SCHOOLER. Let's assume, though, that there is not complete preemption, would you change the test at all?

Mr. PAYNTER. The problem with the test of whether or not a current statute exists within a State is the speed with which a State can adopt new legislation as compared to the Federal legislative process, and by the time that this proposed legislation is eventually passed, if it is, by that time you could have 50 States with the law in place, which would require the manufacturers then to go and show cause in each case why their statutes should not be allowed to stand.

Mr. FINNEGAN. In answer to Mr. Brown's question, you indicated that the agency would have to make a finding before the preemption would take place, a finding as to each category or each type of appliance. Would it not take an awful long time to do that?

What would be the basis for such a finding as far as the FEA? What would they have to do to make that kind of a finding, or are you just expecting a blanket finding across the board?

Mr. PAYNTER. I may not have understood your original question accurately.

I think in categories you can make a finding, general categories such as the amount of energy consumption for a given class of product and a finding as to the exclusion of that group, for example.

Mr. FINNEGAN. What would it take to make that finding? Can the FEA obtain that information very quickly to make that finding?

Mr. PAYNTER. I think through normal rulemaking procedures they could make that finding without undue delay.

Mr. FINNEGAN. That is the nine or ten categories of appliances for mandatory standards; that is one thing. But how about the so-called discretionary standards?

Mr. PAYNTER. The mandatory standards, I do not know there is any question about that.

In the discretionary standard, I think some manufacturers who are in that category might even ask to have their products included in the mandatory standard in order that preemption would, indeed, be exercised.

As a matter of fact, knowing the segment of industry that I represent, I cannot conceive of any segment that would not want to be included in the mandatory category if they could be assured of the protection of preemption.

Mr. FINNEGAN. Do you agree with the identification by FEA or by the administration of those particular appliances in category A, that are set forth as the mandatory ones; would you include all of the 13 that are in the statute now, or would you include some of those, or what?

Mr. PAYNTER. Of those that are gas appliances and electric water heaters, my own feelng is, although we have not gotten a complete feed-back yet from the industry, I have little question that all of those would want to stay in the mandatory category, with preemption as a condition.

Mr. FINNEGAN. Is there any indication for the reason, the rationale.

Mr. PAYNTER. No, I have no idea.

Mr. FINNEGAN. Now the last point is that the present statute also permits a State to receive an exemption from preemption only if the State can prove that there is sufficient interest, local interest, and that its standards are more stringent.

I gather you are opposed to that idea, too?

Mr. PAYNTER. That is assuming a Federal statute in place, the onus is on the State. If the State already has a statute in effect, then the onus is on the manufacturer. It is that to which we object.

Mr. FINNEGAN. Supposing there is a Federal statute in place and the State wants to be more stringent, would you object to that procedure, too?

Mr. PAYNTER. Yes, absolutely.

Mr. DINGELL. The reason, I assume, is because of the great amount of litigation, the great number of appearances and the burden and complexity of response that would be imposed on the industry and, if unsuccessful in terms of preemption, the great diversity in the manufacturing industry would be created; is that right?

Mr. PAYNTER. Absolutely. Even if some State legislation were identical, if enforcement or if further rulemaking is left up to a regulatory agency of the State, even with two States having identical legislation, when it comes to rule-making there can be substantial differences in the final requirements for the manufacturer, such as State labels, certification, all this kind of thing. So it is very burdensome on interstate commerce.

Mr. TAKACS. We feel it would address the economic soundness of the demand for this legislation, because we are national manufacturers, distributing on a national basis. I do not think we could design and tool up and distribute effectively and keep the prices economically reasonable, being dispersed like that throughout the States. So the economic feasibility question I think would come to bear at that point.

Mr. FINNEGAN. Given the situation where FEA has been fairly slow to establish test procedures up to the present moment, do you object to continuation of the so-called target program for the discretionary appliances?

Mr. PAYNTER. I believe the voluntary program is completely gone. What we have in the current——

Mr. FINNEGAN. It is, under the bill. But is that a proper decision?

Mr. WHITMAN. We believe all the products listed should be under the mandatory minimum standards.

Mr. FINNEGAN. Even the so-called discretionary?

Mr. WHITMAN. Yes.

Mr. FINNEGAN. Is that sensible with respect to reaching standards in a reasonable period of time? There are so many that could be

thrown into that category. What is the practical outside date that you might get standards for that, assuming you include in that the Magnuson-Moss procedures which you are urging to continue?

Mr. PAYNTER. I think if preemption were required, even under a target in a discretionary, that you can preempt with that. It comes back to that one point, preemption is so important to the industry.

Mr. FINNEGAN. Assume you go the preemption route, Congress does buy that, but you also continue the Magnuson-Moss procedure, and you put all the appliances, A and B, into mandatory, what is the outside date that we are looking for to get actual standards in place for all of these many appliances, and what would it cost FEA?

Mr. WHITMAN. I have no idea.

Mr. PAYNTER. No idea.

Mr. WHITMAN. We do not have the targets yet, either. So it may be academic.

Mr. FINNEGAN. That is true.

Mr. TAKACS. It is all contingent on test procedures.

Mr. FINNEGAN. The administration proposal is to move faster than 1980. Is it possible to move faster than 1980 if you threw them all into that basket?

Mr. WHITMAN. I think so; it could be done.

Mr. PAYNTER. In my view, 1980 is barely achievable under any condition, now or with the minimum.

Mr. FINNEGAN. The last question.

AHAM—and I believe you people have all said that you want significant industry involvement in setting of the procedures. Is that not already in existence? What additional involvement are you talking about?

Mr. PAYNTER. It is. We would like to make sure that we continue to have that opportunity.

Mr. FINNEGAN. Is there anything in here that would indicate otherwise?

Mr. PAYNTER. Well, in the one area that I called attention to, the retrofit program, there was no rulemaking procedure to determine the products or systems that would qualify in the overall retrofit program.

We feel that there should be opportunity for more industry involvement, specifically called for through rulemaking procedures in that area.

Mr. FINNEGAN. Do you mean by that the Magnuson-Moss procedures?

Mr. PAYNTER. Yes.

Mr. FINNEGAN. No further questions.

Mr. DINGELL. The Chair thanks you all, gentlemen, for your assistance to the committee. You have been very patient. We are grateful to you.

Our next witness——

Mr. BROWN. We will have some other written questions to submit to the panel members.

Mr. DINGELL. The Chair will afford not only the gentleman from Ohio, but any member, full cooperation and consideration in those matters.

The Chair advises our next witness is the Honorable Donna E. Shalala, Assistant Secretary for Policy Development, HUD. We are pleased to have you with us.

The Chair advises that we will have different counsel handle this matter.

Madam Secretary, we are very pleased you are with us.

Will you identify yourself and your associates for the purposes of the record?

**STATEMENT OF DONNA A. SHALALA, ASSISTANT SECRETARY FOR POLICY DEVELOPMENT AND RESEARCH, DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT, ACCOMPANIED BY HARRY K. SCHWARTZ, ASSISTANT SECRETARY FOR LEGISLATION, DAVID GARRISON, DEPUTY ASSISTANT SECRETARY DESIGNATE FOR POLICY DEVELOPMENT AND RESEARCH, DAVID NICHOLS, ENERGY STAFF, AND DUANE KEPLINGER, DEPUTY DIRECTOR, ARCHITECTURE AND ENGINEERING DIVISION, OFFFICE OF HOUSING**

Ms. SHALALA. Mr. Chairman and members of the committee: I am pleased to appear before you today to present a report on energy conservation and solar energy standards activities at the Department of Housing and Urban Development, and to present HUD's views on section 102 of H.R. 6831, the National Energy Act.

I am accompanied by Harry K. Schwartz, Assistant Secretary for Legislation; David Garrison, Deputy Assistant Secretary Designate for Policy Research and Development; sitting back here, David Nichols, a member of our own Energy Staff; and Mr. Duane Keplinger, who is Deputy Director of the Architecture and Engineering Division of HUD's Office of Housing.

Due to the limited time available, my prepared remarks will be brief, but I wil be pleased to answer any questions the committee may have.

Section 102 of the bill requires the Administrator in consultation with the Secretary of Housing and Urban Development and heads of other agencies, to promulgate rules for the content and implementation of residential energy conservation plans within 120 days of enactment. These rules:

(1) shall identify the suggested measures for residential buildings, by climatic region and by categories determined by the Administrator on the basis of type of construction or any other factors which the Administrator may deem appropriate: and

(2) may include——

(A) standards for general safety and effectiveness of any suggested measure;

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

(C) such other requirements as the Administrator may determine to be necessary to carry out this subpart.

The Department supports this provision, which we believe will assist to insure that residential energy conservation plans are effectively developed and implemented.

Under title III of the Energy Conservation and Production Act (P.L. 94-385), the HUD Secretary is directed to develop and promul-

gate energy conservation performance standards for all new residential and commercial buildings. These standards are then to be adopted by State and local governments for implementation in building codes and other mechanisms for regulation of construction. The first phases of this effort involve development of a buildings classification system in which regions of the country will be defined, and existing construction practices for various types of buildings will be documented. These tasks are part of a newly initiated contract effort with the American Institute of Architects Research Corporation and related professional organizations. We believe the output of this activity in the title III standards program will be of considerable assistance in formulating residential energy conservation plans.

This assumes of course that the new Energy Act will be approved as submitted by the administration.

Several of the Department's existing programs also provide resources in the form of technical experience in this area.

For years, HUD has maintained minimum property standards (MPS) for construction that is insured or built under HUD programs. Sections of these standards relate to energy consumption, and for several years, HUD has been working to upgrade and tighten the sections of the MPS dealing with the energy efficiency of buildings. Since the MPS have served as an important benchmark for the construction industry, the years of experience gained in finding reasonable levels of performance will translate directly into an understanding of what can be accomplished through energy conservation standards.

Secondly, title VI of the 1974 Housing and Community Development Act charged HUD with responsiblity for development and enforcement of national mobile home construction and safety standards. All mobile homes constructed in this country must meet the provision of the standards. HUD must also insure that enforcement programs underway in the States are effective.

Finally, in the solar heating and cooling demonstration program, HUD has been charged to develop standards for residential solar heating and cooling systems and system installation. The department published "Interim Performance Criteria" for residential solar heating and cooling systems in January 1975, less than 90 days after the legislation calling for them was enacted.

However, we have now gone far beyond the interim criteria, in the "Inermediate Minimum Property Standards for Solar Heating and Domestic Hot Water Systems." This new portion of the MPS has been through extensive development and full review and comment by the growing solar industry and interested parties, and is now undergoing final department review.

HUD is also actively supporting the development of national, consensus performance standards, by the American Nationa Standards Institute. We are participating actively in the new Steering Committee on Solar Standards Development, organized by the American National Standards Institute to expedite consensus standards for all aspects of the solar heating and cooling industry.

This committee, an ANSI innovation, has put together a solar standards development plan which will significantly reduce the timer equired to develop appropriate national solar standards.

The energy conservation standards program involves:

State level energy and construction regulatory authorities;

Local capacities for implementation of national initiatives; and

Economic effects on homeowners, manufacturers of building materials and systems, construction firms, and the architecture, engineering, and design professions.

We believe HUD's experience and the working relationships established with public and private organizations, will be invaluable assets in the effective development and implementation of comprehensive energy conservation performance standards for buildings. We expect our work in the area to be of considerable assistance in establishing a sound technical basis for programs such as that called for in H.R. 6831.

Mr. Chairman, this concludes my prepared statement. I would be pleased to answer any questions the committee may have.

Mr. DINGELL. We will now recognize members for questions.

The Chair recognizes the gentleman from Ohio, Mr. Brown, for questions.

Mr. BROWN. You suggest, Ms. Shalala, that HUD will promulgate the standards for all new residential and commercial buildings, and these standards are then to be adopted by State and local governments.

Is there a choice?

Mr. SCHWARTZ. Congressman Brown, may I respond to that?

I am Harry Schwartz, Assistant Secretary for Legislation.

What Assistant Secretary Shalala alluded to before was that we are not operating in a vacuum here, as you very well know. There is pending before both Houses the Department of Energy organization bill. What that legislation does is transfer this authority from HUD to the new Department of Energy. The legislation as originally introduced contained a provision for the delegation by DOE back to such other agencies as it chose. That provision has been stricken from the bill in committee in both Houses, so we are at a juncture now where we really don't know what is going to happen.

What we are confronted with, however, is a situation where the President has recommended a transfer of statutory authority from HUD to the Department of Energy in this area, and we will simply have to await the action of the Congress to see what happens.

Mr. BROWN. The extent or the ability to exercise that authority over State and local governments is the heart of my question, however.

Mr. NICHOLS. I would like to speak to it, if I may.

Mr. BROWN. Anybody; but try to answer the question.

Mr. NICHOLS. The standards to be promulgated, and then the States are to pick them up under existing statewide authorities in the States that have building code authority for energy——

Mr. BROWN. They pick them up at their option or do they have a choice?

Mr. NICHOLS. They have a choice under section 305 of P.L. 94-385. There is a sanction provided in that statute which would essentially cut off money from federally regulated or supervised institutions for the purposes of construction in the States that are not in compli-

ance with the Federal standard by certain specified dates. However, there are also exemption procedures set forth in section 305.

The sanction will not go into effect until a resolution approving the sanction is passed by both Houses of Congress. The Congress will have the opportunity to consider the standards themselves and the sanctions——

Mr. BROWN. So at present the authority does not exist. It depends on the congressional actions as a result of the basic provisions of the EPCA legislation; is that correct?

Mr. NICHOLS. Yes.

Mr. BROWN. That is the answer to the legislation, answer to the question?

Mr. NICHOLS. Yes.

Ms. SHALALA. We did not put emphasis on the sanctions because there is hope that there is a recognition out in the State and local governments that there is an energy crisis, and that the Federal Government will work together with State and local governments, so that it is not an imposition.

Mr. BROWN. I might say that it is not the first time that there has been an effort by the Federal Government, however, to influence the establishment of State and local building standards. It has been tried by previous Secretaries of the Department of Housing and Urban Development in order to accomplish lowering of the cost of housing, and it has been met with what might be termed resounding lack of accomplishment on the part of Secretaries in the past.

Can you tell me if the standards being contemplated would involve the operation of the housing as a system? We have been talking about systems approach. The gentleman on the first panel, Mr. Davis, suggested that. The gentleman last night suggested that in our hearings.

To what extent are we going to consider the impact of the washer, the hot water heater, the lighting in the house and so forth, with reference to the Btu package of what is created in the house in terms of heating, cooling and so forth, as a unit?

Ms. SHALALA. Let me just preface Dave answering that question because I need to be careful here, because Congress has not made a final decision that will affect who has the responsiblity for writing the standards, as Mr. Schwartz indicated, but we at HUD do have some ideas about this.

Mr. BROWN. That is why I asked the question of you. I assumed you would know more about it than perhaps the Secretary of the Department of Energy at this point.

Mr. NICHOLS. The standards are to be performance standards for the whole building structure, and although appliances are excluded because they are covered by other portions of legislation, nonetheless there will be methods for considering appliances and especially for commercial buildings of large systems, the heating, ventilating and air conditioning systems, as part of the overall approach to meeting the performance standards for the building. The performance standard itself is a goal or goals setting forth a target of energy consumption for the whole building, a kind of budget, if you will, in terms of Btu or similar energy measurement.

Mr. BROWN. It was suggested last night that we might use the Btu loss from the building on the basis of the first square footage of the floor space of the building. In other words, we could tolerate a loss of 25 Btu's per hour per square foot of floor space in the building.

Have you given any thought to that approach?

Mr. NICHOLS. Indeed we have, sir. This is one of the approaches that is under consideration by the National Bureau of Standards and by our contractors.

Mr. BROWN. Have you given any thought to such ideas as the prospect that all industrial buildings except where you have certain safety factors like blowout windows because of the nature of the process might very well save a lot of energy, if you didn't have any windows at all? In other words, that you retrofit current industrial buildings by closing up the windows to save energy, or require new buildings to be built without windows?

Mr. NICHOLS. In new buildings construction there are many such options for improving the efficiency of the building, and that might be one that a designer of a large industrial structure could come in with in order to meet the goal that is set for him.

Mr. BROWN. What are you going to do with the question of commercial and office buildings in communities like New York, where everybody seems to contend with the next builder for how much glass he can put in so that you have to air condition in the winter and do all those interesting things that seem to be highly energy comsumptive?

Mr. NICHOLS. Well, in New York City itself there are different schools, of course, in the architectural design profession.

Mr. BROWN. It isn't limited to New York but Dallas or any place.

Mr. NICHOLS. Yes. We hope to bring the code authorities in New York City along with us as we develop the standard by an active public information program and a consultation program that will include them, and give them access to the best technical information that we have as we develop it.

Ms. SHALALA. We are assuming that all of the conversations have been consciousness raising, and that the building community and the architectural community is not going to continue to go off in the same directions that they have been going off with if they have bought the argument that there is an energy crisis. We expect some change in attitude.

Mr. BROWN. As a concluding observation it seems to me the best way to raise consciousness is cost. One of the things we have done in the past is to recognize that energy is cheap and it doesn't make any difference how many windows you put in because you can heat and lay in brick and mortar in the window spaces. I think we are going to run into philosophical problems, using not by word, some of these elitist decisions about Washington, about decisions that have to be made at the community level. The best argument for some of these things is an economic argument and you may run into the problem that in New York and Dallas you have got two different problems to meet, but if the price of natural gas or the price of oil or atomic fuel or electricity is roughly the same in New York, Dallas and so forth, that the architects will be more severely impinged by that than they will be by edicts of HUD.

Ms. SHALALA. And we expect careful consultation with architects and builders and consumer groups on these issues.

Mr. SHARP [presiding]. The time of the gentleman has expired. The gentleman from Connecticut is recognized for 5 minutes.

Mr. MOFFETT. Just a brief question, Mr. Chairman.

You mentioned consciousness raising and changes in attitudes on the part of the building community. You seem to be saying that exhortation and consultation will play a role. I wonder. You mentioned your participation in ANSI. We have had some hearings with regard to the industry domination of the American National Standards Institute, and the contention has been made that the government representatives working with ANSI were influenced in some way into more or less taking the industry approach or the industry view. I wonder philosophically how you see the role of ANSI.

Ms. SHALALA. I would rather answer the question about the co-opting of the government officials. I am not aware that HUD officials that are working on the energy standards issue have been co-opted. I would be very happy to look into that.

Mr. MOFFETT. I am not saying that. The contention has been made that our standard setting is done by essentially a private group. We ran into this not with regard to the subject we are talking about here but with regard to another subject on oil furnace efficiency. I wonder if that kind of contention that has been made about government participation in the standard setting would apply here?

Ms. SHALALA. Let me have Mr. Nichols talk about NIBS and then talk about the new Office of Consumer Affairs after Mr. Nichols.

Mr. NICHOLS. We discussed this subject early in the development of the program plans for performance standards. We have talked to consumer groups about the shaping of the plan and so on. They expressed the same kind of concerns that you have raised, that there be adequate represenation for all groups.

Mr. BROWN. Tell me something about that process of talking with consumer groups.

How does HUD do that?

Ms. SHALALA. We are going to have a new procedure on that. The only reason I am being hesitant is because we don't yet have, because we are waiting for the legislation, the full responsibiity for doing these standards. If we did do the standards, we have a new Office of—I am going to forget the title—Neighborhoods, Nongovernmental Organizations and Consumer Affairs under Assistant Secretary Gino Baroni, and it is not only a new office, but a new attitude about HUD that technical standards or policy in general shall not be developed without formal and informal participation by as many groups as we can reach out to, so I can assure you, Mr. Moffett, that we do not intend to let the technicians, and since I am not one myself in this field, write those standards without full participation in a process that is designed both by the Assistant Secretary for Neighborhoods and myself working in it.

Mr. MOFFETT. I don't need assurance if Mr. Baroni is handling the consultation with consumer groups. I wasn't sure that this type of consultation was being carried out through his office here, but apparently it is.

Ms. SHALALA. Yes, but we are not tying it to offices. It is going on throughout HUD.

Mr. MOFFETT. Fine.

Thank you, Mr. Chairman.

Mr. SHARP. Thank you.

Mr. Stockman.

Mr. STOCKMAN. I will yield.

Mr. SHARP. I just wanted to ask a couple of questions regarding some testimony we had yesterday indicating that the Federal Housing Authority has no standards on installation at this point. Let me suggest to you——

Ms. SHALALA. Are you asking us whether we do?

Mr. SHARP. Yes.

Ms. SHALALA. I was not aware that we didn't.

Mr. Keplinger.

Mr. KEPLINGER. Yes, we have had standards for insulation for some 30 years. They have been increasing gradually up until 1974 which was the last time they were tightened up. The insulating material itself is referenced to Federal specifications.

Mr. SHARP. And I assume people in the field would be made aware of this.

Mr. KEPLINGER. I hope they have. We have our property standards.

Ms. SHALALA. We have someone to inform them of these practices.

Mr. SHARP. The testimony was given yesterday and the gentleman is not here to defend himself so it is hard to say. It was indicated that in the Minneapolis/St. Paul area one of the people from FHA actually testified, I believe, before the State agency there or the State legislature that you people had no such standard, and that it would be very difficult to develop one.

Ms. SHALALA. If you will pass on that information, we would be happy to respond to it directly and send you a copy.

Mr. NICHOLS. There may be some confusion between the energy conservation performance standards for all new buildings mandated by the Energy Conservation and Production Act and the existing standards, the insulation standards.

Mr. SHARP. The insulation standards may relate to fire and things of that sort, rather than——

Mr. NICHOLS. The standards that we currently have for insulation are different than the ones that we are developing for the whole building.

Mr. SHARP. We are concerned that this process is going on. We are not interested in one member of your organization who may be out of step. You can take care of that.

Ms. SHALALA. But we are.

Mr. SHARP. Yes, I hope so. I don't want to generate a lot of paperwork back on this score.

Ms. SHALALA. I understand.

Mr. SHARP. We are concerned about that.

The gentleman from Michigan is recognized for 5 minutes.

Mr. DINGELL. Mr. Chairman, I thank you.

At this moment I have no questions, although I will perhaps later after the staff.

Mr. SHARP. Mrs. Harrison.

Mrs. HARRISON. You talk about contract work with the American Institute of Architects, which is being done.

Does that bear on energy conservation measures for homes by climatic region or type of construction; what would be required by this bill before us for existing homes, or is this strictly new homes again?

Mr. NICHOLS. One portion of the work statement speaks to existing construction practices, and so there will be some information coming through the contract that we hope would give us some additional handle on the matters that are addressed in this bill.

Mrs. HARRISON. What is the timing on that?

Mr. NICHOLS. It is a 5-month contract, and it was started a week or two ago.

Mrs. HARRISON. What about existing standards now for insulation in homes?

Mr. KEPLINGER. We have no standards. We have recommendations to our staff in the field offices to try to encourage the use of insulation approximating that which we require for new construction.

Mrs. HARRISON. For new construction.

Mr. KEPLINGER. Yes.

Mr. DINGELL. Mr. Chairman, if the staff would yield to me for just one question.

Do I understand that this study was called for in EPCA or ECPA and was begun a week ago?

Mr. NICHOLS. Yes, sir, that is right. The study was not itself called for. It is part of a program plan, one small element of the program plan.

Mr. DINGELL. EPCA was passed in December of 1975.

Mr. NICHOLS. 1976. This is the Energy Conservation and Production Act.

Mr. DINGELL. This became law, as I recall it, in November of last year.

Mr. NICHOLS. August 14, 1976.

Mr. DINGELL. And the study is just requested now.

Mr. NICHOLS. The study has been initiated. There was a period of discussion about the program plan. There was the hiatus in administrations, of course, during which the administrative procedure for transferring funds from the Energy Research and Development Administration for the work was delayed, but that has now been set to rights and that project is going forward.

Mr. DINGELL. It seems that falls a little short of the moral equivalent of war?

I thank the Chair.

Mr. SHARP. Mrs. Harrison.

Mrs. HARRISON. Thank you.

Moving to the area of mobile homes which was raised yesterday in our hearings, do you have existing standards now for insulation?

Mr. KEPLINGER. Standards for insulation of mobile homes, the standards are quite similar to those that we require for site built housing, with some differences for thicknesses of walls, available cavity space in floors and ceilings.

Mrs. HARRISON. Do you have information on the percentage of the housing market that mobile homes occupy?

Ms. SHALALA. We could provide that for the record. We didn't bring it with us.

Mrs. HARRISON. And what about energy consumption by type and percentage of the total?

Ms. SHALALA. The first number we would have. The second I am not sure, but we will look and see whether we have that information. If we don't have it, ERDA might have it.

[The following information was received for the record:]

As of October 1, 1975, mobile homes made up 4.6 percent of the occupied housing units in the United States. In 1975, mobile homes represented approximately 4 percent of residential energy consumption in the United States. We do not have a further breakdown of this information by type.

Mrs. HARRISON. Testimony yesterday indicated that they are not only large consumers of energy but there is a lot of waste, and we would like whatever information you can give us.

Ms. SHALALA. We will be happy to provide that, whatever we have.

Mrs. HARRISON. What about retrofitting mobile homes as far as insulation goes? Is this feasible?

Mr. KEPLINGER. I don't know. It would be very difficult.

Mrs. HARRISON. Are you speaking of technologically difficult or cost effectiveness?

Mr. KEPLINGER. I think cost effectiveness, some technical difficulty probably. Without removing the exterior finish or the interior finish it would only leave one approach, foam insulation. It has been used. It is expensive. I am not sure of the effectiveness.

Mrs. HARRISON. That completes my questions.

Mr. SHARP. Mr. Hunt.

Mr. HUNT. Under sections 101 to 109, mobile homes are not covered; am I correct?

Ms. SHALALA. That is right.

Mr. HUNT. Are row houses covered?

Ms. SHALALA. The definition of "residential building," it seems to me, would include row housing.

Mr. NICHOLS. It would include a row house.

Mr. HUNT. Good. There is a HUD standard I believe, 51(a).

Mr. KEPLINGER. Standard 51(a) was superseded in 1974 by the present standards.

Mr. HUNT. Is the present standard designed and directed towards single family housing?

Mr. KEPLINGER. Yes, it is. Single family including row housing.

Mr. HUNT. Including row housing.

Mr. KEPLINGER. Yes.

Mr. HUNT. What criteria are used in the establishment of that standard? Is it a cost effectiveness criterion, and if so, what are the expected costs used? Are they current or future costs?

Mr. KEPLINGER. I can't give you a short answer. We initially developed these around 28 test cities. The criteria then was to reduce the monthly operating cost to the homeowner or at least to break even with the increased amortization cost versus reduced operating costs. We worked that out for the 1973 fuel costs. It was

cost effective in 20 of the 28 cities. We projected a slight increase, I believe, of 5 percent at the time, of fuel cost, and it brought the other——

Mr. HUNT. Five percent per year?

Mr. KEPLINGER. This was 5 percent only at that time for the one operation. We are looking at this again now to see if we can tighten our standards again, using the same criteria.

Mr. HUNT. If you were updating that standard, what would you use today as far as the cost of fuel, in estimated cost for 1985 or 1990? Would you look at it in terms of the full life cycle or just immediate costs?

Mr. KEPLINGER. We would have to take both approaches, so that we did not push the present day homeowner out of the chance to purchase a home. We would look at the present day cost and then project it as well as we could over a period of time, but each time we would expect to find some way to keep the homeowner's monthly total out-of-pocket expense within reason.

Mr. HUNT. In utilizing a discounted cash flow, what rate you would use? Would it be a 10 percent rate, 8 percent?

Mr. KEPLINGER. I cannot, sir. We would have to go back to our economist on that. As far as we go in our particular division, it is strictly the increased amortization costs versus the reduced monthly heating and cooling. Our economists would have to give us the other figures.

Mr. HUNT. That sort of analysis is highly sensitive to the discount rate that is used.

Mr. KEPLINGER. Yes.

Mr. HUNT. I think it would be important to know what discount rates you do use. Interior, as I understand it, has used 4 percent rates in the past.

In the utilization of a performance standard such as 25 Btu's per square foot per hour, this basically as I understand it measures the outflow of energy through the walls of the structure; am I correct?

Mr. KEPLINGER. Through all surfaces.

Mr. HUNT. Through wall surfaces?

Mr. KEPLINGER. All surfaces.

Mr. HUNT. Would it be advisable, do you believe, to move the figure of merit and change that to the input of energy to the house, so that you could incorporate the efficiency of furnaces in the equation?

Mr. KEPLINGER. I think it probabLy would be.

Mr. HUNT. Have you done any work in this area?

Mr. KEPLINGER. We have not.

Mr. NICHOLS. This is part of the effort that is going to result in the energy conservation performance standards. We are looking at an input figure as being the likely approach to be taken in the final standards.

Mr. HUNT. What would argue against it, if I may ask? Why not use an input figure rather than an output figure, since that is the sensitive end?

Mr. KEPLINGER. Well, differences between fuel types is one.

You get very quickly into complex economic calculations.

Mr. HUNT. If, for example, you use electricity, would you utilize the value of the Btu's of the fuel going into the electrical generating plant? This is considerably larger than what goes into the house itself.

Mr. NICHOLS. This is one of the questions that really is a serious policy issue.

Mr. DINGELL. If counsel will yield, what goes into the generating plant comes out two-thirds waste and one-third electricity. Then you have your line loss.

Finally, it enters the home. Then you have the efficiency loss inside the home heating facility. Then you have loss of efficiency through the insulation and other structural elements of the house itself.

Has this gone into the formulas and computations in the consideration of your agency?

Mr. NICHOLS. The problem is one that is before us every day. A special term has been developed for these factors—resource impact and resource utilization factors. They would account for some of those line losses, losses in the electric generation and so on and the waste heat that comes out of the whole system, if you view the house as just one part of it.

However, because these standards are going to be implemented by local building code officials, it seemed inadvisable to run a fuels management policy through local building departments. We have separated it, and the Energy Research and Development Administration is doing further work on the resource impact and resource utilization factors.

We are doing further work on the building envelope and the systems within the structure itself. We are going to hope to meet through the consultation procedures, and as we publish the standards for evaluation and demonstration, at an agreeable solution that would allow for using both approaches if it is possible.

Mr. HUNT. Do you feel you can meet the rather stringent time constraints established in this section of the act?

Ms. SHALALA. We are going to try.

Mr. NICHOLS. We are going to try.

The reorganization question, of course, is one that is before us, but the President is very serious about getting this portion of the program moving very quickly

Mr. HUNT. And the contracts that you have written today and the ones you anticipate writing in the future or are in process of writing at this point——

Ms. SHALALA. Yes.

Mr. HUNT. ——will meet that 120-day deadline with sufficient time for——

Ms. SHALALA. Well, the 120-day deadline, if I may note, is on the FEA Administrator. We are going to assist in every way possible to help him in the technical portions of the work.

Mr. MOFFETT. Will the staff yield?

The question came to mind that has not been asked. I have in my area a number of three- and four-family houses, rather old dwellings, which are split up into apartments now. Let's say you have three or four tenants paying rent in one of these old houses

and the people are paying their fuel bills, not the landlord. Under the President's plan, what is the incentive to insulate that dwelling?

Ms. SHALALA. I guess I have to beg off the question. You are asking me to comment on something we are not prepared to comment on. We are prepared on energy standards. If you would like an answer for the record on HUD's interpretation of what is in the Energy Act and how it applies to that question, we can do that.

Mr. MOFFETT. I am asking the Housing Department. I think I am asking the right department.

Ms. SHALALA. Yes, you are.

Mr. MOFFETT. HUD is part of the executive branch and is part of the administration, correct?

Ms. SHALALA. Right.

Mr. MOFFETT. I cannot believe that there have not been analyses of the plan as it regards your jurisdiction, that is housing. It seems to me you must have some feelings about where that incentive is, if it exists. If it does not, then should the Congress insert language that would provide the incentive to insulate.

Can anyone answer that?

Mr. SCHWARTZ. Let me respond again.

As you know, the reorganization question is now before the Congress. It is contemplated under those bills that this issue will be a Department of Energy issue, and not a HUD issue.

Ms. SHALALA. But the answer—I do not want to really get you angry by not answering the question.

Mr. MOFFETT. I am not getting an answer.

Ms. SHALALA. There are no mandatory things in the President's bill. The incentive has to be the same incentive in our response to other kinds of questions. If energy costs are going to be high, there has to be the incentive for those people that own the building to make changes to bring down those energy costs.

Mr. MOFFETT. But the owner is not paying the fuel bill.

Ms. SHALALA. He is passing on the cost?

Mr. SCHWARTZ. There may be separate metering.

Mr. MOFFETT. He is passing it on, he is not concerned.

Mr. DINGELL. The tenant pays for the gas and the landlord gets the profits and in theory puts in the insulation.

Now, where is the incentive for the landlord under those conditions to insulate, and how is the tenant going to insulate?

Mr. NICHOLS. As I understand it, there is a provision in part of the bill, in the tax-related provisions, that would offer some incentive to owners to reinsulate.

Mr. HUNT. There is a ten percent tax credit for an investment but, the point is, if you do not have to pay anything, why pay $1,000 to get $10 or 10 percent back?

The landlord would be in the position of making the investment for insulation in order to get back 10 or 20 percent, but there is nothing compelling him to make the investment.

Mr. DINGELL. He is also in the position of collecting money for not doing anything. We are trying to see the efficiency and fairness of this arrangement. We may be talking to the wrong folks but the question is before us.

Ms. SHALALA. Yes.

My problem is, I have not been asked that question before. We are not prepared to answer that question. I do not want to answer a question off the top of my head.

Mr. DINGELL. We want to be fair, but I think the gentleman from Connecticut wants an answer.

Mr. BROWN. While we are on this point, could you also address the legal problems in trying to retrofit condominium-owned facilities?

Mr. DINGELL. Again I am transgressing on the gentleman's time.

Mr. MOFFETT. It is the time of the staff.

I would like to believe that somebody in a rather high level at HUD has read the President's proposal. I would like to believe they had something to do with putting it together but, if not, at least have read the President's proposal.

Reorganization questions aside, I was struck by the lack of incentive to insulate the kinds of dwellings we are talking about. I would hope you would have some reaction to that.

Thank you, Mr. Chairman.

Mr. DINGELL. Could you give us your comments on the question, Madam Secretary?

Ms. SHALALA. Yes.

Mr. DINGELL. Deal, if you will, with rental property, small-family property, i.e., one-family unit, two or three. Then, as the gentleman from Ohio points out, condominiums; also co-ops; and I am sure other kinds of houses that I am not fully familiar with.

I think you have here a good-sized crack and a lot of things are falling through it. Let me just ask one more question.

Was any consideration given in drafting this legislation or in the laying out of the administration's policy to using the mechanisms that are available through financing, and Federal controls over financing at the time that the property changes hands? Let me lay out what I am referring to.

A home which is financed through VA, FHA, or some kind of HUD supplemental—as in the case of the poor or persons on fixed income—might be required to retrofit when property changes hands. Can you comment on that?

Mr. GARRISON. There was some consideration, as far as we know, but it was rejected by the folks working for Mr. Schlesinger drafting the legislation for reasons we are not familiar with, but I understand it was discussed in the process of the drafting of the proposal.

Mr. DINGELL. Did HUD make any submissions on this matter?

Mr. GARRISON. We were not requested to, no, sir.

Mr. DINGELL. You were not requested to. Do you have any views as to whether or not this is a mechanism that might afford us an opportunity for occasioning faster and more efficient retrofitting on this kind of premises?

Mr. GARRISON. On that score, Mr. Chairman, I would ask we be able to respond. That is an important question, and I think we ought to think it out before we give you an answer.

Mr. DINGELL. As I understand it, our housing starts turn over at a rate of approximately 10 percent a year; is that right? I am talking about one family residences.

Mr. GARRISON. Something like, I think the average is how your house turns over every seven years.

Mr. DINGELL. That is faster than 10 percent a year; that is more like about 12 or 13 percent.

Can you just say yes or no so we can have an answer? I assume you are saying yes.

Mr. GARRISON. Yes, sir.

Mr. DINGELL. If we turn now to utilization of a Federal financing mechanism as a device to encourage retrofitting, haven't we missed a major opportunity to bring about retrofitting of homes and residences for maximum residential energy efficiency?

Ms. SHALALA. It certainly is possible.

We would simply like to think through that question and give you a full response on it.

Mr. DINGELL. A simple yes or no answer; I am not asking you to submit a plan. I am asking you to indicate to me whether or not this is a major opportunity to achieve energy efficiency.

Ms. SHALALA. Absolutely.

Mr. DINGELL. Let's try and look. Can you give us a list of the programs you have which might enable us to use this kind of retrofit undertaking in connection with exchange of property? You have your regular FHA program, do you not?

Ms. SHALALA. Yes.

Mr. DINGELL. Then you have the VA program, which is not under the administration of your agency, but with which you have a rather close interchange; correct?

Ms. SHALALA. Yes.

Mr. DINGELL. Then you also have the Federal Government which has certain other special programs in this housing business; isn't that right?

Mr. STOCKMAN. Farmers Home Administration.

Mr. DINGELL. I was about to come to that, and I thank the gentleman.

Mr. BROWN. They have 236 and section 8 housing.

Mr. DINGELL. You have Capehart housing for military and I don't know whether that falls in your lap; you have that. Then you have conventional mortgages, do you not, which fall into the hands of regulated banks or savings and loans, which are regulated by either the Federal agencies dealing with savings or loan or the FDIC or FSLIC, or Comptroller of the Currency, or the Federal Reserve; am I right?

Ms. SHALALA. Yes.

Mr. DINGELL. It strikes me that we have missed a great opportunity here. Would you give us a list of all of the housing programs where retrofitting could be required at exchange of the property?

Ms. SHALALA. We will be happy to.

Mr. DINGELL. Could you also give us, if you please, the way in which—and I don't want this cleared through OMB, I get nothing useful when it comes back through their hands—but can you give us how these mechanisms could be utilized for purposes of achieving a retrofit when the property changes hands? Perhaps you could offer some suggestions as to who ought to be the lucky fellow that pays the cost?

Ms. SHALALA. I can't promise you it won't go through OMB, but we can promise to provide you the information.

Mr. DINGELL. If we want to clear it through OMB we will ask. The Chair does advise we have severe time limits. If you can give us your responses to these questions within seven days so we can get our record printed, it would be much appreciated.

Mr. DINGELL. The Chair recognizes the staff again, Mrs. Harrison or Mr. Hunt.

Mr. HUNT. Yes.

Mr. BROWN. Before Mr. Hunt goes on, could I add one point to the question you just asked?

Mr. DINGELL. Certainly, I think that would be very helpful.

Mr. BROWN. Would you also include the impact in terms of the amount of housing that changes hands annually, so we can get some idea of how quickly this might be accomplished if the methods which the chairman is alluding to were going to be used, and what the impact would be on the delay, if any, in those housing units changing hands.

In other words, what is likely to be required in terms of how long a house currently stays on the market, if the average time on the market is four weeks or six weeks around the country, would that be time to retrofit a house without delaying unduly the availability of housing in the housing market?

You understand what I am saying?

Ms. SHALALA. Yes.

Mr. BROWN. Could you also give us in your judgment any categories of housing which should be excluded from this kind of mandatory retrofit requirement on the sale.

For example, it may be that houses under a certain value should not be included, or houses over a certain age should not be included.

Mr. STOCKMAN. Mr. Chairman?

Mr. DINGELL. Or homes in certain parts of the country.

Mr. STOCKMAN. Could I add one other requirement? Your estimate or judgment as to what impact it might have on tenure because you could get a lot of home owner, occupied houses, diverted into rental housing, and since we are not covering rental housing which is the thing we got to before, we would want to add that.

Ms. SHALALA. Mr. Dingell, we will be happy to provide this information, with one qualification; allow me to go back to my office and see how long it will take to answer all of the questions, and we will give you a timeframe.

Mr. DINGELL. Madam Secretary, that certainly is appropriate. A copy of the record will be made available to you so you don't have to be sitting here scribbling notes on what we are requesting, and any other suggestions you think would go into the makeup of a rational program of this sort, and if you have a criticism, you don't think this ought to be done or something, and I am talking about you folks down at HUD, again, I stress we are interested in your views and not the folks over at OMB.

Mr. Hunt?

Mr. HUNT. Thank you, Mr. Chairman.

Madam Secretary, it was just recently stated that HUD standard 51A was updated in 1974. Does that updated standard have a number?

Mr. KEPLINGER. No; it was incorporated into the rewrite of the minimum property standard at that time.

Mr. HUNT. We were informed yesterday by Mr. Morgenroth—who was representing ASHRAE yesterday—that indeed, those standards could be updated within a 60 day period and rewritten since we are on a different side of the oil embargo.

Does that seem reasonable or not?

Mr. KEPLINGER. In 60 days we could not get the public comment. We usually go to the Federal Register with provisions of this type for public comment and response.

Mr. HUNT. You might not have the public comment back, but at least you would have the proposed new standard out. Could you do this in the 60 day period Mr. Morgenroth estimated?

Mr. KEPLINGER. Yes. We have one problem. We have recently modified the standards to adopt the parts of the ASHRAE 90 programs we felt provided the same results as our standard.

Mr. HUNT. ASHRAE 90 standards are not as stringent, as I understand, as the Farmers Home Administration.

Mr. KEPLINGER. Not as stringent as Farmers Home, no.

Mr. HUNT. How do we account for the difference that Farmers Home has more stringent standards than ASHRAE 75-1.1? Perhaps you could explain to us why Farmers Home seems to be relatively more stringent in their standards, at this point at least.

Mr. KEPLINGER. I cannot answer that. We were caught unaware, as everyone else with this. We had one day's notice that they were going to press with their revision. We were looking at it. The ASHRAE panel in a meeting early last week, the Panel Four Committee, which controls the thermal envelope, the insulation, upgraded their standards also.

We have requested a copy of this because it is a performance standard, and it gives some flexibility so other materials can be used. We would like to review that to see if we can incorporate it.

Mr. HUNT. Fine.

One final area of questioning.

Do the standards you have on insulation material include standards on compaction over time?

Mr. KEPLINGER. No, sir; they do not.

Mr. HUNT. Do they include standards on fungal growths which appear to be a problem in the area of cellulosic insulation?

Mr. KEPLINGER. No; they do not.

Mr. HUNT. They do include standards on flame spread.

Mr. KEPLINGER. Yes.

Mr. HUNT. Do they include standards on the vapor barrier material or solely the insulating material.

Mr. KEPLINGER. It would be on the cellulosic insulating material only.

Mr. HUNT. Not the vapor barrier. We received testimony that the vapor barrier burns like a fuse. So it doesn't make really much difference how the cellulosic material burns. The real hazard is in the vapor barrier rather than the cellulosic or indeed the fiber glass.

Would it seem more worthwhile to incorporate the total insulating system, including vapor barrier and insulating material in a single flame spread standard?

Mr. KEPLINGER. We can consider that. At the present time our standards are with reference to Federal specifications published by GSA. We will have to see what modification it would take on our part through other agency standards, how it could be identified if we did decide to endorse this. We will look into it.

Mr. HUNT. Do your standards include loss of fire retardancy aspects in material over time?

Mr. KEPLINGER. Again, only as the Federal specification does.

Mr. HUNT. Do you know whether the Federal specifications do include it?

Mr. KEPLINGER. There is one being revised right now, HHI 515(d), I think is in preparation, and it's my understanding it will include that.

Mr. HUNT. Do you happen to know when that might be out?

Mr. KEPLINGER. No; I do not, sir.

Mr. HUNT. Thank you, Mr. Chairman.

Mr. DINGELL. The Chair recognizes the gentleman from Ohio.

Mr. BROWN. I want to request verbally, and get some idea whether you have this available, and we will try to get the detail we want if you do, and perhaps there is just some standard publication that is put out by HUD that will tell us, but could you give us the indication of how much housing there is that is heated in the various ways that energy is supplied for that purpose, like coal, oil, gas, electricity, and perhaps solar heating too, now as a factor that you might have some statistics on, and then the nature of housing, single family, duplex, apartments, condominiums, organization, in effect of housing, and then finally, I would like to get some division of how the consumption in buildings, not just housing now, but in buildings of energy is allocated around the country, if you have that information.

I am still concerned about buildings which are not used for residences, manufacturing establishments, commercial locations, and those which are neither namely office buildings, places of entertainment and so forth.

Ms. SHALALA. Mr. Brown, the first information you need is available in the Census of Housing, and we will provide that. The information on other businesses and commercial buildings is available from another source but we will provide it to you.

Mr. BROWN I assume you have fairly sophisticated housing data.

Ms. SHALALA. We do.

Mr. BROWN. They ask in the Census whether you shower a loan, things like that?

Ms. SHALALA. We do. Would you like that too?

Mr. BROWN. It might be interesting, but I don't know that it serves any worthy purpose for household heating programs, but anything you want to send me I will be happy to receive.

Thank you.

Mr. DINGELL. We thank all of you for being with us. We have laid much upon you, and our staff will cooperate with you fully in your undertakings. If you need any guidance or opportunity to consult,

Mrs. Harrison and Mr. Hunt will be more than delighted to cooperate with you, as I will be.

Ms. SHALALA. Thank you.

[The following material was received for the record:]

RESPONSES TO QUESTIONS ASKED OF HUD

Under the President's proposed program, businesses would be entitled to a 10 percent tax credit for investments in approved conservation measures in addition to the existing investment tax credits. The credit would be available to owners of all types of rental properties. Solar energy equipment would be eligible, as would a broad range of measures including recuperators, heat wheels, regenerators, heat exchangers, waste heat boilers, heat pipes, insulation, double glazing, heat pumps, reflective glass coatings, automatic energy control systems, turbulators, pre-heaters, combustible gas recovery systems, economizers, and other measurers to reduce the amount of energy consumed to heat or cool the building or other structure. This credit would be available to owners to all types of rental properties.

Tenants in one and two family residences would be eligible for the programs offered through the utilities, and for the proposed residential tax credits. In addition, tenants in larger buildings would also be eligible for tax credits. Low-income renters are to be eligible for assistance under the Weatherization Assistance Program, due to be expanded under the President's plan.

* * *

There is considerable diversity among state statutes governing condominiums as well as among the declarations and by-laws for separate condominium projects. Accurate generalizations are difficult to arrive at. In the condominium form of ownership, each individual owns his unit and has an undivided interest in the common elements. Some condominium schemes also have "limited common elements", such as balconies, in which all owners have an undivided interest but which are in the sole possession of one family unit or a limited number of family units. An initial problem in retrofitting condominium units is to determine what retrofit measures involve improvements to the common elements and what measures involve individual units. This will differ by project. In one condominium the addition of wall insulation may involve an improvement to the common elements; in another, this will be within the sole ownership of an individual.

*Common Elements*

Most retrofitting measures will probably involve improvements to the common elements. If the cost of improvements is relatively small, the Board of Directors could finance the action by increasing the annual budget and the general assessment levied to fund it, or by the levy of a special assessment. The latter approach often requires an extraordinary majority, such as two-thirds or three-fourths of the owners' association. The same techniques could be used where the work can be phased, or scheduled over a period of several years. However, where larger sums are required and financing is needed, substantial legal and practical problems are presented. A lending institution advancing sums for retrofit would require adequate security and the owners' association might well be unable to provide such security. A mortgage on the common elements would be of limited practical value to the lender. Further, to encumber each owner's undivided interest in the common property, the approval of all the owners as well as holders of all first mortgages might be necessary.

*Individual Units.*

There is considerable doubt as to whether the Board of Directors or a majority of an owners' association could approve expenditures involving improvements to individual units.

* * *

In considering the energy program, the Administration decided not to propose time of transfer regulation. It is our view that the American people should be given the opportunity to take advantage of the incentives and encouragements which will be offered under a voluntary residential energy conservation retrofit program. In addition, the mandatory approach has a significant disadvantage in that it would require lending institutions to become federal inspectors. The Administration intends to closely monitor the results of the voluntary program contained in the National Energy Act. If the response to the program is inadequate, a mandatory approach may be reconsidered.

However, the Administration considered the following option as an enforcement mechanism for the residential energy conservation program:

*Time of Transfer*

I. Effective on date of enactment, no federally insured financial institution may make any loan secured by first mortgage on a one or two-unit residential building unless: a. in the case of a loan made more than six months after promulgation of standards under (ii), the financial institution certifies to purchaser that building meets Federal standards, or that it will cost more than maximum required investment to bring up to the standard;

b. if loan is made prior to six months after the promulgation of Federal standards, (i) the loan permits an add-on in the amount of the maximum required investment, at institution's lowest rate for residential first mortgage loans (as of time or add-on) or (ii) the financial institution contracts to make an additional loan in that amount, without further security;

c. residence was certified under (a) in an earlier transaction; or

d. the ECPA performance standards were met by the building when it was constructed.

II. FEA would prescribe retrofit standards, and specify maximum required investment, for different regions and building types.

III. False certification of compliance with standards would subject the financial institution to liability to homeowners for damages equal to an amount necessary to bring up to standard (plus attorney fee) and could be assessed a civil penalty. If financial institution certified that it cost more to bring house up to standard than maximum required investment, and homeowner gets bid to do work at less than 75% of maximum required investment, financial institution is liable in damages for cost of bringing the residence up to standard, and could also be assessed civil penalties.

We believe that such a program would cover all programs involving existing housing currently operated by HUD/FHA, the Veterans Administration, and the Farmer's Home Administration. It would also cover housing financed by institutions insured by the Federal Deposit Insurance Corporation and the Federal Savings and Loan Insurance Corporation.

The costs of such program would be borne by the purchaser, since there is no way to discourage sellers from increasing prices to cover any costs they experience.

The rate at which retrofit at the time of transfer could occur depends upon the rate at which residential units are sold. For example, on October 1, 1975, there were approximately 46.867 million owner-occupied housing units. Existing homes are currently being sold at a rate of approximately three million units per year. HUD does not maintain figures on the length of time homes remain on the market before sale. We can provide no estimate of the potential delays in the availability of housing caused by such a program. This would depend heavily on administrative procedures used, the level of energy efficiency to be required, industry capabilities and various other factors.

With regard to enacting a mandatory retrofit program for federal housing programs, we would note that FHA finances or insures only about seven percent of housing sold annually. With Veteran's Administration programs included, the total is approximately 12 to 14 percent of annual turnover. A retrofit requirement would be a substantial impediment to participation, since it would add another cost element in programs that are currently more costly - generally speaking - than comparable programs operated by private firms. The addition of such a requirement could be expected to drive down the federal market share yet further.

* * *

Housing is categorized both according to tenure and structural type. In the *Annual Housing Survey* (AHS) prepared for HUD by the Bureau of the Census, tenure in all year-round housing units is divided into units that are owner-occupied, renter-occupied and vacant. Structural differences are presented for all year-round units, owner-occupied units and renter-occupied units. Categories are: single-family detached, single-family attached, two to four unit dwellings, dwellings containing five or more units and mobile homes or trailers. Much additional information is provided in AHS: Part A, "General Housing Characteristics Series H-150-74A" (attached).

Table A-1 contains figures for characteristics of the housing inventory in 1974 and 1970. The type of heating equipment, air conditioning, house heating fuel and cooking fuel found in the nationwide sample are presented in Table A-1, pages 7 and 8. Figures are presented on a regional basis as follows:

Northeast, 56-57;

North Central, 83-84;

South Region, 110-111; and
West Region, 137-138.

A copy of the study, "Fuels used for Single-Family Detached Residential Heating in the United States", performed by Fred A. Heddleson of the Oak Ridge National Laboratory, is also attached for the Committee's information.

* * *

In its recent report on "Energy Consumption Measurement: Data Needs for Public Policy," the National Research Council's Committee on Measurement of Energy Consumption concluded that data for the commercial sector, including space conditioning of buildings "are inadequate or do not exist." We have provided a copy of the portion of their report dealing with "Energy Use in Commercial Buildings," since it contains information and further references the Committee may find useful.

In addition, we are providing data tables from a study of "Energy Consumption in Commercial Industries by Census Division - 1974," performed for FEA by Jack Faucett Associates. Table 1-1 presents data on energy consumption in the commercial sector by industry - 1974, in billions of BTUs. Table 1-2 presents data on energy consumption in the commercial sector by census division - 1974, in billions of BTUs. Table 1-5 presents data on energy consumption in the commercial sector, with totals for all industries, in billions of BTUs. The abbreviations of functional uses contained in these tables are as follows:

SC—Space Conditioning
WH—Water Heating
CK—Cooking
LT—Lighting
RF—Refrigeration
OT—Other
NT—Total of all functions

Table 1-6 presents the same information on energy consumption in the commercial sector for all industries, in physical units. Units for each energy form follow:

Coal—thousands of short tons
Fuel Oil—thousands of barrels
Natural Gas—millions of cubic feet
Electricity—millions of KWH
Steam—millions of pounds

Table 5-1 presents data on energy consumption in retail trade for 1974, divided by census division. Table 5-2 presents data on energy consumption in retail trade by functional use, expressed in billions of BTUs. Table 5-3 presents data on energy consumption in the commercial sector for retail trade, in billions of BTUs, and Table 5-4, in physical units.

[The documents and data referred to may be found in the subcommittee files.]

Mr. DINGELL. The Chair announces the committee will be in recess until 2:30 p.m., at which time we will hear our next panel.

[Whereupon, at 1:45 p.m., the subcommittee recessed, to reconvene at 2:30 p.m. the same day.]

AFTER RECESS

[The subcommittee reconvened at 2:30 p.m., Hon. John D. Dingell presiding.]

Mr. DINGELL. The subcommittee will be in order.

Our first panel this afternoon will be Robert Foster, Division Chief, Conservation, California Energy Commission; Mr. Gorman C. Smith, Acting Deputy Administrator, Federal Energy Administration; Mr. Stanley Warshaw, Director, Center for Consumer Product Technology, National Bureau of Standards, and Mr. Wallace Snyder, Acting Assistant Director for National Advertising, Federal Trade Commission.

Gentlemen, we welcome you all.

We will start with Mr. Snyder and your statement.

STATEMENTS OF WALLACE S. SNYDER, ACTING ASSISTANT DIRECTOR, DIVISION OF NATIONAL ADVERTISING, FEDERAL TRADE COMMISSION, GORMAN C. SMITH, ACTING DEPUTY ADMINISTRATOR, FEDERAL ENERGY ADMINISTRATION, STANLEY I. WARSHAW, PH. D., DIRECTOR, CENTER FOR CONSUMER PRODUCT TECHNOLOGY, INSTITUTE FOR APPLIED TECHNOLOGY, NATIONAL BUREAU OF STANDARDS, AND ROBERT FOSTER, ADMINISTRATOR, CONSERVATION DIVISION, CALIFORNIA ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION

Mr. SNYDER. Mr. Chairman and members of the subcommittee, in the interest of conserving your time, I would like to summarize the beginning of my written remarks by dealing with our mandate, and what we have done to date to exercise it, and then I would lke to concentrate on the amendments themselves and what effect they have on the mandate.

Mr. DINGELL. I think that is entirely appropriate.

Your full statement will be inserted in the record and we will recognize you for such comments as you choose you give.

Mr. SNYDER. Thank you.

Our mandate at FTC is, of course, to design energy efficiency labels that will effectively disclose the annual cost of operating the covered appliances, along with the range of the costs for competing models.

In addition, we are given discretion to include additional information on the labels or at point of sale or in the shipping cartons that will assist consumers in either purchasing or using the appliances in an efficient manner.

We have found that our mandate has provided us with many novel and complex technical communication issues. Only very recently have consumers been advised to become energy efficient, and we have found that there is not a clear standard as to the words that consumers would use to express energy efficiency.

It has, therefore, been necessary for us to go to outside research firms in order to assist us in this area.

We have actually done three separate pieces of research. The first was to have focus groups among consumers across the country to find out how they expressed energy consumption, what types of information they would like to obtain, and indeed, if they understood energy concepts such as energy efficiency rating, watts, Btu's and this sort of thing.

Second, we went to a design firm to actually do the prototype labels for us. These labels incorporate the information that we then learned from the first research study.

We have now in hand eight alternative label formats that we will be testing starting next week for their effectiveness in communicating to consumers in the following ways:

First of all, the ability to attract their attention in a purchase situation. Second, to communicate in a non-deceptive manner the energy efficiency information we are giving, and third, just a general understandability of the labels.

That research, as I said, will start next week or the week thereafter. We expect to have the final research report in our hands by mid-July, and at that point we will be going to the Commission with our proposed rules.

I might add one thing, that during this period of time that the research is being conducted the staff is doing its investigative research, so we have everything in place and we don't have to wait beyond the time that this needed research is done to go forward to the Commission.

With that very brief comment on our mandate and what we are doing, I would like to turn to page 8 of my prepared testimony and there concentrate on the amendments to the act as they impact on our program.

There is really only one amendment which directly relates to the Commission's responsibility. Section 324 of the act, as I have said, specifically requires us to come up with information on the label as to cost, and as to the range of comparability.

However, 324(c)(5) gives us a discretionary duty, which is to put additional information at point of sale or on the labels or in the shipping cartons that will assist consumers in purchasing or using the product.

One amendment, I should say the amendment to this discretionary section, would expand the type of additional information to include instructions for the maintenance, use or repair of the covered product.

This language clearly recognizes that information in addition to the estimated annual cost of operation of a product may assist consumers in using and caring for the product in a way to maximize its given efficiency and accordingly this proposed amendment is welcomed as an addition to our existing discretionary authority, and we think it will be most helpful.

The remaining amendments relate almost exclusively to FEA setting voluntary efficiency standards for covered products under section 325 of the act. Under the present scheme, FEA, of course, is empowered to prescribe mandatory minimum efficiency standards for covered products. This action would be initiated if by 1980 there is no indication that the aggregate energy efficiency of these products exceeds by not less than 20 percent of the efficiency of the products manufactured in 1972.

However, this section prohibits these minimum standards from taking effect until at least 18 months after the Commission's labeling rules have been in effect.

Thus, under the amendment, the interplay between section 324 and section 325 would be eliminated, and instead minimum standards would be set.

We believe that this proposed amendment reflects a legitimate concern that the gravity of the energy crisis demands more immediate and imposing requirements on manufacturers, rather than first tying increased product efficiencies to the potential effect on the marketplace of the Commission's labeling rules; so we support that amendment.

The setting of standards inherently increases the risks of anticompetitive effects when the standard process is not open and

fair. This is true whether standards are set by Government regulatory bodies or private institutions, and it is important that in setting these standards that a proper balance is struck between furthering the purpose of the act and protecting the legitimate interests of the manufacturers and purchasers of the covered products.

I believe that the amendment, as it is presently drafted, provides the necessary safeguards to meet my concerns at the FTC.

For example, in determining whether the prescription of an efficiency standard for a covered product type is technologically and economically justified, section 325(a)(5) directs the Administrator of FEA to consider among other things any lessening of the utility or the performance of the covered product likely to result from the imposition of the standard, and any negative effects on competition likely to result from the imposition of the standard.

In addition, section 325(a)(7) provides authority to exempt small manufacturers from meeting the requirements of an energy efficiency standard if a finding is made that the imposition of the standard may cause a serious economic hardship.

Another major amendment is that of exempting the standard setting at FEA from Magnuson-Moss, and instead providing that it can be section 553 of the APA Act rulemaking.

Mr. DINGELL. For the record, 553(a) is what, which one of the three?

Mr. SNYDER. I am sorry, 553 could be used under the amendment to set the energy efficiency standards. It already can be used by the Commission in our label rules and it can also be used to design the test procedures.

Mr. DINGELL. Then 553 is not prolonged rulemaking with cross-examination?

Mr. SNYDER. I am sorry, it is not; it is for expedited rulemaking.

Mr. DINGELL. The rulemaking procedures peculiar to the Magnuson-Moss provisions are what, if you please, sir?

Mr. SNYDER. They call for a very complex type of rulemaking; they provide for cross-examination of the witnesses, for oral testimony, for a rebuttal period from industry and consumer groups, and they were to be used by FEA to set the minimum standards. Under the amendment, 553 could be now used instead of that complex forum.

Mr. DINGELL. How long would the Magnuson-Moss procedures take?

Mr. SNYDER. We have at the Commission some 16 Magnuson-Moss proceedings, and I think it is safe to say that none of them have been concluded, and it seems like all of them are taking at least a year and a half to two years to complete, because of the notice requirements and because of the various rebuttal requirements. At least two years I would say.

Mr. DINGELL. At least two years.

Mr. SNYDER. Yes, sir.

Mr. DINGELL. Thank you.

I noticed Mr. Smith nods affirmatively here.

Mr. SMITH. Yes, sir.

Mr. DINGELL. Could you just for the record give us a list of the requirements imposed by Magnuson-Moss, please?

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Mr. SNYDER. Yes; I could.

Mr. DINGELL. Not now, just for the record, if you please.

[The following information was received for the record:]

From our initial experience, we have identified 19 major tasks that must be completed in each trade regulation rulemaking proceeding. The tasks include: (1) conducting the preliminary investigation; (2) obtaining a compulsory process resolution from the Commission and conducting a formal investigation; (3) developing the proposed rule; (4) developing a compliance plan, an environmental impact statement and a rule impact evaluation plan; (5) submitting the proposed rule, together with a supporting memorandum and a staff report, for Commission approval; (6) issuing an initial notice of proposed rulemaking; (7) placing all relevant documents on the public record; (8) reviewing comments on the proposed rule and proposing disputed issues of material fact; (9) designating disputed issues, resolving any appeal of the issues designated and issuing a final notice of proposed rulemaking; (10) completing staff's investigation and hearing preparation; (11) conducting the public hearings; (12) providing a period of submission of rebuttal evidence; (13) preparing the presiding officer report for public release; (14) preparing the staff report for public release; (15) providing for 60 days of public comment on both the presiding officer and the staff reports; (16) Commission consideration of the proposed rule including a determination to promulgate, reject or take other appropriate action on the proposed rule; (17) developing final compliance and education plans for the promulgated rule; (18) implementing the promulgated rule and monitoring the extent of compliance; (19) conducting an impact evaluation of the promulgated rule.

Mr. DINGELL. Go ahead, please.

Mr. SNYDER. I was just going to say that I think a balance has been struck in this amendment in that it's not exactly a 553 APA rulemaking procedure, but it's a bit of a hybrid procedure between 553 and Magnuson-Moss, in that we note that the Administrator can, through informal procedures, allow cross-examination with respect to disputed issues of material fact. That sounds a lot like Magnuson-Moss, but the Administrator has that discretion to allow for cross-examination.

Secondly, an opportunity to present oral testimony by consumer groups and industry is provided for in the amendment, and we certainly support that. So, I believe that a very fair balance has been struck between the need to move forward expeditiously in this very important area, and yet to give procedural safeguards to the public, to consumer groups and the industry.

One final point I would like to comment upon is the question of preemption.

Section 327(a)(1)(b) of the act provides that any State regulation which requires disclosure of information other than information disclosed in accordance with the Commission labelling rules, shall be superseded. This is not a directly inconsistent preemptive scheme, but one of total preemption by the Federal Goverment.

I think this approach is imminently sound, because I believe first of all the energy efficiency labels that we adopt have to be very effective in communicating this very important information to consumers. We have to make sure that there is a format that is understood by consumers, and we would like to use it for all appliances, all 13 appliances. There is reenforcement between the various labels so consumers don't have to relearn the process every time they purchase a new appliance.

Mr. DINGELL. Or move from State to State.

Mr. SNYDER. Or move from State to State, or localities within a State.

Another very important reason I think we need a consistent approach is we don't believe that the labels themselves are going to be effective in doing the whole job, but rather the act specifies there is going to be a rather elaborate consumer education program to apprise consumers of how to read the labels and what is on the labels.

FTC will be doing that in conjunction with FEA and we believe that educational program can be facilitated better if we have one label to work with, one design format.

Finally, on that point, I think it would be under the act very burdensome to manufacturers to have to publish a number of different labels. So we believe all of these reasons should lead us to conclude that the total preemption is the way we should go.

Thank you very much.

[Mr. Snyder's prepared statement follows:]

[The remarks in this statement represent only the views of a member of the Federal Trade Commission staff. They are not intended to be, and should not be construed as, representative of any official commission policy.]

TESTIMONY OF WALLACE S. SNYDER, ACTING ASSISTANT DIRECTOR FOR THE DIVISION OF NATIONAL ADVERTISING, FEDERAL TRADE COMMISSION

Mr. Chairman and Members of the Committee:

My name is Wallace S. Snyder, Acting Assistant Director of the Division of National Advertising, Bureau of Consumer Protection of the Federal Trade Commission. I am pleased to respond to your invitation to discuss in general the status of the Commission's activity in discharging its responsibilities under Title V, Part B of the Energy Policy and Conservation Act (P.L. 94-163), and to focus specific attention in two areas: (a) the effect of the proposed amendments to the Act which directly, or indirectly, will impact on the Commission's mandate to prescribe energy efficiency labeling rules, and (b) the need for that section of the Act which expressly preempts State energy efficiency labeling rules which differ in form and content from those prescribed by the Commission. Of course, the views I express today are my own and not necessarily those of the Commission or any individual Commissioner.

Under Section 324(a) of the Act, the Commission is required to prescribe labeling rules applicable to designated consumer products covered under Section 322(a) of the Act. These rules will require manufacturers of covered products to attach a label to each of their products which will disclose, based on test procedures developed by the Federal Energy Administration, the estimated annual cost of operation of the product or, if the Commission determines that this measure will not assist consumers in purchasing decisions, some other useful measure of energy consumption. In addition, the label will disclose information respecting the range of estimated annual operating costs, or in lieu thereof, the range of some other useful measure of energy consumption, for the covered product to which the rule applies. This last disclosure is designed to inform the consumer of where the model under consideration ranks in energy efficiency relative to other comparable models.

Lastly, the Act requires that each rule be accompanied with a prototype label and directions for displaying such label. While the above label disclosures are mandated, the Commission has discretionary authority under Section 324(c)(5) to require additional information relating to energy consumption, if it determines that such information would assist consumers in making purchase decisions or in using the product, and that disclosing such additional information would not be unduly burdensome to manufacturers.

Developing these labeling rules is a challenging and complex effort. Aside from the central issue of how to most effectively communicate the required information, which I discuss shortly, the staff has been forced to deal with a variety of technical issues which bear on the ultimate form and content of the labels. Considerable time has been spent in learning how each covered product functions in the home environment, how optional features diminish or increase the energy consumption of the product, and what other special performance features bear upon the type of information which might be disclosed on the label.

Since the label must disclose the range of annual operating costs for comparable products, a threshold determination of product comparability was made after consul-

tation with the National Bureau of Standards, product manufacturers, trade associations representing these manufacturers, and a review of all literature bearing on the subject. For example, a highly efficient room air conditioner with a cooling capacity of 12,000 Btu's, if it is too large for a consumer's cooling needs, will actually consume more energy than a less efficient model which is properly sized. Thus, it was necessary to determine what cooling capacities are essentially equivalent in performance so that consumers can compare energy costs among comparable products. In September, 1976, the Commission published (41 F.R. 43251) for comment proposed ranges of comparability for the first seven products [1] for which it will issue proposed labeling rules. The staff is presently making such determinations for the six products [2] covered under Section 322(a) of the Act.

While the Federal Energy Administration is responsible for developing the test procedures to measure energy consumption for each covered product, Commission staff, through an informal liaison agreement with FEA, reviews and comments on each proposed test procedure prior to publication to ensure that these procedures take into account optional product features which may bear upon the operating cost disclosure to appear on the labels. In addition, after consultation between FEA and FTC staff, the proposed test procedures now include a section specifying the number of models to be tested, based on a statistical formula reflecting quality control considerations. Specifying the number that will have to be tested will help to assure that the cost figure appearing on the label will be accurate. In addition, this will better enable the Commission to enforce the energy labeling rules by providing a standard against which to judge whether the cost disclosures on the label accurately reflect the results of the testing.

The responsibility for developing these energy labeling rules was given to the Commission because of its experience in dealing with issues of communication. However, because the emergence of energy efficiency as a central theme of consumer deliberation is only a recent event, the Commission has had to confront two important problems. First, the relatively low profile of energy efficiency issues in the past means that consumers may not now possess a well developed conceptual base for thinking about the energy efficiency issues related to the various products. And second, there is a paucity of research and practical experience that could guide the Commission's efforts to communicate their information to consumers.

In response to the situation which I have described, the Commission has a contract with an independent research firm to conduct a consumer study to determine the type of label that most effectively produces attention, comprehension, and retention of the product information. While research of this kind may not be necessary for some other types of labeling rules, it is imperative for those rules mandated under the Act. Most importantly, in view of the large number of consumer products involved in this rulemaking activity, and the desirability of as much consistency as possible in content and format across product categories, it is essential that the research results be available before any of the labeling rules are published in proposed form. By publication in the *Federal Register* (41 F.R. 37677), the Commission gave notice pursuant to Section 324(b)(5) of the Act that it was delaying issuance of proposed rules for the covered products [3] (1) through (6) and (8) until the research was completed.

The consumer research protocol is a two-stage design, the first of which has been completed and the second phase of which is underway. The first stage consisted of small group interviews in three cities to assess the present understanding by consumers of energy consumption concepts and to determine what information is used by and/or understood by consumers when thinking about and discussing energy consumption issues. The interviews also sought to evaluate the effectiveness of alternative means of communicating on labels information about such concepts as annual operating costs, the bearing of regional utility on annual operating costs, the effects of energy saving options (e.g., anti-sweat heater switch for refrigerators) on annual operating costs, the range of annual operating costs for comparable products, and other measures of energy efficiency.

After analyzing the information generated from these focus groups, prototype labels have been developed and an experimental design has been established in which to test the effectiveness of these alternative labels in their ability to attract

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[1] Refrigerators and refrigerator-freezers; freezers; dishwashers; clothes dryers; water heaters; room air conditioners; and television sets.

[2] Home heating equipment, not including furnaces; kitchen ranges and ovens; clothes washers; humidifiers and dehumidifiers; central air conditioners; and furnaces.

[3] Note 1, *supra*.

attention, convey the information in a comprehensible fashion, and facilitate retention of the information so as to allow consumers to make comparative purchasing decisions among comparable products differing in energy efficiency. This phase of the research is being conducted in four different geographic areas among consumers of varying educational, age, and socio-economic backgrounds. The final results of this testing is expected in mid-July, and the Commission will then be in a position to issue its proposed labeling rules.

I should also point out that the ability of a label to attract and hold attention is a function of its aestheic design (color, shape, and size) and the organization of the information presented. In this regard, a design and communications firm was hired to design the prototype labels which are being tested, and they will be responsible for the ultimate design of the prototype labels which must be included in the proposed labeling rules.

That, in a good sized nutshell, is the status of our current efforts to implement the EPCA. I now turn my attention to the proposed amendments in the President's energy package which may bear on the Commission's mandate under the Act. There is only one amendment which directly relates to the Commission's responsibility. As discussed earlier, Section 324 of the Act specifically requires that certain information *must* be included on each label. However, Section 324(c)(5) gives the Commission discretionary authority to require a manufacturer of a covered product to which a rule applies to (a) include on the label, (b) separately attach to the product, or (c) ship with the product, *"additional information relating to energy consumption if the Commission determines that such additional information would assist consumers in making purchasing decisions in using such product, and that such requirement would not be unduly burdensome to manufacturers."*

An amendment to this discretionary section would expand the type of additional information to include *instructions for the maintenance, use or repair of the covered product.* This language clearly recognizes that information in addition to the estimated annual cost of operation of a product may assist consumers in using and caring for the product in a way to maximize its given efficiency. *Accordingly, this proposed amendment is a welcomed addition to our existing discretionary authority.* For at least one covered product, water heaters, our present thinking is to require disclosure on the label of instructions for determining the size of the water heater best suited to the consumer's particular hot water needs; an oversized water heater needlessly consumes energy. And, one version of the prototype labels which are being tested includes additional information which might allow consumers to particularize the estimated annual operating cost in accordance with their own use habits and local utility rates.

The remaining amendments relate almost exclusively to FEA's setting of voluntary efficiency targets for covered products under Section 325 of the Act. Under the present scheme, FEA is empowered to prescribe mandatory minimum efficiency standards for covered products. This action would be initiated if by 1980 there is no indication that the aggregate energy efficiency of these products exceeds by not less than 20% the efficiency of the products manufactured in 1972. However, this section prohibits these minimum standards from taking effect until at least 18 months after the Commission's labeling rules have been in effect. Thus, the interplay between Sections 324 and 325 of the Act seems to be designed to give the forces of the marketplace a chance to improve the aggregate efficiency of these products without the need for minimum efficiency standards. Ths economic model anticipates that the percentage of sales of more efficient models of a covered product will increase if consumers are provided with label disclosures on comparative energy efficiencies. This increased interest in higher efficiency will foster competition among appliance manufacturers which, in turn, will result in the production of more energy efficient products.

The proposed amendment to Section 325 would eliminate this interplay between Sections 324 and 325 because the FEA would now be *required* to set minimum efficiency standards for many of the covered products. This proposed amendment reflects a legitimate concern that the gravity of the energy crisis demands more immediate and imposing requirements on manufacturers, rather than first tying increased product efficiencies to the potential effect o.. the marketplace of the Commission's labeling rules.

Of course, the setting of standards inherently increases the risks of anticompetitive effects when the standards process is not open and fair. This is true whether standards are set by government regulatory bodies or private institutions. And it is important that in setting these standards that a proper balance is struck between furthering the purpose of the Act, and protecting the legitimate interests of

the manufacturers and purchasers of the covered products. I believe, however, that the amendment as presently drafted provides the necessary safeguards to meet my concerns. For example, in determining whether the prescription of an efficiency standard for a covered product type is technologically and economically justified, Section 325(a)(5) directs the Administrator of FEA to consider, among other things, "any lessening of the utility or the performance of the covered product likely to result from the imposition of the standard" and "any negative effects on competition likely to result from the imposition of the standard." In addition, Section 325(a)(7) provides authority to exempt small manufacturers from meeting the requirements of an energy efficiency standard if a finding is made that the imposition of the standard may cause a serious economic hardship.

The proposed amendment also provides that the rulemaking procedure in which these standards will be set will be pursuant to Section 553 of the APA rather than "Magnuson-Moss" rulemaking as presently provided for. Since the Commission has not yet had an opportunity to engage in a "Magnuson-Moss" rulemaking proceeding involving the setting of technical standards, I cannot knowlegeably speak to the issue of whether a more formal or informal rulemaking proceeding is best suited for purposes of prescribing these efficiency standards. I note, however, that the type of 553 APA rulemaking proposed is really hybrid in nature, since an opportunity to present oral testimony is provided, and the Administrator can, through informal procedures, allow cross-examination with respect to disputed issues of material fact. With regard to setting complex technical standards, the feasibility of this type of rulemaking in terms of reducing unnecessary delay but at the same time ensuring for a full and fair hearing of all the issues, must largely depend on FEA's internal rules of practice for implementing this section.

Finally, I want to use this opportunity to briefly touch upon the question of preemption. Section 327(a)(1)(B) of the Act provides that any State regulation which requires disclosure of information other than information disclosed in accordance with the Commission's labeling rules shall be superseded. This is not a "directly inconsistent" preemptive scheme, but one of total preemption. I think this approach is eminently sound. As discussed earlier, the energy efficiency labels that we adopt will be the product of major consumer research to determine the most effective means to communicate this important information to consumers. Not only the information itself, but also the order of its presentation and the format of the label, affect the utility of the information to the consumer. Our labels will facilitate the disclosure of consistent information on a national basis. Thus, consumers moving from one state or locality to another would not have to refamiliarize themselves with different label information. Manufacturers can attach this label to their products on a uniform basis across the country, thereby avoiding unnecessary costs of using a multiplicity of labels to conform with various state or local requirements.

Most important, while the Commission's program will provide consumers with standardized labels that disclose energy consumption information, merely having the information available will not ensure that consumers will use it in their purchase decisions. The success of these labels demands a major educational effort. To this end, Section 337 of the Act requires FEA, in cooperation with the Commission, to educate consumers to the significance of energy costs for individual appliances and to the extent that comparative shopping for energy efficiency can save energy for the nation and money for consumers. It should be obvious that the success of this educational effort can best be achieved by promoting the understanding and use of consistent information on a standardized label.

Thank you.

Mr. DINGELL. Total?

Mr. SNYDER. Total preemption on the Commission's labels as far as the labeling program itself. We believe that the Federal label should take preemption over any State or local label.

Mr. DINGELL. How about standards?

Mr. SNYDER. As to the standards, I think I should defer maybe largely to FEA here to see how they feel that works in a consistent process. We are aware that some States may have tougher penalties and under the amended act I believe FEA is given the right to exempt certain States if the procedures do not meet that State's requirements for the standards. So I think there are safeguards in the legislation.

Mr. DINGELL. Thank you.
Mr. Smith?

## STATEMENT OF GORMAN C. SMITH

Mr. SMITH. Thank you, Mr. Chairman.

Mr. Chairman and members of the subcommittee, I appreciate this early opportunity to discuss with you our energy problem and one of the President's legislative initiatives for dealing with it, energy efficiency standards for consumer products.

As you are aware, Mr. Chairman, the President's National Energy Plan has four major features:

Conservation and increased fuel efficiency; rational pricing and production policies; substitution of abundant energy sources for those in short supply; and development of nonconventional technologies for the future.

Conservation, including increased fuel efficiency, is the cornerstone of the plan. The plan seeks to reduce the rate of increase of energy consumption from the 1950-1973 average of 3.5 percent per year to less than 2 percent per year.

The strategy is to achieve sensible, cost-effective conservation in all sectors of energy use. The Nation's current stock of automobiles, buildings, equipment, and other capital goods currently uses energy inefficiently. Our conservation measures would modify that capital stock in an orderly way, so that by the mid-1980's we will be able to use energy far more efficiently than we do today.

The National Energy Act contains provisions designed to bring about conversion by industrial firms and electric utilities from scarce oil and natural gas to coal and other abundant fuels.

The plan contains a variety of measures to promote the development and use of nonconventional energy sources. Tax credits for residential and business use of solar energy, a tax deduction for intangible drilling costs of geothermal drilling equivalent to that available for oil and gas drilling, and new research and development initiatives should contribute significantly to the development of renewable and essentially inexhaustible energy sources for the country's long-term future.

Before turning to the details of the President's proposals for consumer product energy efficiency improvement standards, it would be appropriate to review briefly the current responsibilities under title III, part B of the Energy Policy and Conservation Act.

In its deliberations on this part, Congress made several important judgments: Consumers lacked adequate information on the estimated operating costs of products; significant improvements in the energy efficiency of consumer products were attainable, and consumer education was needed to support the value of life cycle costing and comparison shopping.

The responsibilities of this part were designed to provide energy cost information by labeling consumer products and to encourage the design and manufacture of more energy efficient products by establishing energy efficiency improvement targets for 1980.

As pointed out by Mr. Snyder, the legislation also provided authority for the imposition of performance standards, but only

after making findings that the standard is technically feasible and economically justified, and that the application of the labeling rule was not likely to be sufficient to induce the manufacture and consumption of the products which achieved a maximum energy efficiency that is technologically feasible and economically justified.

As Mr. Snyder mentioned, these standards could be promulgated only after the labeling rules had been in effect for 18 months.

Moreover, specific procedures that do provide for safeguards in the standard setting process were included specifically in section 325(B).

The legislation gives FEA the primary responsibility for implementing the consumer product energy efficiency program. This entails the development of test procedures and energy efficiency improvement targets for each of the products covered by the legislation.

It also involves the establishment of a reporting system which will enable FEA to monitor the progress of the industry in achieving the established targets for energy efficiency improvement.

The Federal Trade Commission is responsible for issuing rules requiring that each product be labeled and for deciding what information will be disclosed on the labels. The EPCA also requires that FEA develop a program to educate consumers on the use of the labels and on ways of saving energy in the use of consumer products.

The President's proposal contains the following specific elements:

1. Minimum efficiency standards shall be prescribed for refrigerators/refrigerator-freezers, freezers, water heaters, room air-conditioners, kitchen ranges and ovens, central air-conditioners, and furnaces. These products account for about 80 percent of the energy used in American households.

2. Standards may also be prescribed for dishwashers, clothes dryers, home heating equipment, television sets, clothes washers, and humidifiers and dehumidifiers. Standards may also apply to products specified by the Administrator under paragraph 14 of section 322(A), other appliances, that is, if the average per houshold energy use exceeds 150 kilowatt hours, or Btu equivalent, per year and if the aggregate household energy use exceeds 4.2 billion kilowatt hours per year.

3. Test procedures must be prescribed for a product before a standard for that product can be established.

4. Standards must be technically feasible and economically justifiable.

5. Reevaluation of standards is required within five years to determine whether or not modifications are needed.

6. Manufacturers of consumer products whose gross sales do not exceed $8 million/year may be exempt in whole or part, from standard requirements as determined by the Administrator for not more than two years after prescription of a rule if imposition of the standard may result in substantial lessening of competition.

7. Procedures for moving to energy standards will be streamlined to facilitate implementation.

Mr. Snyder discussed some of the streamlining in his testimony, so I won't review them here.

Finally, additional information as determined by the Federal Trade Commission concerning instructions for use, maintenance, or repair of the covered product may be required on any energy label.

The development of test procedures and labels will continue as required by existing legislation, but the requirements to establish energy efficiency improvement targets would be eliminated.

There are three major reasons for the change in the fundamental approach to energy efficiency improvements embodied in the President's proposals:

First, the urgent need to guarantee that we begin now to reduce the future rate of growth of energy demand.

Second, to assure fair treatment of all manufacturers.

Third, to minimize uncertainty on the part of manufacturers to the end that they can, in fact, begin production of more energy efficient appliances at an early date.

Since the passage of the EPCA, there has developed an increased awareness of the absolute necessity to begin now taking those measures that will reduce the rate of growth of energy demand in future years.

The President's energy plan embodies a number of such measures. Those aimed at improving the energy efficiency of our capital stock, including the major appliances we use in our homes, will necesarily have long lead times before they become fully effective. This is true because of the extended times required for the replacement of the existing, largely inefficient capital stock. For appliances we estimate that it could take something like 15 years to replace the existing stock, and longer in the cases of some such as furnaces and central air-conditioners.

We have reviewed our requirements under current legislation authorities, and while we believe targets under current legislative authorities could be met because they are designed to be both technologically feasible and economically justified, there is no assurance that this will occur. If it does not, we could delay by some two to three years the imposition of standards that would guarantee the attainment of technologically feasible and economically justifiable energy improvements.

The President's proposals are designed to avoid this possible delay by moving immediately to establish standards. In this way, we will begin as soon as possible the essential conversion of our existing stock of appliances by replacing them with more energy efficient ones.

The initial standards would be reviewed not less than every five years so as to take into account new technological developments and changes in economic considerations that will flow from the energy pricing provisions of the President's plan. This provision is designed to assure that we accelerate the energy efficiency improvement of our appliance stock at the maximum rate that is economically justifiable.

The second major objective of the President's proposal is to support the fundamental characteristic of fairness embodied in the overall energy plan. The current target approach aims at achieving an overall average efficiency improvement.

This generates the opportunity for some manufacturers to benefit at the expense of others. Manufacturers have little or no incentive to attain or exceed the established target levels. In fact, to do so may place them at a competitive disadvantage compared to manufacturers who do not attain the same target levels because of the higher initial costs of more energy efficient products.

Replacement of the target approach with specific standards places all manufacturers on an equal footing in the sense that all are required to achieve the same energy efficiency on the same schedule.

There is, however, a provision in the President's proposal for exempting small manufacturers from all or part of a standard requirement for a period of up to two years if the Administrator determines such exemption to be necessary to prevent a substantial lessening of competition.

This provision is designed to provide the flexibility required to assure fair treatment among manufacturers with widely differing resources while still attaining the energy efficiency improvements required.

Finally, the current target-setting approach, with the possibility of standards being imposed after a certain period of time, creates uncertainties among manufacturers as to exactly what their particular decision should be.

A manufacturer must decide what his particular contribution to the target should be, what he should design with his appliances, and how he should tool up to make them absent knowing what his competitors are going to do. There is an inherent risk in this approach that the individual who makes the maximum contribution to the national goal of energy efficiency may, if that involves, as is quite likely, an increase in the initial purchase cost of his more energy efficient product, at the same time damage his competitive position relative to other manufacturers who do not make the same energy improvement.

The President's proposal would, by promulgating specific energy efficiency standards, make clear to all the schedule for improving energy efficiency of appliances. In this way, all manufacturers start from the same base line or specific information. They do not have to make their own independent judgments as to what their individual energy improvement targets are going to be.

It is our judgment that this provision will, by itself, increase the speed with which energy efficiency improvements are actually realized in the production of new appliances. Moreover, it reinforces the concept of fairness embodied in the President's overall energy plan.

If adopted, the President's proposal will ensure that level of improvements expected under EPCA are met, and that our future energy problems are minimized by the early introduction of more efficient products.

The proposal will also provide a clear basis for industry planning, since standards will apply to individual products and manufacturers, rather than to a group that only collectively is required to attain a "not less than 20 percent" efficiency improvement.

Standards can be proposed only after test procedures are finalized, thus clearly providing industry with an unambiguous state-

ment of both how much they must improve and how that improvement is to be measured.

Intermediate standards will allow the phasing-in of final efficiency improvement requirements, but minimizing economic dislocations, especially with respect to smaller firms. Regulatory action will better focus upon the characteristics of each product.

Mr. Chairman, this part of the President's overall proposal is a fair one which deals effectively with an important part of the energy problem that faces us and would remove some of the difficulties that have plagued the effective implementation of the consumer product efficiency improvement program to date. It is an important element of the comprehensive energy package before you, and we urgently seek the support of this subcommittee in working towards its early enactment.

Your staff specifically asked that we bring you up to date on our efforts towards implementing our current responsibilities in the appliance area. I am keenly aware of your concern about the lack of progress made during the year following enactment of the law.

I am pleased to be able to report today that we are adhering closely to the implementation timetable which FEA provided to you, Mr. Chairman, by letters of March 18 and May 5, 1977.

To date, we have issued proposed test procedures for refrigerators and refrigerator-freezers, freezers, clothes dryers, water heaters, television sets, and unvented home heating equipment. The proposed test procedure for clothes washers is scheduled to be issued today.

Mr. Chairman, this concludes my formal statement. I will be glad to try to answer any questions you may have.

I assure you, Mr. Chairman, as Mr. O'Leary has earlier, that all of us from Mr. O'Leary, myself, and all of the people in the responsible offices are committed to the attainment of the commitments, that Mr. O'Leary made to you. We are spending a number of extra hours and have transferred extra resources into this program and are continuing to do so as they can be made available to see that we meet, and if at all possible, exceed the timetables that have been communicated to you.

Mr. DINGELL. Thank you, Mr. Smith.

Mr. SMITH That concludes my statement, and I will be glad to try to answer any questions at the appropriate time.

Mr. DINGELL. Mr. Smith, I am pleased to see the comments in the second to last paragraph of your statement. I think that indicates a good sign of progress.

Mr. SMITH. Thank you,sir.

[The following letters and attachments were received for the record:]

FEDERAL ENERGY ADMINISTRATION
WASHINGTON, D.C. 20461

18 MAR 1977

OFFICE OF THE ADMINISTRATOR

RECEIVED
MAR 21 1977
Energy & Power Subcommittee

Honorable John D. Dingell
Chairman, Subcommittee on
Energy and Power
Committee on Interstate and
Foreign Commerce
House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

In my March 14, 1977, letter to you, I enclosed a timetable for implementing the energy conservation programs established by the Energy Policy and Conservation Act and the Energy Conservation and Production Act. I also promised to forward a revised timetable by the end of this week.

Accordingly, I am enclosing a revised schedule of deadlines that reflects additional resource commitments by the Federal Energy Administration to accelerate implementation of these programs. This accelerated schedule is based on acquisition of additional necessary resources, and assumes the absence of significant technical difficulties encountered by the National Bureau of Standards in providing the support required for the Appliance Program. On that basis, we are committed to meeting the deadlines established in this timetable.

If I can be of further assistance, please do not hesitate to contact me.

Sincerely,

John C. O'Leary
Administrator

Enclosure

## APPLIANCE EFFICIENCY

Statutory Program

EPCA lists 13 appliances subject to regulation. For each appliance, FEA must prescribe test procedures for determining energy efficiency and set energy efficiency targets. Based upon the FEA test procedures, the Federal Trade Commission must prescribe labeling rules. FEA must conduct a consumer education program.

Deadlines

| Action | Statutory | Actual | Estimated Timetable | Accelerated Timetable | |
|---|---|---|---|---|---|
| FEA issues proposed test procedures | 6/30/76* | 7/27/76 (room air conditioners) | 4/25/77 | •clothes dryers | 4/25/77 |
| | | | 5/6/77 | •water heaters | 4/25/77 |
| | | 3/17/77 (dishwashers) | | •home heating equipment (not including furnaces)- | |
| | | | 5/17/77 | nonvented | 4/25/77 |
| | | | 5/27/77 | •television | 4/25/77 |
| | | | | •refrigerators and refrigerator-freezers, and | |
| | | | 6/3/77 | freezers | 5/4/77 |
| | | | 6/22/77 | •clothes washers | 5/11/77 |
| | | | | •humidifiers and | |
| | | | 7/13/77 | dehumidifiers | 5/25/77 |
| | | | 7/25/77 | •central air conditioners | 5/25/77 |
| | | | 8/4/77 | •kitchen ranges and ovens | 6/9/77 |
| | | | 9/16/77 | •furnaces | 7/28/77 |
| | | | | •home heating equipment (not including furnaces)- | |
| | | | 9/30/77 | vented | 8/4/77 |
| FEA prescribes final test procedures | 9/30/76* | | 5/24/77** | •room air conditioners | 5/24/77 |
| | 12/31/76 | | 8/29/77 | •dishwashers | 8/2/77 |
| | 9/30/77 | | 10/11/77 | •clothes dryers | 9/8/77 |
| | | | 10/31/77 | •water heaters | 9/8/77 |

* Under section 323 (a) (6) of EPCA, FEA may delay if necessary and it publishes such a determination in the Federal Register.

**Unless recently received data necessitates a further proposal

Deadlines

| Action | Statutory | Actual | Estimated Timetable | Accelerated Timetable | |
|---|---|---|---|---|---|
| | | | 12/5/77 | •home heating equipment (not including furnaces)-nonvented | 9/8/77 |
| | | | 12/29/77 | •television | 9/8/77 |
| | | | 1/5/78 | •refrigerators and refrigerator-freezers, and freezers | 9/15/77 |
| | | | 1/16/78 | •clothes washers | 9/22/77 |
| | | | 3/15/78 | •humidifiers and dehumidifiers | 10/11/77 |
| | | | 3/27/78 | •central air conditioners | 10/11/77 |
| | | | 4/11/78 | •Kitchen ranges and ovens | 10/24/77 |
| | | | 1/26/78 | •furnaces | 12/14/77 |
| | | | 3/3/78 | •home heating equipment (not including furnaces) -vented | 12/20/77 |
| PEA sets efficiency improvement targets | 11/12/76 | 12/22/76 | 7/11/77 | Proposed targets for: •appliances (1-10) | 7/8/77 |
| | | | 8/22/77 | •humidifiers and dehumidifiers | 8/4/77 |
| | | | 9/6/77 | •central air conditioners | 8/4/77 |
| | | | 11/28/77 | •furnaces | 9/23/77 |

Deadlines

| Action | Statutory | Actual | Estimated Timetable | Accelerated Timetable | |
|---|---|---|---|---|---|
| | | | | Final targets for: | |
| | | | 12/22/77 | •appliances (1-10) | 11/29/77 |
| | | | 2/2/78 | •humidifiers and dehumidifiers | 12/22/77 |
| | | | 2/20/78 | •central air conditioners | 12/22/77 |
| | | | 5/2/78 | •furnaces | 12/22/77 |
| FEA makes annual report | 12/22/77 | | 4/1/77 | | 4/1/77 |

RECEIVED
MAY 9 1977
Energy & Power Subcommittee

FEDERAL ENERGY ADMINISTRATION
WASHINGTON, D.C. 20461

MAY 5 1977

OFFICE OF THE ADMINISTRATOR

Honorable John D. Dingell
Chairman, Subcommittee on
Energy and Power
Committee on Interstate and
Foreign Commerce
House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

In my letter of March 18, 1977, I provided you with an accelerated time schedule for implementation of the energy conservation programs authorized by the Energy Policy and Conservation Act (EPCA). Implicit in the letter was an obligation to promptly advise you if the schedule could not be met either because there had been a change in an assumption on which the schedule was based, or as a result of other factors.

For the reasons described below, these items on the schedule must be changed:

1. test procedures for refrigerators, refrigerator-freezers, and freezers were issued on April 21, 1977, instead of May 4, 1977;

2. test procedures for home heating equipment (not including furnaces)--nonvented were issued on May 4, 1977, instead of April 25, 1977; and

3. test procedures for central air conditioners will be issued by June 8, 1977, instead of May 25, 1977.

The dates for issuance of the final test procedures also will be revised accordingly.

The acceleration of the issuance of test procedures for refrigerators, refrigerator-freezers, and freezers and the companion

delay in the issuance of the test procedures for home heating equipment (not including furnaces)--nonvented reflects a decision to apply the Agency's resources to test procedures that progressed more rapidly in preparation and review than expected, rather than to turn to other test procedures. Furthermore, with the end of the heating season, the interest in home heating equipment will not be as great as in refrigeration equipment.

The delay in issuing the test procedures for central air conditioners results from receipt by the Federal Energy Administration (FEA) of the recommended test procedures from the National Bureau of Standards one week later than was expected at the time of my March 18 letter. Furthermore, the proposed test procedures are extremely complex and, to insure that the procedures technically meet the requirements of EPCA and conform to the format necessary for a Federal Register publication, will require a more extended period of review by FEA staff engineers than was anticipated.

Revised schedules are enclosed showing changes to the deadlines for issuance of the proposed and final test procedures for the four covered products above.

Sincerely,

John F. O'Leary
Administrator

Enclosure

Statutory Program

EPCA lists 13 appliances subject to regulation. For each appliance, FEA must prescribe test procedures for determining energy efficiency and set energy efficiency targets. Based upon the FEA test procedures, the Federal Trade Commission must prescribe labeling rules. FEA must conduct a consumer education program.

Deadlines

| Action | Statutory | Actual | Estimated Timetable | Accelerated Timetable |
|---|---|---|---|---|
| FEA issues proposed test procedures | 6/30/76* | 7/27/76 | 4/25/77 | eclothes dryers 4/25/77 |
| | 9/30/76 | (room air | 5/6/77 | ewater heaters 4/25/77 |
| | 6/30/77 | conditioners) 3/17/77 (dishwashers) | 5/17/77 | ehome heating equipment (not including furnaces)- nonvented 5/4/77 |
| | | | 5/27/77 | etelevision 4/25/77 |
| | | | 6/3/77 | erefrigerators and refrigerator-freezers, and freezers 4/25/77 |
| | | | 6/22/77 | eclothes washers 5/11/77 |
| | | | 7/13/77 | ehumidifiers and dehumidifiers 5/25/77 |
| | | | 7/25/77 | econtral air conditioners 6/8/77 |
| | | | 8/4/77 | ekitchen ranges and ovens 6/9/77 |
| | | | 9/16/77 | efurnaces 7/28/77 |
| | | | 9/30/77 | ehome heating equipment (not including furnaces)- vented 8/4/77 |
| FEA prescribes final test procedures | 9/30/76* | | 5/24/77** | eroom air conditioners 5/24/77 |
| | 12/31/76 | | 8/29/77 | edishwashers 8/2/77 |
| | 9/30/77 | | 10/11/77 | eclothes dryers 9/8/77 |
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* Under section 323 (a) (6) of EPCA, FEA may delay if necessary and it publishes such a determination in the Federal Register.

Deadlines

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|---|---|---|---|---|---|
| | | | 12/5/77 | •home heating equipment (not including furnaces)-nonvented | 9/15/77 |
| | | | 12/29/77 | •television | 9/8/77 |
| | | | 1/5/78 | •refrigerators and refrigerator-freezers, and freezers | 9/8/77 |
| | | | 1/16/78 | •clothes washers | 9/22/77 |
| | | | 3/15/78 | •humidifiers and dehumidifiers | 10/11/77 |
| | | | 3/27/78 | •central air conditioners | 10/25/77 |
| | | | 4/11/78 | •Kitchen ranges and ovens | 10/24/77 |
| | | | 1/26/78 | •furnaces | 12/14/77 |
| | | | 3/3/78 | •home heating equipment (not including furnaces) -vented | 12/20/77 |
| FEA sets efficiency improvement targets | 11/12/76 12/22/76 | | 7/11/77 | Proposed targets for: •appliances (1-10) | 7/8/77 |
| | | | 8/22/77 | •humidifiers and dehumidifiers | 8/4/77 |
| | | | 9/6/77 | •central air conditioners | 8/4/77 |
| | | | 11/28/77 | •furnaces | 9/23/77 |

FEDERAL ENERGY ADMINISTRATION
WASHINGTON, D.C. 20461

MAY 27 -

DEPUTY ADMINISTRATOR

Honorable John D. Dingell
Chairman, Subcommittee on Energy
and Power
Committee on Interstate and Foreign
Commerce
House of Representatives
Washington, D.C. 20515

Dear Mr. Chairman:

Thank you for your letter of May 19, 1977, in which you pose 11 additional questions concerning the appliance efficiency program. Enclosed please find our responses to those questions and the additional materials requested. In addition, please note that the responses to oral questions from the May 11 hearing and the corrected transcript of that hearing were hand-delivered to the Subcommittee on Energy and Power of the Committee on Interstate and Foreign Commerce on May 23, 1977.

Please be assured of this Agency's continued commitment to implement as expeditiously as possible the appliance efficiency program authorized by the Energy Policy and Conservation Act. If we can be of further assistance, please do not hesitate to contact us.

Sincerely,

Gorman Smith

Gorman C. Smith
Acting Deputy Administrator

Enclosures

Question 1(a): Please describe your procedures for handling petitions under Section 327(b)(1) of EPCA.

(b) If no procedures have been promulgated, please explain why and indicate when they will be proposed and promulgated.

Answer: FEA is in the process of formulating such procedures. We expect to publish proposed regulations for public comment and hearing within the next 2 weeks. Given the time necessary for this difficult process, and for FEA consideration of the comments received, it would be possible to promulgate final regulations by late June.

Question 2(a): Under what procedures do you intend to judge the present petitions pending before you concerning the California standards?

Answer: The three pending petitions are presently under active review in the responsible program office, Conservation and Environment, and in the Office of the General Counsel. The petitions were filed by the Home Appliance Manufacturers Association, the Air Conditioning and Refrigeration Institute (ARI), and the Gas Appliance Manufacturers Association (GAMA). These two offices will jointly recommend the action FEA should take. The recommended action will be either to deny the petitions or to publish in the Federal Register notice of a rulemaking proceeding for the purposes of proposing a rule to supersede the State regulation at issue and obtaining public comments. The recommended action will be reviewed through normal FEA channels and ultimately taken by the Administrator or his delegate.

Question 2(b): When were those petitions received by FEA and when must FEA act on them:

Answer: FEA deems the petitions of AHAM to have been filed on January 24, 1977, the date FEA received materials (submitted January 21) in completion of AHAM's earlier, incomplete submission dated December 2, 1976. Under Section 327(b)(1) of the Energy Policy and Conservation Act, the date for FEA's final action on the AHAM petition is July 24, 1977. The GAMA petition was received and deemed filed on March 25, 1977, and the final action date is September 25, 1977. The ARI petition was filed on April 1, 1977, and the final action date is October 1, 1977.

Question 2(c): When did FEA notify California and the public about the petitions and provide an opportunity to comment thereon?

Answer: The FEA has not published a Federal Register notice of receipt of the three pending petitions. If FEA determines to institute a proposed rulemaking (through the procedures described in the answer to question 2(a) above), it will do so by a Federal Register notice, which will provide a full opportunity for all interested persons, including of course the affected State agency, to present written comments and to participate in a public hearing. The FEA will not supersede any State regulation without first having notified the public of receipt and acceptance for filing of a petition to supersede, and second having the rulemaking proceeding required by the statute.

The FEA has, at the staff level, kept the affected State of California agency apprised of the petitions and has sent copies of all submissions to the State agency.

Question 3: Please explain why FEA should not adopt mandatory standards for all 13 consumer products in Section 322(a) of EPCA.

Answer: The seven products listed in the mandatory category by Section 201(a) of H.R. 6831, the National Energy Act, account for the major portion of home energy consumption. We believe that setting mandatory standards for the other six product categories should only occur if there is evidence that mandatory labeling is not causing producers to make, or customers to buy, more efficient products. Some of the discretionary products, e.g., television sets, are already quite efficient, and standards would only need to be set if significant backsliding began to occur.

Question 4: H.R. 6831 establishes no criteria to guide the Administrator in deciding whether to set a standard for the so-called "discretionary" appliances. Why? What criteria should be used?

Answer: The Administrator would continuously review the performance of "discretionary" appliances balancing market impact of standards against the energy savings obtainable. If criteria were to be set, they should include general findings of technological feasibility, economic justification, and potential for energy efficiency improvements otherwise unrealizable.

Question 5(a): Please give your best estimates of a timetable for the completion of each step in the mandatory standards-setting process for each product listed in H.R. 6831. Include your estimates for the promulgation of needed test procedures.

(b) Perform the same estimates as above, assuming standards for all appliances listed in Section 322(a) of EPCA are mandatory.

Answer: The attached schedules represent the minimum time required by FEA to publish draft standards in a Notice of Proposed Rulemaking (NPRM) and to prescribe final efficiency standards. For purposes of formulating this schedule, it was assumed that the initial efficiency standards developed by FEA will be applied to products produced during 1980-1981 because much of the necessary support information will have been developed in connection with the existing 1980 target program. The range of schedule estimates provided for certain product types reflects two considerations for implementing minimum efficiency standards: (1) the standards on product types such as furnaces, will have to be developed in classes to account for different fuel types and functionally different designs (boilers, hot air, radiant), and (2) the standards for the various classes within a product type cannot be promulgated simultaneously since this would necessitate unnecessary duplication of program resources. The schedules also assume adequate staff and financial resources.

The list of estimates for promulgation of needed test procedures was provided to you on May 23, along with the corrected testimony and answers to several other questions raised during the May 11 hearing.

Schedule for Energy Efficiency Standards for Mandatory Standards Products (H.R. 6831)

| | Product | NPRM | Standard Prescribed |
|---|---|---|---|
| (1) | Refrigerators, refrigerator-freezers | 11 months | 18 months |
| (2) | Freezers | 11 months | 18 months |
| (5) | Water Heaters | 11-17 months | 18-24 months |
| (6) | Room Air Conditioners | 11 months | 18 months |
| (9) | Kitchen Ranges and Ovens | 11-17 months | 18-24 months |
| (12) | Central Air Conditioners | 11-17 months | 18-24 months |
| (13) | Furnaces | 11-23 months | 18-30 months |

Schedule for Efficiency Standards for Remaining EPCA Products

| | Product | NPRM | Standard Prescribed |
|---|---|---|---|
| (3) | Dishwashers | 11 months | 18 months |
| (4) | Clothes Dryers | 11 months | 18 months |
| (7) | Home Heating Equipment | 11-17 months | 18-24 months |
| (8) | Television Sets | 11 months | 18 months |
| (10) | Clothes Washers | 11 months | 18 months |
| (11) | Dehumidifiers/Humidifiers | 11-14 months | 18-21 months |

Question 6(a): To what degree, if any, do you intend to use either the National Bureau of Standards (NBS) or consultants in the development of appliance efficiency standards?

Answer: FEA anticipates using both NBS and consultants in developing the appliance efficiency standards. In addition, we intend to draw on existing Energy Research and Development Administration labs, which will be part of the new Department of Energy. Consequently, we see no need or justification for limiting the Administrator's discretion in choosing technical support to one particular source.

Question 6(b): Is FEA using consultants for this program now? If yes, please identify them, indicate what they are doing and the cost thereof?

Answer: The following is a list of contracts currently being administered by the Office of Appliance Programs.

PRESENT CONTRACTS

I. ECONOMIC IMPACT OF APPLIANCE EFFICIENCY TARGETS (ECONOMIC ANALYSIS)

CONTRACTOR: ARTHUR YOUNG & CO.

COST: $228,000

OBJECTIVES:

1) COLLECTION AND REVIEW OF EXISTING DATA FOR APPLIANCE DEMAND ANALYSIS

2) CONSUMER PROFILE FOR APPLIANCE CONSUMPTION BEHAVIOR

3) ECONOMETRIC MODEL DESCRIBING APPLIANCE DEMAND

4) ECONOMETRIC ANALYSIS OF APPLIANCE DEMAND

5) APPLIANCE INDUSTRY ECONOMIC PROFILE AND ECONOMIC IMPACT ANALYSIS

II. PATTERNS OF ENERGY USE IN ELECTRICAL APPLIANCES

CONTRACTOR: MIDWEST RESEARCH INSTITUTE

COST: $225,000

OBJECTIVES:

1) CONDUCT SURVEY TO SELECT HOMES FOR METERING OF PRODUCTS

2) WORK THROUGH LOCAL UTILITIES AND HOMEOWNERS TO MEASURE CONSUMPTION OVER FULL YEAR

3) ANALYZE DATA DESCRIBING USE PATTERNS

III. CONSUMER EDUCATION PROGRAM

CONTRACTOR: FRASER/RUDER, FINN

PRICE: $111,000

OBJECTIVES:

1) DEVELOP GENERAL INFORMATION ON CONSERVATION OF ENERGY USAGE

2) EDUCATION PROGRAM TO SPECIFICALLY CREATE AWARENESS ABOUT LABELS

IV. QUICK RESPONSE - ENVIRONMENTAL ASSESSMENT/REPORTING & MONITORING

CONTRACTOR: ARTHUR D. LITTLE

COST: $100,000

OBJECTIVES:

1) ENVIRONMENTAL ASSESSMENT

2) DEVELOP REPORTING & MONITORING SYSTEM

3) STATE PREEMPTION

V. TECHNICAL AND ECONOMIC ASSISTANCE ON EFFICIENCY TARGETS AND TEST PROCEDURES (ENERGY EFFICIENCY PROGRAM)

CONTRACTORS:

1) SCIENCE APPLICATIONS, INC.

COST: $120,000 A. CLOTHES WASHERS, CLOTHES DRYERS, ETC
COST: $200,000 B. AIR COND., CAC, HEAT PUMPS
COST: $130,000 C. KITCHEN RANGES & OVENS

2) BOOZ-ALLEN & HAMILTON

COST: $289,000 A. HOME HEATING EQUIPMENT & FURNACES

3) VALUE ENG. CO.

COST: $78,000 A. TELEVISION SETS

OBJECTIVES:

1) STATE-OF-THE-ART ASSESSMENT OF AVAILABLE TEST PROCEDURES & TECHNOLOGY

2) IDENTIFICATION, EVALUATION, AND FURTHER DEVELOPMENT OF TEST PROCEDURES

3) DEFINITION OF A 1972 BASE LINE IN ORDER TO SET EFFICIENCY TARGETS

4) IDENTIFICATION OF FEASIBLE EFFICIENCY IMPROVEMENTS THROUGH COST/BENEFIT ANALYSIS OF VARIOUS DESIGN OPTIONS

Question 7: The bill provides an exception for small manufacturers. What is the basis for using a standard of $8 million and how will FEA determine whether a firm meets that test?

Answer: The 40 firms with revenues of $8 million and less account for 4 percent of the market for covered consumer products (1-13). Moving the $8 million figure upward even slightly can significantly increase percentage of the market exempted from standards for certain product types. Analysis indicates that firms below $8 million generally don't have the capital investment capability to meet standards initially. Small manufacturers may be exempted from standards for no more than 2 years, and this process will be determined by rulemaking.

Question 8 : H.R. 6831 requires a review of each standard 5 years after promulgation.

(a) Why did you choose 5 years? Why not a lesser period?

(b) Is it intended that there be a review every 5 years after promulgation or just one review?

(d) How would this review be conducted?

(e) Will test procedures also be reviewed? How often?

Answer: We believe 5 years is an appropriate period of time for a review of the standards from both an administrative and industry perspective. We anticipate that within 5 years from the date of enactment, FEA would conduct a complete and thorough review, including public participation, of all test procedures and standards to determine which are in need of modification. Such an overall review would be conducted every 5 years thereafter.

Question 8(c): Should not the bill require the FEA to complete the review in a specified period and require a report thereon?

Answer: We do not believe statutory deadlines for the completion of the review should be included in the legislation, because we cannot anticipate the appropriate time needed to conduct such a comprehensive review. We have no objection to requiring a report on such a review.

Question 9 : We understand that AHAM has asked FEA to allow data collection through an industry-sponsored, third party reporting system "to insure against the disclosure of proprietary information".

(a) Please provide a copy of that request and indicate its status.

Answer: No official action has been taken on the AHAM "third party reporting system" proposal at this time. Arthur D. Little, Inc. (ADL), under contract, is currently evaluating the requirements of a reporting and monitoring system for the appliance target program including the review of several operational private and governmental systems. Based on this evaluation and study, ADL will submit a report outlining options regarding a monitoring and reporting system. Based upon receipt of the ADL report and other information, FEA will complete development. As requested, the AHAM proposals for a third-party reporting system are enclosed.

Question 9(b): We question the soundness of this procedure and suggest that the confidentiality provisions of Section 11 of the Energy Supply and Environmental Coordination Act of 1974 apply to this program. Please comment.

Answer: As stated above, no official action has been taken on the AHAM proposal. However, any data reporting system ultimately adopted must provide a sound data base. FEA believes that to enforce the law effectively and to serve the best interest of both the public and the regulated industry, a sound data base must be available to the staff. We believe FEA currently has adequate procedures to insure that information determined to be confidential is not released. The applicability of these procedures to the appliance reporting and monitoring system will be weighted. As you know, FEA currently collects large volumes of confidential information and maintains several systems to insure the confidentiality of such data pursuant to section 1905 of Title 18 as well as other laws.

Question 10: The bill adds a new Section 326(d) to the law which authorizes FEA to "require" information. The word "require" appears ambiguous. Does this mean FEA can force compliance? If so, how and in what manner?

Answer: The word "require", in our view, is not ambiguous. The same term is utilized in both Sections 13 of the Federal Energy Administration Act and Section 11 of the Energy Supply and Environmental Coordination Act, two of the basic information gathering powers available to the FEA. A requirement for submission of information could be imposed either by rule or by order. Compliance with any requirement which might be established pursuant to this authority would be obtained in the same manner as compliance under Section 329 of the EPCA, which provides for issuance of a subpoena in the first instance, with ultimate enforcement through Court action.

Question 11: Please provide to us the report required by the Act of July 25, 1956 (70 Stat. 652).

Answer: The Act of July 25, 1956 (70 Stat. 652) requires that "Each report, recommendation, or other communication, of an official nature, of any department, agency or independent establishment of the Executive Branch of the Federal Government ..." which (1) relates to pending or proposed legislation entailing an annual expenditure of appropriated funds in excess of $1,000,000; (2) is submitted ... on the initiative of the appropriate authority of the Executive Branch; and (3) officially proposes or recommends the creation or expansion ... of any function, activity, or authority of any such department ... shall contain certain estimates with respect to estimated additional man-years, personnel expenditures and other expenditures which would be required to effectuate the performance of the function or activity involved.

Since the official request for enactment of the National Energy Act was transmitted by the President, and not by a "department, agency, or independent establishment of the executive branch" to which the statute applies, no report was required to accompany the Presidential message. FEA will, of course, be preparing information of the nature covered by the statute and will provide such information to the Congress in the context of whatever budgetary requests might be made.

NINETY-FIFTH CONGRESS

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HOUSE OF REPRESENTATIVES
SUBCOMMITTEE ON ENERGY AND POWER
OF THE
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE
WASHINGTON, D.C. 20515

May 31, 1977

Mr. Gorman C. Smith
Assistant Administrator for
Regulatory Programs
Federal Energy Administration
2000 M Street, N.W.
Washington, D.C. 20461

Dear Mr. Smith:

Thank you for your May 27 letter replying to my written questions concerning the appliance provisions of H.R. 6831.

Your reply to my question Number 11 states that because H.R. 6831 was transmitted to Congress by the President, the report of the cost of this program and personnel needs over five fiscal years will not be provided, as required by the Act of July 25, 1956 (70 Stat. 652). I do not agree with your interpretation of the law, particularly since Part B of H.R. 6831 amends a statute administered by FEA. I have asked the GAO for an opinion thereon.

H.R. 6831 proposes to more than double the authorization for this program in Fiscal Year 1977 and provides an open-ended authorization. EPCA now authorizes $1.5 million in FY 1977 and 1978 for the FEA for this program. The FEA provided no data to support this substantial increase in the existing authorization.

In the light of the Administration's refusal to comply with the 1956 law and the lack of supporting data, I will recommend to the Subcommittee in markup that the current authorization in section 339(a) of EPCA remain unchanged. I plan to take a similar approach in the coal conversion program if the FEA does not provide the needed data.

Sincerely,

John D. Dingell
Chairman

Mr. DINGELL. Our next witness is Mr. Warshaw.

STATEMENT OF STANLEY I. WARSHAW, PH. D.

Mr. WARSHAW. Thank you for the opportunity to testify here today, Mr. Chairman.

As part of his National Energy Policy, the President has proposed legislation which, among other things, would amend part B of title III of the Energy Policy and Conservation Act (EPCA) to substitute reliance on voluntary efforts to meet industrywide average energy efficiency targets for consumer products other than automobiles with a program of mandatory energy efficiency standards prescribing minimum levels of performance.

As a general rule we feel, as does the President, that regulation of industry is not a preferred course of action, and we are strong proponents of voluntary action whenever possible.

However, the events that have occurred in appliance energy labeling and efficiency improvement since 1973 have led us to conclude that reliance on voluntary efforts to meet energy efficiency targets likely will not work in the time allocated by the law.

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's 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 the Federal Energy Administration and the Federal Trade Commission.

In the area of energy efficiency standards, FEA was given responsibility. 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, et cetera, 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 initial 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 support mandatory energy efficiency standards proposed by the President for consumer products. 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.

Mr. DINGELL. I apologize for the interruption. There is a vote on the floor. One of my colleagues cannot come back, so I will go vote and come back as quickly as I can.

The committee will stand in recess briefly while the Chair goes to vote.

[Brief recess.]

Mr. DINGELL. The subcommittee will come to order.

Mr. Warshaw, we apologize for interrupting you. We recognize you to conclude your statement.

Mr. WARSHAW. Thank you, Mr. Chairman.

As I was pointing out, the amendment to EPCA proposed by the President leaves intact the responsibility of the National Bureau of Standards (NBS) to provide FEA with test procedures. We welcome this continuing responsibility.

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.

Some of the test procedures were supplied as early as March 1976. As new products are brought in under Category 14, and they can be aircraft, boats, attic fans, gardening equipment, or a variety of other appliances and nonappliances, new test procedures will be needed. Also in response to new unforeseen inventions or developments, or changes in usage patterns, existing test procedures will require updating.

This concludes my formal statement for the record. I would be happy to answer any questions.

Mr. DINGELL. Mr. Warshaw, we thank you for a very helpful statement.

Our last panel member is Mr. Foster.

Mr. Foster, I believe you have been before the committee before. Happy to have you back.

## STATEMENT OF ROBERT FOSTER

Mr. FOSTER. Thank you. I am happy to be here. I appreciate the opportunity to comment on the appliance efficiency program.

With your permission, I have a prepared statement to submit for the record. I would like to summarize that statement.

Mr. DINGELL. That will be entirely appropriate. That statement may be made part of the record without objection.

Mr. FOSTER. In addition, I would also like to submit for the record a staff report from the Energy Commission which may answer some of the questions raised this morning in terms of energy usage and price of efficiency standards.

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Mr. DINGELL. I think that is entirely appropriate, and without objection that will appear in the record at the appropriate point.

Mr. FOSTER. Thank you, Mr. Chairman.

We support the concept of minimum energy efficiency standards for appliances. We think there are several compelling reasons why they are necessary.

To begin with, over the last several years there has been a change in the cost structure of utilities. The previous two decades of the Fifties experienced a declining marginal cost on the part of utility systems whereby new supplies were in fact cheaper than the average supplies of the utility systems. That trend has been reversed.

Now costs appear to be higher and there appears to be no chance of that trend abating in the near future. In fact, due to the fuel cost increases, marginal costs will continue to be higher than the average costs.

Secondly, there are a number of technical improvements either now existing or on the horizon which we feel will not be introduced into the marketplace in sufficient time to achieve substantial energy savings in the near future, primarily because the appliance industry is tremendously cost-competitive. Those companies which seek to make efficiency improvements will suffer in the marketplace, and most companies will not make such changes.

Third, the marketplace itself is distorted. Many of the purchases for appliances are not made by the person who will in fact use that appliance. You and I might think of purchasing appliances at the retail level, but in fact a substantial number of the energy-intensive appliances are purchased wholesale by builders or owners of apartments. The users of those appliances have almost no way of impacting the market.

Mr. BROWN. Would you quantify "substantial"?

Mr. FOSTER. I do not have the exact number.

Mr. BROWN. Can you get it and insert it?

Mr. FOSTER. Yes, I will.

[The following information was received for the record:]

According to central air conditioner representatives, over 90 percent of the central air conditioners and central furnaces are installed by contractors. We do not know the percentage of room air conditioners and refrigerators that are installed by contractors.

Mr. BROWN. Thank you.

Mr. FOSTER. Again to reiterate, many of those decisions are made by builders of homes or apartments and the users of those appliances are removed from that decision, and those decisions are generally made on the basis of low initial cost.

Finally, we think there is a compelling need to conserve energy. We think this is an area where significant saving can be made. We are happy to see that the concept of minimum efficiency standards has been chosen by the administration over that of energy targets.

In reviewing the program under EPCA, we think that energy conservation targets are really difficult to administer, almost impossible to enforce, and they are uncertain in result. In that sense it is difficult to plan in any meaningful way for a conservation program out into the future. So again we would like to reiterate, we do

support the concept of minimum efficiency standards for appliances.

Earlier this morning, several witnesses testified to what is necessary for any minimum efficiency appliance program to be workable. They made statements relative to the technical feasibility of whatever standards are adopted. Whatever will come out in the way of standards must be achievable in terms of an engineering perspective for appliances.

Secondly, they must be economically cost-effective both to the manufacturer and to the consumer.

Third, there must be sufficient time for industry to make the necessary changes to products, to the designs and for the tooling of their process to enable them to comply with standards.

Fourth, the standards must not burden the consumer. That is, the initial cost must not be so great as to defer purchase of the appliance or the savings that will accumulate from the appliance will not pay for the initial price increase for the efficiency standards.

Finally, whatever standards are adopted, it is recommended they be performance standards and not be any kind of prescriptive regulations. Again we heartily agree.

These are all necessary ingredients of any sound appliance efficiency program.

In California we have taken I think very seriously the need to adopt minimum efficiency standards for appliances. In fact the five points I mentioned earlier, which were raised this morning, have guided the California appliance efficiency program.

California has already adopted minimum efficiency standards for a number of appliances. Those that have been adopted relate to refrigerators and freezers, refrigerator-freezer combinations, room air-conditioners, and central air-conditioners and, in addition, California has required the elimination of the pilot light and its replacement by intermittent ignition devices on gas furnaces, ovens and ranges.

The standards in California are in two groups.

The first group I mentioned has already been adopted. Subsequent groups dealing basically with the heating appliances are upcoming for adoption in the fall. They are put into two phases, the first going into effect on November 3 of this year and the second and more stringent standards going into effect on November 3 of 1979.

Those standards were phased deliberately to provide industry the necessary time required, and this was basically done at their request, to allow them to make the necessary design changes and changes to their product lines to meet the standards.

The standards are also cost-effective. The law which required that the California Energy Commission adopt minimum efficiency standards for appliances requires three things:

One, it requires that the Commission make a finding that the appliances for which it seeks to adopt standards consume a significant amount of energy on a statewide basis.

Secondly, the standards should be technologically feasible.

Third, they must be cost-effective to the consumer in that they do not increase the cost of the appliance over the design life when weighted against savings in operating expenses.

So we have done this; we think these standards we have adopted are reasonable. We held numerous workshops and several public hearings before the Commission.

The industry itself is divided on these standards we have adopted. Some members of the industry will state that they are reasonable standards, they are able to be complied with, and that California has in effect taken a very important step in meeting what is now the President's energy policy

We have heard this morning from a number of witnesses about the issue of Federal preemption in this area. I would like to say that I do not think that the issue is really Federal preemption at all.

In California, even though we have done substantial work in this area, we have to agree that it really is not in the public interest to have a balkanization of appliance efficiency programs. We will have 50 different States setting 50 different standards. That really is nonsense.

What we would urge is that the issue is not really Federal preemption, it is the soundness of the standards that the Federal Government will adopt. We would like to see very strong, very stringent, technically feasible, cost-effective standards come from the Federal Government.

If that is done, we think there is really no need for the States to set standards, except in perhaps very few instances, and in fact there will be no desire on the part of the States to set standards, and few would have the resources to do it anyway.

We know that the present proposal would keep intact section 327 of the Energy Policy and Conservation Act. We would urge that in fact that act as it is presently written; and that section as it presently stands provides sufficient safeguards both for the industry and for States to make exceptions to the Federal preemption rules.

We think there may be cases where States ought to go beyond Federal standards or perhaps set standards not covered by Federal regulation.

Finally, we think it ought to be made clear in the absence of Federal standards the California standards should stay intact and should be enforced. We think this can provide a useful test bed for seeing how workable and practical minimum energy standards for appliances are. We think we can provide much-needed practical experience in this area to the Federal Government.

We would urge, we know there are some petitions now before FEA contending that the California standards should be struck down, but we urge that the standards should remain intact until Federal standards speak to the subject.

Then again, I would like to reiterate that 327 does provide sufficient protection both for the industry and for the States to make exception to that rule.

Thank you.

[Mr. Foster's prepared statement and the report referred to follow:]

STATEMENT OF ROBERT FOSTER

My name is Robert Foster. I am the Administrator of the Conservation Division of the California Energy Resources Conservation and Development Commission. Part of the Commission's responsibilities is to develop and adopt appliance efficiency standards for those appliances which the Commission determines consume a significant amount of energy on a statewide basis. The Conservation Division is responsible for the development of a variety of conservation programs, including the program for appliance efficiency.

It is encouraging to witness national attention focusing on our critical energy problems. For many years, energy conservation has been observed only as a concept needed to meet emergency conditions or to provide time to bridge gaps in energy supply schemes. Several initiatives in recent years have begun to place energy conservation among the major ingredients of the energy solution. These have culminated in President Carter placing energy conservation as the centerpiece of his energy program.

As part of his energy conservation program, President Carter has requested authority to develop and promulgate minimum efficiency standards for appliances. There are several reasons why efficiency standards for appliances are warranted. First, existing appliance design is a vestige of an era of inexpensive energy. During the decade of the fifties and sixties, the marginal cost of producing electricity was declining in relation to average cost. This meant that the cost of increased electrical use was lower per unit consumed and as use increased, price per unit consumed could decline. This situation has now reversed to where the cost of additional electrical supply is substantially more expensive than present average costs. This trend shows no sign of abating and may be accelerated by rising fuel and construction costs. In this environment, the production of poorly designed inefficient machines with lifetimes of 10 to 20 years is wasteful at best.

Secondly, there are a variety of technological improvements which could be made now or which are on the horizon that will not be introduced into the market place on a large scale under present conditions. The appliance business is intensely cost competitive and improvements in efficiency will not produce substantial increases in market penetration due to the attendant cost increases. New developments, such as the recent improvements in electric motor design or intermittent ignition devices for gas appliances, will not be assimilated quickly enough under present market conditions to result in measurable savings in the near future. Strong efficiency standards will tend to place a premium on new design which is inexpensive yet highly efficient and will push the industry to its technological limits. Without such force, the industry will continue to concentrate on low initial costs with little regard to operating expenses.

Third, standards are necessary because of market conditions which remove the user of appliances from the purchase decisions. Most of us think of appliances as purchases we would make in retail stores. However, for many energy intense appliances such as furnaces, air conditioners, and refrigerators, a sizeable number are purchased wholesale for new construction. In this situation, the normal impulse to seek the lowest first cost item *cannot* be counterbalanced by education which teaches the buyer to also examine the operating costs of the device. In these instances, the decision is made for the buyer by the residential building, to whom small discounts on quantity purchases dictates the purchase decision. Minimum standards can assure a basic level of quality for home buyers and apartment dwellers not now existent in the marketplace.

Finally, even if the dictates of increased prices and market constraints did not require appliance standards, the energy savings to be gained would produce the need for standards. Major appliances presently account for the majority of residential electrical use and this percentage is likely to increase with rising income, increased appliance saturation, and additional product lines. Improvements in efficiency can help reduce the electrical growth rate to that level targeted by the President. In addition, the savings in fuel oil burned by utilities and reductions in air pollutants are substantial benefits derived from improved efficiency. If we are to produce machines to last one or two decades, we should ensure prudent design consistent with the requirements of future resource and environmental constraints. This emphasis on minimum efficiency standards is a change from the present requirement for appliance efficiency targets as contained in the Energy Policy and Conservation Act. This change should be applauded by all who take the energy problem seriously. Major appliances are an area ripe for substantial improvements in efficiency and there should be strong standards which meet the dictates of sound design

and prudent operation. The present program for appliance efficiency targets is not consistent with a vital energy conservation program. Appliance efficiency targets are difficult to administer, impossible to enforce, and uncertain in results. There can be no realistic energy planning in this area if targets are relied upon. In contrast, minimum efficiency standards will produce measurable results within specified time frames and provide certitude in administration. Minimum standards are the only real method for an effective conservation program.

Appliance standards need not burden industry, threaten production, adversely affect employment, or substantially increase prices. Standards, in order to achieve compliance, must be reasonable and consistent with several economic parameters. They must balance energy savings with the requirements of technological feasibility and be cost effective for the consumer. They can neither burden industry to the point where compliance is impossible or possible only under tremendous costs, nor impose cost increases upon the consumer which are out of proportion to expected savings. They can and should recognize the improvements that are possible and set reasonable time frames for their implementation. They should push the technology in the direction of improved efficiency at the lowest cost by establishing levels of performance rather than prescriptive characteristics. Most important, any standard should recognize and take account of the rising marginal cost of energy and encourage design changes consistent with these increasing costs.

The need for standards compatible with the above requirements has been evident for some time. The federal government, until recently, has chosen not to enter this area. Several states have considered action, but only one has taken the responsibility in this field seriously enough to require standards for appliances. California policy has recognized the need for appliance efficiency improvement since 1974. We have taken the finite nature of energy resources and the need for conservation and translated them into a reasonable and workable set of regulation governing appliance design. This action is not only consistent with federal policy and provided an example of how to implement energy conservation policy. The policy is now a reality in California, not only in the appliance field but in numerous other areas. If we are to support a conservation policy then we are compelled to support the California program.

What is the program? The Warren Alquist Act, which created our Commission, required the development of appliance efficiency standards for those appliances which consume a significant amount of energy on a statewide basis. It requires that such standards be technologically feasible and be cost effective over the design life of the appliance.

Under this legislation, California has now adopted efficiency standards for the first group of appliances. These standards cover refrigerators, refrigerator/freezers, room air conditioners and central air conditioners. This group was chosen because of its energy intensity, its relationship to peak loads, and its impact upon air quality. The standards are implemented in two phases. The first phase is effective November 3, 1977, and the second and more stringent phase is effective on November 3, 1979. This phased process was chosen to provide industry sufficient time to make the necessary design changes to meet the standards. The standards are promulgated in terms of performance levels rather than prescriptive design requirements to provide the necessary design freedom and encourage design innovation. In addition, California has adopted standards for the certification of intermittent ignition devices on gas appliances. Several appliances equipped with intermittent ignition devices are now certified and after July 8, 1978, all gass furnaces, ranges, and ovens will be required to have intermittent ignition devices rather than pilot lights. I have attached a copy of all the adopted appliance standards for your information.

The effect of the standards in both energy and financial savings is substantial. By 1987, California will save two billion kilowatt hours of electricity annually and over 3,000 megawatts of capacity by the implementation of these standards. This equates to over four million barrels of oil equivalent. California consumers will not only save energy but also lower the otherwise rapidly rising utility rates as a result of lower capacity requirements. One notable example of just how significant these savings can be is with refrigerators. If a person were to purchase the most efficient refrigerator on the market today, in contrast to the least efficient refrigerator, the operating savings would be over $1,000 over the life (15 years) of the refrigerators. If this savings were discounted for present value, it would be equal to about $500.00 in savings. This is akin to placing $500.00 in a bank account today.

The California standards are cost effective for the consumer. They increase the initial cost for refrigerators and freezers by no more than 10%, and for room and central air conditioners by no more than 30%. Any increase in initial cost will be

more than covered by reduced fuel bills. These standards will soon be accompanied by the second group of standards covering furnaces, water heaters, swimming pool heaters, shower heads, decorative gas logs and television sets. These standards are scheduled for adoption in late fall of this year and will go into effect one year after adoption. Listed on the following page are the anticipated statewide savings from standards covering these appliances, assuming stringent standards are actually adopted.

ESTIMATED ANNUAL SAVINGS IN BARRELS OF OIL EQUIVALENT IN THE TENTH YEAR FOR THE STATE OF CALIFORNIA

Furnaces—170,000,000.
Water Heaters and Swimming Pool Heaters—10,000,000.
Shower Heads—3,800,000.
Decorative Gas Logs—190,000.
Television—270,000.

The California standards meet all the requirements of prudent appliance standards. They are consistent with the national thrust for energy conservation. They are cost effective for the consumer. They allow a reasonable amount of time for industry to meet the necessary design changes. They are performance standards and will encourage technological change. Despite this reasonable and necessary approach to the appliance problem, you will probably hear today from some within industry that the California standards are infeasible and too costly. Industry will argue that a great burden will be placed upon them; that they cannot possibly meet the time requirements; that the costs will be too high. The simple fact is that all of the efficiency levels required by the California standards have been attained by devices presently on the market. The costs of these changes have, if anything, been overestimated by the Commission to err on the side of conservation in setting the standards. Industry itself divided on the issue, with some manufacturers admitting in hearings before the Commission that the standards are reasonable and pose no undue burden upon industry.

If you favor increased efficiency for appliances. . .if you support an active conservation program as the centerpiece of an energy policy. . .if you desire to protect the consumer from the effects of rapidly rising energy prices. . .if you seek to initiate technological improvements, then you should support the California standards as a reasonable first step in this effort to solve the energy problem.

California has chosen to act on appliance efficiency in advance of federal efforts. Some may seek to make the issue one of federal and state conflicts rather than improved efficiency and national need. We think that the existing law, EPCA Section 327, provides sufficient federal authority on this question and at the same time allows some flexibility when local conditions and needs merit special consideration. The present situation allows California to serve both as a model and test ground for the practicality and workability of appliance standards. At the same time, it provides a mechanism to prevent a balkanization of appliance standards in each of the 50 states. The present law also allows for the implementation of these standards substantially earlier than any federal effort is possible. Under the most optimistic condition, the time required for federal standards will be 13 months. This does not even begin to account for the probable delays brought about by any reorganization of the federal energy establishment. California's standards are already adopted and will be enforced in six months. The standards will provide a good method of evaluation of federal efforts in this area and will provide for earlier introduction of more efficient machines than is possible under federal rules.

The real issue is not federal and state conflicts. The issue is the quality and care with which we develop standards and the level of the political will to assure their consistency with the dictates of energy conservation. Section 327 of EPCA sets out the conditions under which states may set higher standards than the federal government. Two conditions must be met. There must be substantial local need and no undue burden upon interstate commerce. Clearly there may be instances where regulation may of necessity meet these criteria, but the real issue is the strength and integrity of the federal efforts in this area. Few states will have the need or the resources to even enter the field. The number of those that may choose to enter the field will be greatly reduced by a sound federal effort which is consistent with the criteria for effective and prudent regulations. In short, the better the federal effort, the less need for state efforts under Section 327.

The need for appliance standards is apparent and the potential savings significant. California has chosen to use its own resources to lead in this field. Our regulations

are sound and consistent with federal policy. They are the kind of regulations which should be adopted at the federal level but they should stand until federal action takes place. They will stand unless specifically struck down by the federal hand. We hope that we now take energy conservation too seriously for such an event to occur.

California State Energy Resources Conservation and Development Commission
Conservation Division

STAFF REPORT ON APPLIANCE EFFICIENCY PROGRAM
REVISED JULY 29, 1976


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Appendix

A. List of Exhibits Entered into the Hearing Record (as of July 29, 1976)

SUPPLEMENT
Published September 24, 1976

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4. Answers to Questions Asked at the Hearings 39
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Appendix

B. Science Applications Inc. Questionnaire

Note

(November 17, 1976)

This package consists of a staff report revised and completely rewritten on July 29, 1976 (pages 1-35) and a Supplement published on September 24, 1976 (pages 36-47). The reader should note that changes were subsequently made to the proposed regulations on which these documents were based. The following are the standards which were adopted, with changes shown as footnotes:

Refrigerators, Refrigerator-freezers and Freezers

| Effective Date | Appliance | Formula |
|---|---|---|
| November 3, 1977 | Refrigerators | EC = 40 + 2.5V |
| | Refrigerator-freezers and freezers | |
| | o with automatic defrost systems | EC = 40 + 7V |
| | o all others | EC = 40 + 5V |
| November 3, 1979 | Refrigerators | EC = 40 + 2.5V |
| | Refrigerator-freezers | |
| | o with automatic defrost systems | EC = 40 + 5V |
| | o all others | EC = 40 + 4V |
| | Freezers | |
| | o upright freezers with automatic defrost systems 1/ | EC = 40 + 6V |
| | o all others | EC = 40 + 4V |

EC = Energy Consumption (kwh/mo)

V = Total Refrigerated Volume (cubic feet)

1/ Additional catagory added by Commission on October 14, 1976

Air Conditioners

| Effective Date | Appliance | EER |
|---|---|---|
| November 3, 1977 | Room air conditioners | |
| | o those with cooling capacity 2/ equal to or greater than 20,000 Btu/hour | 7.0 |
| | o other heat pumps | 7.1 |
| | o all other room air conditioners | 7.5 |
| | Central air conditioners | |
| | o heat pumps | 6.7 |
| | o all others | 7.0 |
| November 3, 1979 | Room air conditioners | |
| | o those designed for use 3/ with a supply of at least 200 volts | 8.2 |
| | o other heat pumps | 8.3 |
| | o all other room air conditioners | 8.7 |
| | Central air conditioners | |
| | o heat pumps 4/ | 7.5 |
| | o all others 4/ | 8.0 |

2/ Additional category added by staff on October 6, 1976

3/ Additional category added by Commission on October 14, 1976

4/ EER values of 8.7 and 9.2 were changed by staff to 7.5 and 8.0 on October 6, 1976

## 1. Executive Summary

Section 25402 of the Public Resources Code requires the State Energy Resources Conservation and Development Commission to prescribe standards for minimum levels of operating efficiency for all appliances whose use requires a significant amount of energy on a statewide basis. One year after the date of adoption of such standards, no new appliance may be sold or offered for sale in the State which is not certified by the manufacturer thereof to be in compliance with such standards. These standards must be drawn so that they do not result in any added costs to the consumer over the designed life of the appliance concerned.

The Commission staff has identified several groups of appliances as requiring significant amounts of energy on a statewide basis, and has prepared proposed regulations for refrigerators, refrigerator-freezers and freezers, room air conditioners and central air conditioners.

The proposed regulations are limited to those appliances which are operated by electricity. The air conditioner regulations refer only to air conditioners whose capacity does not exceed 65,000 Btu per hour and excludes those designed expressly for mobile homes and other mobile applications.

Some air conditioners have capabilities of both heating and cooling, using gas, oil or electricity as sources of energy for heating. Only the cooling characteristics are being considered at this time. Heating characteristics will be considered in later regulations.

The regulations require standards for appliances whose use requires a significant amount of energy on a statewide basis. Our consultants have estimated that refrigerators and freezers use 12 billion kilowatt-hours of electricity annually, representing 8.6% of the total electricity sales in California. Room air conditioners use 1 billion kilowatt-hours, representing 0.7% and central air conditioners use 1.7 billion kilowatt-hours, representing 1.2% of the total electricity sales in California. Air conditioners are particularly significant since they are normally used at times of peak demand.

The regulations must be based on feasible and attainable efficiencies. Technology exists today to produce higher efficiency models which meet California's proposed standards. It is questionable whether or not industry can produce commercial quantities within the 12 months mandated by the Public Resources Code. Staff, therefore, proposes two sets of standards, one set to take effect on September 15, 1977, and the other set on September 15, 1979. The 1977 standards are partly based on recommendations from industry and are presumed attainable within the time allowed. The 1979 standards allow three years for the manufacturers to make necessary changes to their appliances.

Standards must also be based on a reasonable use pattern. The use patterns for refrigerators and freezers are relatively consistent, but use of air conditioners vary widely from location to location. The proposed regulations are based on a weighted average use of 500 hours per year. The alternative to using a statewide average would be to make different assumptions for each city or region. This would result in a multiplicity of standards within California which would be very difficult to enforce and would place an undue burden on the industry.

Standards must be drawn so that they do not result in any added total cost to the consumer over the designed life of the appliances concerned. Buying high efficiency models of refrigerators and freezers is today clearly cost effective. Whether the regulations proposed for air conditioners for September 1979 are cost effective depends on the assumptions made for the design life of the appliance, the discount rate and the future price of electricity, none of which are positively known. Staff used its best judgment and that of qualified consultants in selecting these values. The proposed regulations are cost effective, based on these assumptions.

There will be some increase in the purchase price of all appliances due to the higher performance standards. This increase should not exceed 10% for food refrigeration appliances or 30% for room and central air conditioners.

Energy savings associated with the proposed standards are estimated at 2.30 billion kilowatt-hours in the tenth year. Additional energy used to produce the more efficient products is estimated at 0.40 billion kilowatt-hours per year.

## 2. Background

Section 25402 of the Public Resources Code requires the State Energy Resources Conservation and Development Commission to "...prescribe standards for minimum levels of operating efficiency, based on a reasonable use pattern, for all appliances whose use, as determined by the commission, requires a significant amount of energy on a statewide basis. Such minimum levels of operating efficiency shall be based on feasible and attainable efficiencies or feasible improved efficiencies which will reduce the electrical energy consumption growth rate. One year after the date of the adoption of such standards, no new appliance may be sold or offered for sale in the state which is not certified by the manufacturer thereof to be in compliance with such standards. Such standards shall be drawn so that they do not result in any added total costs to the consumer over the designed life of the appliances concerned."

The following groups of appliances have been identified as requiring a significant amount of energy on a statewide basis.

Gas-fired space heaters
Water heaters (gas and electric)
Refrigerators and freezers
Air conditioners and heat pumps (subdivided into two groups)
Cooking appliances (gas and electric)
Clothes dryers (gas and electric)
Televisions
Dishwashers
Clothes washers

On February 27, 1976, the staff publicly distributed a draft of proposed regulations for refrigerators and freezers, room air conditioners (including those with electric heating), central air conditioning systems (including heat pumps).

Informal staff workshops, to obtain input from industry and other members of the public, were conducted in Los Angeles on April 6, 1976, in San Francisco on April 21, 1976, and in Sacramento on May 20, 1976.

In April 1976, Commission staff mailed questionnaires to all known manufacturers of the affected appliances asking for information about the price and number of models of appliances sold in California. A summary of responses is included in this report.

In May 1976, Commission staff distributed Proposed Regulations for Appliance Efficiency Standards (Exhibit 2)* and a Staff Report on the Appliance Efficiency Program (Exhibit 3), both dated May 14, 1976. At the June 3, 1976 hearing, the staff indicated that the regulations and report might be revised prior to the August hearing.

The Commission has set the following dates for public hearings to take testimony and to consider the possible adoption of the proposed regulations.

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*Exhibits are listed in the Appendix.

June 3, 1976 in Sacramento
June 29, 1976 in Santa Monica
August 24, 1976 in San Francisco
August 26, 1976 in Sacramento
September 15, 1976 in Los Angeles

The exhibits which were entered into the record of the hearings on June 3, 1976 and June 29, 1976 and some additional exhibits which will be entered into the record at subsequent hearings are listed in Appendix A.

On or about July 29, 1976, the Commission staff will distribute a revised edition of the proposed regulations (Exhibit 2B), this staff report (Exhibit 3B) and, in accordance with the California Environmental Quality Act, an assessment of the impact of the proposed regulations (Exhibits 32 A & B) and a study on the socio-economic impacts by the Commission's consultant, Science Applications, Inc. (Exhibit 33A).

The adoption of the proposed regulations will be considered by the Commission at a hearing scheduled for September 15, 1976.

The staff will propose regulations for heating appliances by January 1, 1977, which may include standards for some combined heating and cooling appliances.

### 3. Relationship with Federal Programs

(a) Energy Policy and Conservation Act

The sections of the Public Resources Code under which appliance efficiency standards are being developed became effective in January 1975. In December 1975, President Ford signed into law the federal Energy Policy and Conservation Act which includes requirements for the setting of federal conservation targets, test procedures, labeling rules and, under certain circumstances, energy efficiency standards for many appliances. Proposed ranges of energy efficiency improvement targets for refrigerators, refrigerator-freezers, freezers, and room air conditioners were published in the Federal Register on May 14, 1976. Proposed test procedures which were scheduled to be published by June 30, 1976, have been delayed. As of July 26, 1976, no targets,* test procedures, labeling rules or efficiency standards have been adopted under the federal act.

The need for both state and federal programs has been questioned. The Commission proposes to continue its program for the following reasons:

(1) It is required by State law.

(2) The federal labeling program will help the informed consumer make rational choices based on life cycle cost. It may not affect significantly, purchases by those consumers and building contractors who are interested in first costs rather than life cycle costs.

(3) It will not be known for several years whether the federal agencies will develop energy conservation standards for appliances.



* Proposed test procedures for room air conditioners published in Federal Register on July 27, 1976 according to FEA.

The Commission staff has worked and will continue to work closely with the federal agencies to ensure that manufacturers are not burdened by the necessity of testing their products under different test procedures.

(b) National Mobile Home Construction and Safety Standards Act

This act requires the Secretary of Housing and Urban Development to establish appropriate federal mobile home construction and safety standards. These standards, published on December 18, 1975, include energy efficiency requirements for electric motor-driven unitary cooling systems and electric motor-driven vapor compression heat pumps.

The State regulations exclude from their scope all air conditioners designed expressly for installation in mobile homes.

4. Significance of Refrigerators, Freezers and Air Conditioners

The Commission has responsibility and authority to prescribe standards for "appliances whose use,... requires a significant amount of energy on a statewide basis." The Commission's consultants have made the following estimates of electricity (Exhibit 7A) used by these groups of appliances.

Table 4-1

| Appliance Group | Billions of Kilowatt-hours per Year | Percent of Total Electricity Sales |
|---|---|---|
| Refrigerators and freezers | 12 | 8.6 |
| Room air conditioners | 1 | 0.7 |
| Central air conditioners | 1.7 | 1.2 |

Additional calculations have been made by staff and entered into the record (Exhibit 21A).

The staff considers the amount of energy used by these appliances to be significant. The refrigerator/freezer group is the largest user of electrical energy. Air conditioners are particularly significant due to their critical effect on peak demand.

5. Scope of the Regulations

The Public Resources Code does not define the term appliance. The staff believes that the term may be defined broadly and may not necessarily be limited to devices using any specific energy source, any specific type of location or application or to any size restriction. The scope of the regulations being proposed, however, does include some limitations.

(a) Refrigerators and Freezers

The scope of the regulations for refrigerators and freezers excludes appliances which are not operated by electricity, since these are relatively few in number and usually small users of energy. Commercial type appliances, such as refrigerated display cabinets found in grocery and liquor stores, have been omitted because the staff does not have sufficient information upon which to base regulations at this time.

(b) Air Conditioners

The scope of the regulations for air conditioners excludes appliances which are not operated by electricity. This is due to insufficient information, not necessarily because they are not significant users of energy on a statewide basis. It also excludes air conditioners designed expressly for use in mobile homes since standards for these have been adopted under provisions of the National Mobile Home Construction and Safety Standards Act.

The scope of the regulations for central air conditioners excludes those with capacity greater than 65,000 Btu per hour since calculation of life cycle costs were based on residential electricity rates and air conditioners with capacities exceeding 65,000 Btu per hour are rarely used in residential applications. The Commission has authority to set standards for larger capacity air conditioners and will continue to study this application.

Air conditioners mounted on various types of vehicles are also excluded since it is very difficult to obtain meaningful data concerning the hours of use per year, the ambient temperatures at the point of use or the cost of electricity to the user.

6. Choice of Test Procedures and Standards

(a) Test Procedures

Test procedures selected by the Commission for the proposed standards are those presently being used by federal regulatory agencies and the majority of the manufacturing industry. There is agreement within the industry that these are the test procedures the Commission should be specifying.

For refrigerators, refrigerator-freezers and freezers the alternatives are between a monthly consumption (kWh per month) obtained directly from the test procedure and an Energy Factor, proposed and defined by Mr. Hilliker of General Electric in testimony on June 29, 1976 (Exhibit 30). Since the Energy Factor concept has not been officially adopted by any standard-making body, the staff recommends use of the universally recognized monthly consumption concept.

There are three possible ways of regulating air conditioners. The concept of a seasonal EER (Exhibit 28, Appendix A) would result in several different standards for different locations. This would be unacceptable to an industry already very concerned about a possible multiplicity of state standards. An effective EER (Exhibit 28) which would make allowance for energy saving devices is described below. The third choice, which the staff recommends, is that of regulating the EER as directly obtained from the recognized test procedures.

Energy Saving Options (All Appliances) - There are several energy saving options available today which are not reflected in the test procedures specified in Section 1603 of the regulations. The Commission staff prefers using the values obtained directly from accepted test procedures in the regulations in order to avoid numerous mathematical adjustments and the problems of judging whether one company's energy saving feature is equivalent to another company's energy saving feature. The ultimate decision of whether credit should be allowed and to what extent, is a policy decision which should be made by the Commission.

Anti-Sweat Heater Switches (Refrigerator-Freezers and Freezers) - As the freezer compartments of refrigerator-freezers increased in size (in the 1960's), as temperatures were reduced in those compartments and as door seals became longer, manufacturers installed heaters into the outer part of the shells to eliminate sweating of the appliance in humid conditions. Later, many manufacturers installed switches to turn off these heaters when sweating was not a problem. According to the AHAM directory, several current models of upright freezers, side-by-side refrigerator-freezers and top freezer type refrigerator-freezers are equipped with these switches. Energy consumption of these appliances is currently measured and reported both with the anti-sweat heaters operating and with the anti-sweat heaters switched off.

Section 1603 includes two alternatives for subsection (3). The staff recommends Alternative A, under which no credit is given for anti-sweat heater switches. Under Alternative B, it is assumed that the anti-sweat heaters will operate only half the time. Those supporting Alternative A (Exhibits 12, 13) claim that electric anti-sweat heaters are extravagant in the use of energy. Less extravagant means of performing this function would be the improvement of insulation. Another claim of those opposing credit for anti-sweat heater switches is that anyone can tell, by the puddle on the kitchen floor, when to turn on the anti-sweat heater, but virtually no one can tell when to switch it off.

Those supporting Alternative B claim that anti-sweat heaters are switched off up to 80% of the time (Exhibit 30) and credit should be given to this fact. Frigidaire suggests that the credit should be 50% (Exhibit 29 and Transcript of June 29, 1976 Hearing, page 298). Staff-recommended standards were based on an analysis that assumed the adoption of Alternative A. Should the commission adopt Alternative B, the staff will recommend an adjustment to its recommended standards.



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A compromise might be to allow the credit for anti-sweat heaters only if the appliance is designed so that the anti-sweat heaters are turned off automatically under low humidity conditions, but have to be switched on manually.

Power Saver Switch (Air Conditioners) - There are a number of air conditioner features which, it is claimed, can significantly reduce energy consumption but are not reflected in the EER as determined by the recognized test procedures. One such feature is called Power Saver by General Electric. It allows the fan motor of a room air conditioner to be cycled on and off with the compressor so that fan power is used only when the unit is cooling the room.

Oak Ridge National Laboratory report ORNL-NSF-EP-85 dated October 1975 states that this feature can increase the equivalent EER from 12 to 34% based on a study of four models of air conditioners in 10 different cities. Mr. Slattery of General Electric (Exhibit 28, Appendix E) suggests that the nameplate power input be reduced by 12% in calculating the equivalent EER. Amana Refrigeration in a letter dated July 9, 1976 has expressed the opinion that the power saver switch (automatic fan) results in an uneven distribution of air and it represents only a 3% saving for a typical unit.

Other Features - Should the Commission desire to give credit for other energy saving features, which may or may not exist at the time the regulations are adopted, the following paragraph could be added at the end of Section 1603.

> "The manufacturer may submit to the Executive Director details of any energy-saving device with which an appliance is equipped and request that the Commission make allowance therefore upon the recommendation of the executive director, the Commission shall consider amending these regulations accordingly.

(b) Standards

The 1979 standards for refrigerators, refrigerator-freezers, and freezers have been achieved by some manufacturers and are cost effective. The 1977 standards are partially based on recommendations from industry (Exhibit 29) and designed to permit a wide segment of the industry to produce significant numbers of complying models in order to minimize their economic impact.

The proposed 1979 standards for room air conditioners have been achieved and are cost effective. Staff is aware of over 70 models representing 26 brands which meet the proposed standards for 1979. Over 90 percent of these models are designed for operation on a 115-volt electric supply, and have a cooling capacity between 5,000 and 14,000 BTU per hour. Staff is aware of six models (representing five brands) with capacity greater than 14,000 BTU per hour which meet California standards. Standards for 1977 are partly based on an industry recommendation (Exhibit 25) and reflect market conditions.

The proposed 1979 standards for central air conditioners have been achieved and are cost effective. Standards for 1977 are partly based on recommendations from industry (Exhibit 25) and also reflect market conditions.

Heat Pumps - Heat pumps, which heat and cool, are inherently less efficient than corresponding air conditioners which only cool. Staff, therefore, set standards for heat pumps lower than standards for other types of air conditioners. The five percent reduction was that recommended by industry (Exhibit 25).

7. Feasibility and Attainability of Standards

The minimum levels of operating efficiency required by the regulations must be based on feasible and attainable efficiencies or feasible improved efficiencies which will reduce the electrical energy consumption growth rate. The standards are feasible only if:

(1) they are technically attainable (assuming adequate time).
(2) they can be attained within the time allowed.

(a) Technical Feasibility

Figures 7-1 through 7-12, based on the latest available editions of AHAM and ARI directories, show the performance of appliances presently available and their relationship to the proposed standards. The following tables show the percentage of current models which meet the standards proposed for 1977 and 1979. For the purposes of this analysis Appliances with similar characteristics are considered to be one model.

Table 7-1. Refrigerators, Refrigerators-Freezers and Freezers

| Type | Defrost System | Percent of Models Complying* 1977 Regulations | 1979 Regulations |
|---|---|---|---|
| Refrigerator | Manual | 73 | 73 |
| | Partial Automatic** | 0 | 0 |
| Refrigerator-Freezer*** | | | |
| Top freezer | Partial Automatic | 79 | 47 |
| Top freezer | Automatic | 80 | 26 |
| Side-by-side | Automatic | 85 | 13 |
| Freezers*** | | | |
| Upright | Manual | 72 | 34 |
| Upright | Automatic | 50 | 0 |
| Chest | Manual | 95 | 62 |

*Each symbol on Figures 7-1 through 7-7 is considered a model for this analysis.
**Only one model listed.
***With anti-sweat heaters on, where provided.

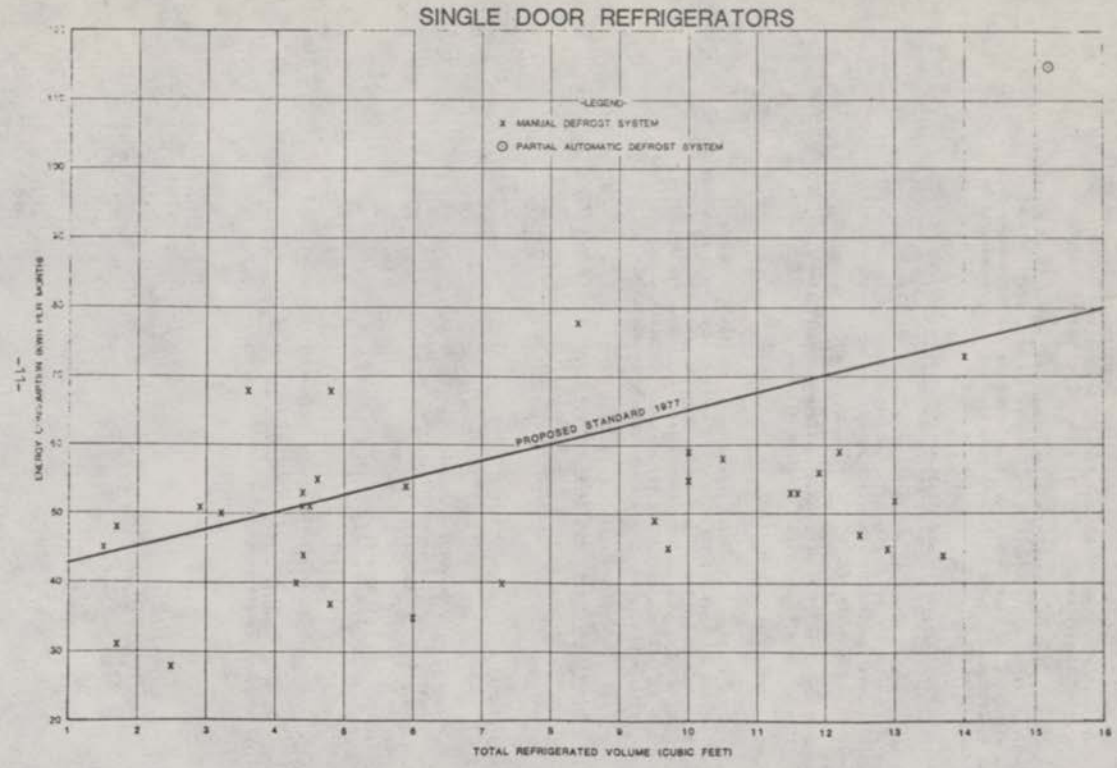



Figure 7-1



JUL 29 1976

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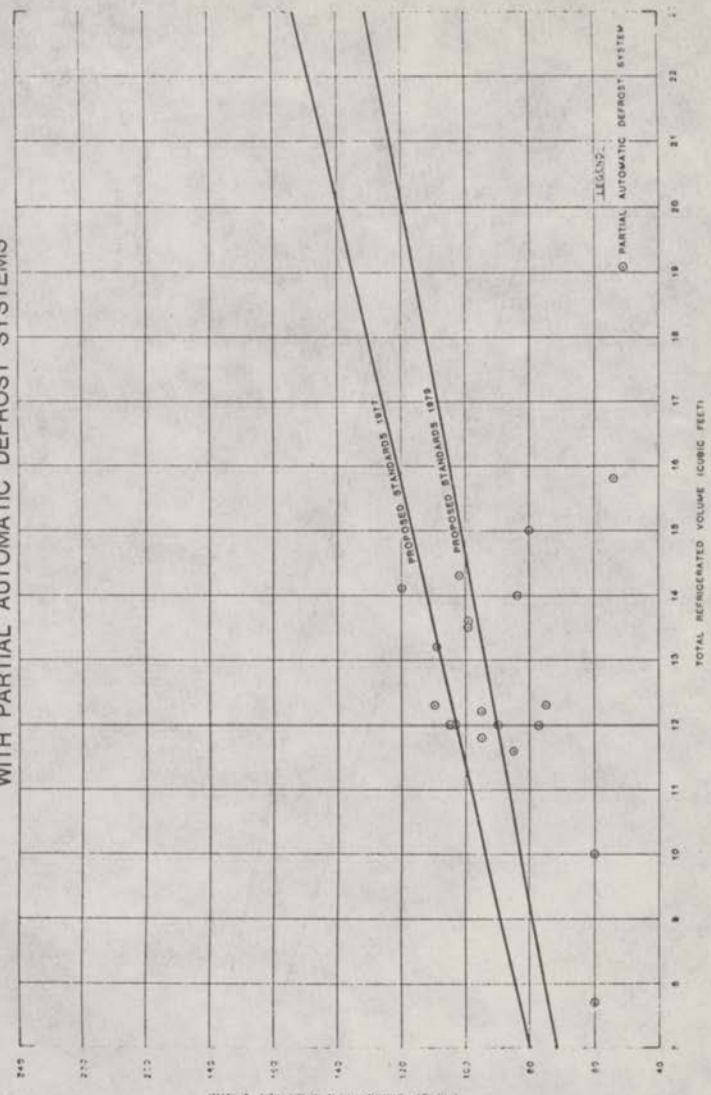
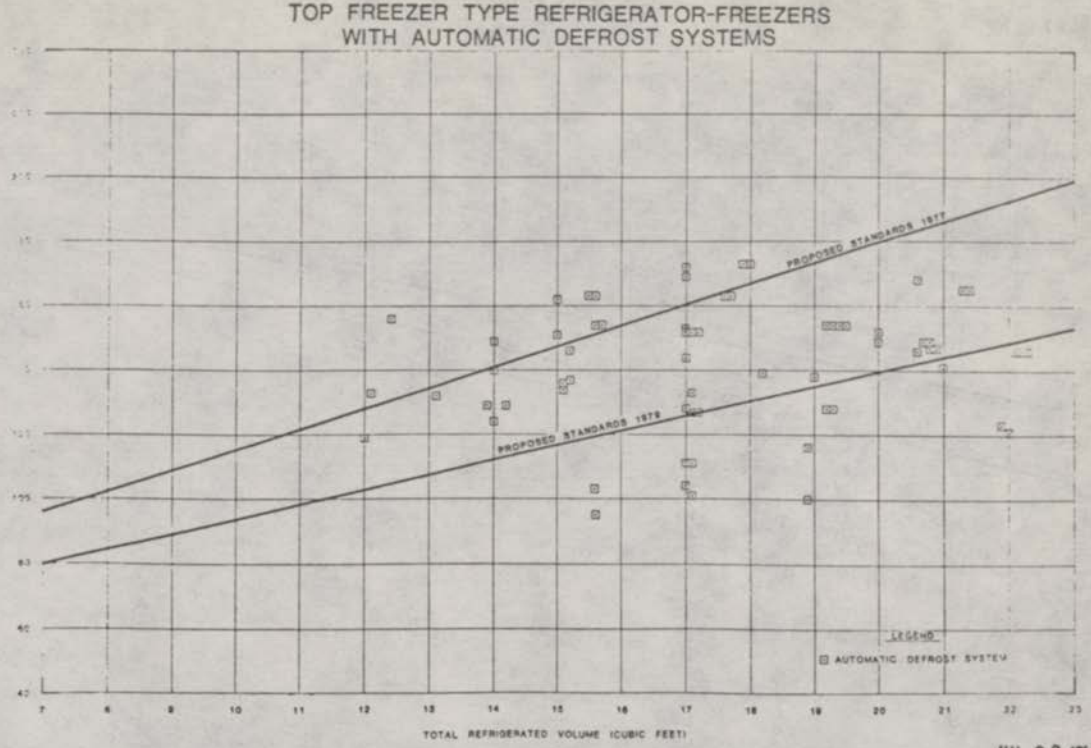



Figure 7-2

JUL 29 1976




JUL 29 19

Figure 7-3

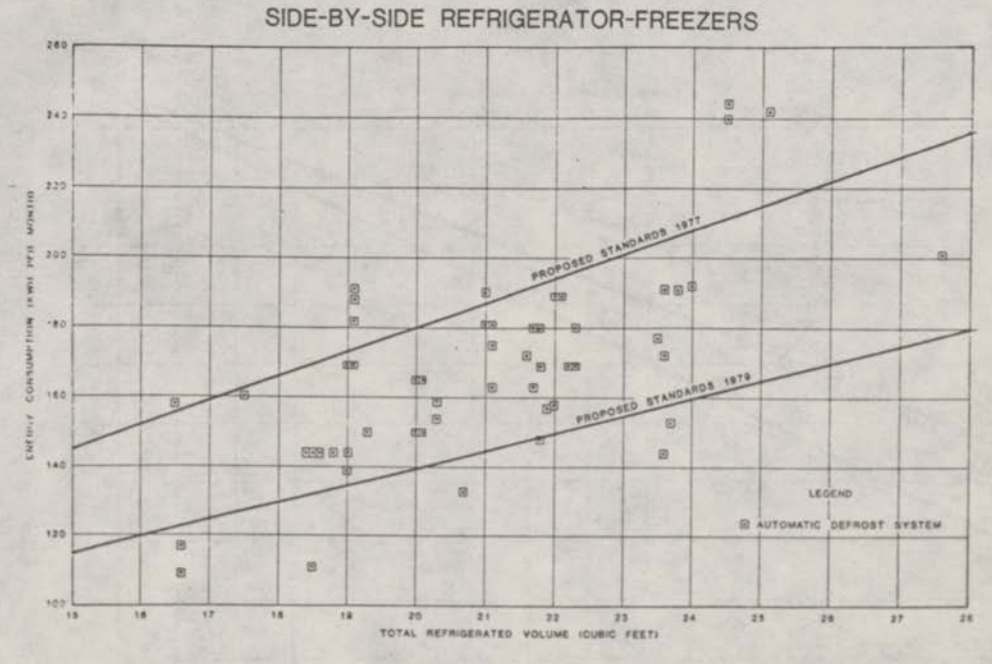



Figure 7-4

JUL 29 197(

781

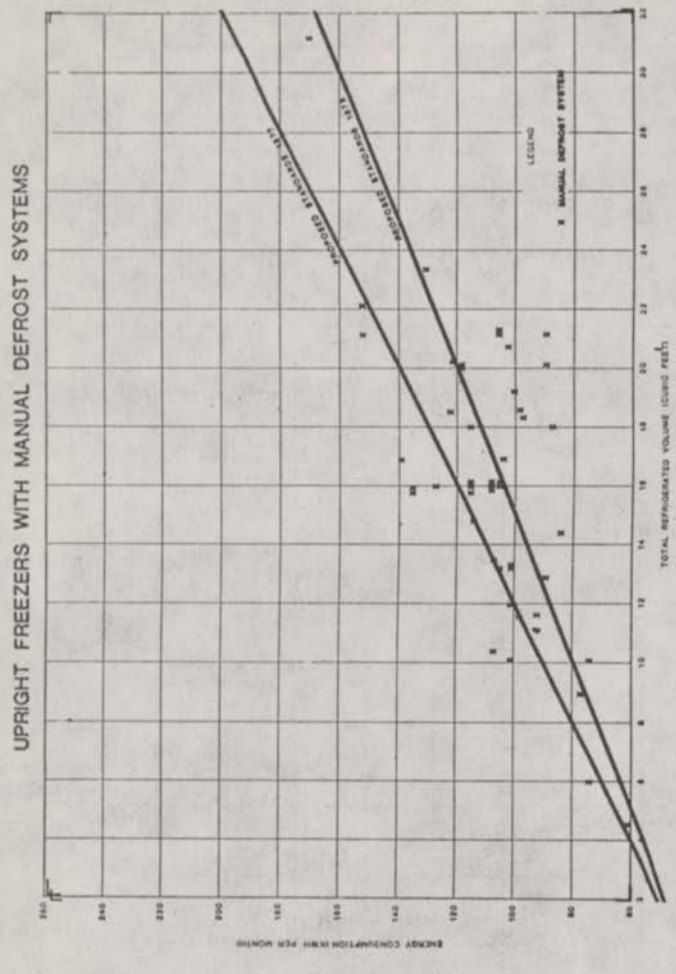



Figure 7-5

JUL 29 1976

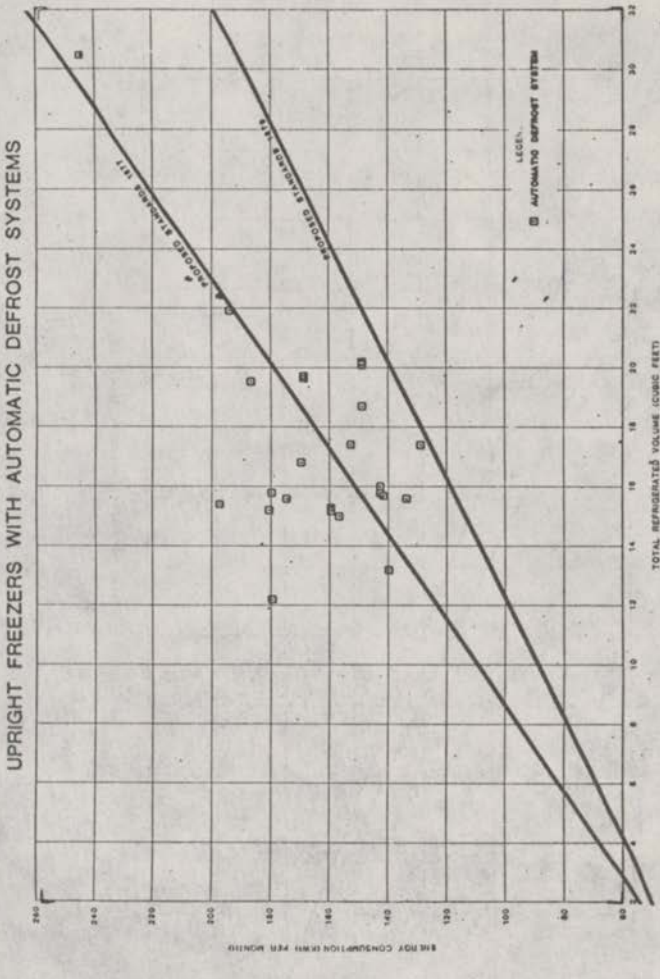
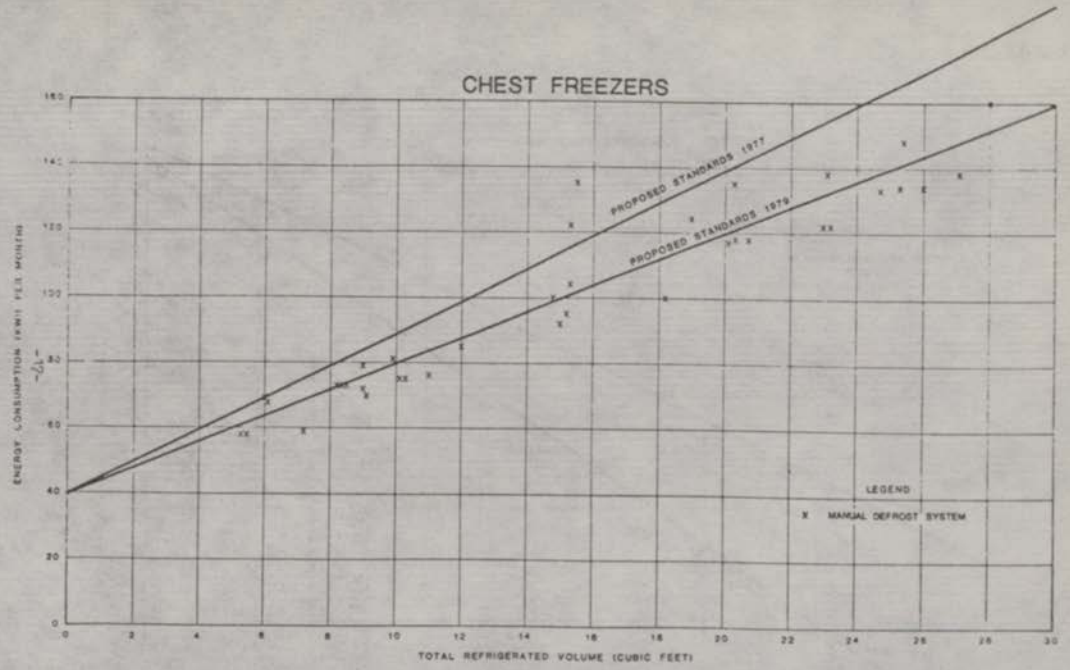



Figure 7-6.

JUL 29 1976




JUL 29 197

Figure 7-7

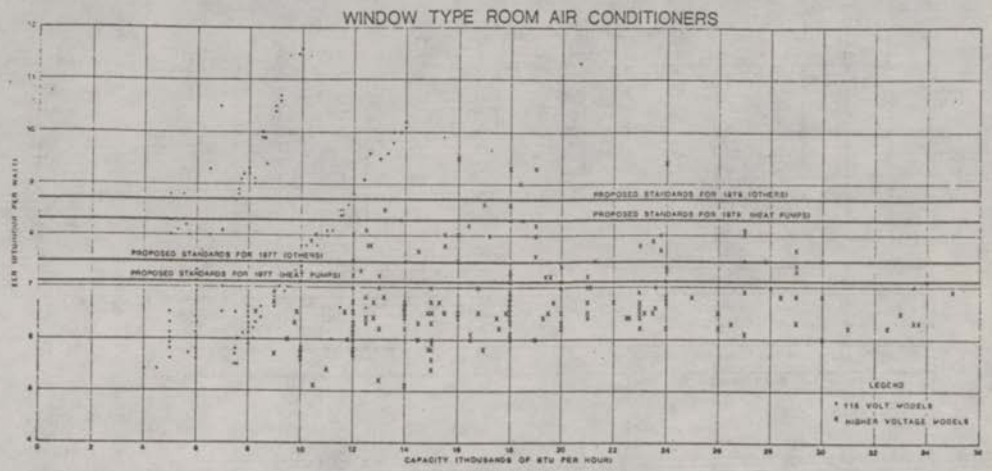



Figure 7-8

JUL 29 1976

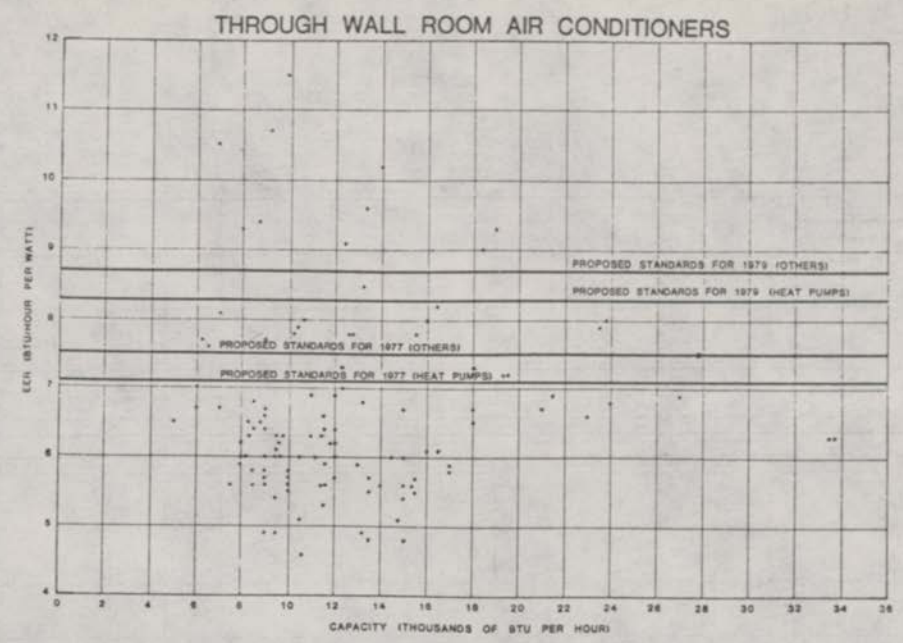



Figure 7-9

JUL 29 1976

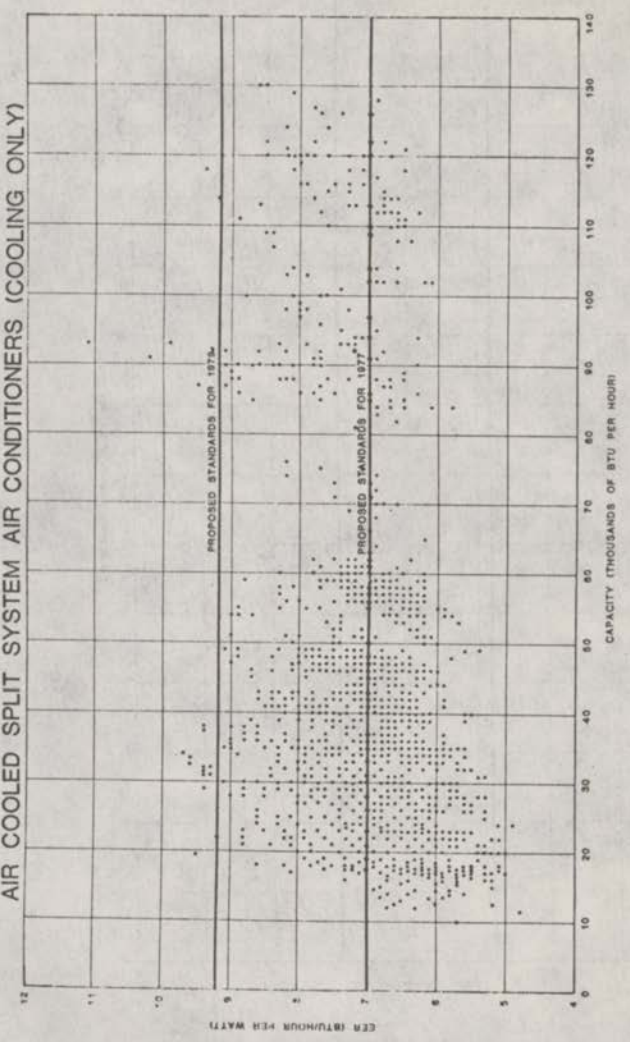
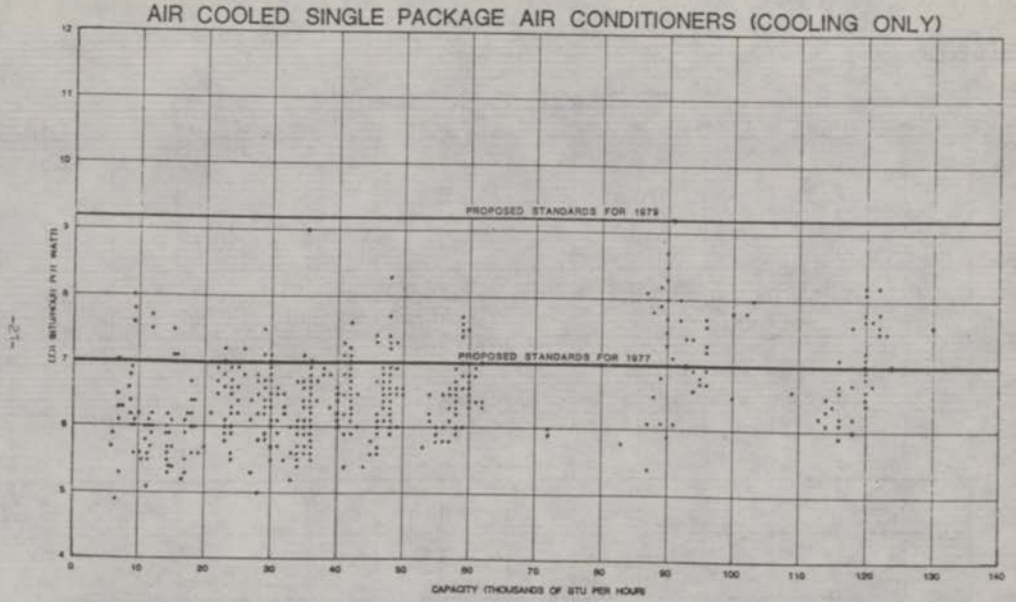



Figure 7-10

JUL 29 197




JUL 29 1977

Figure 7-11

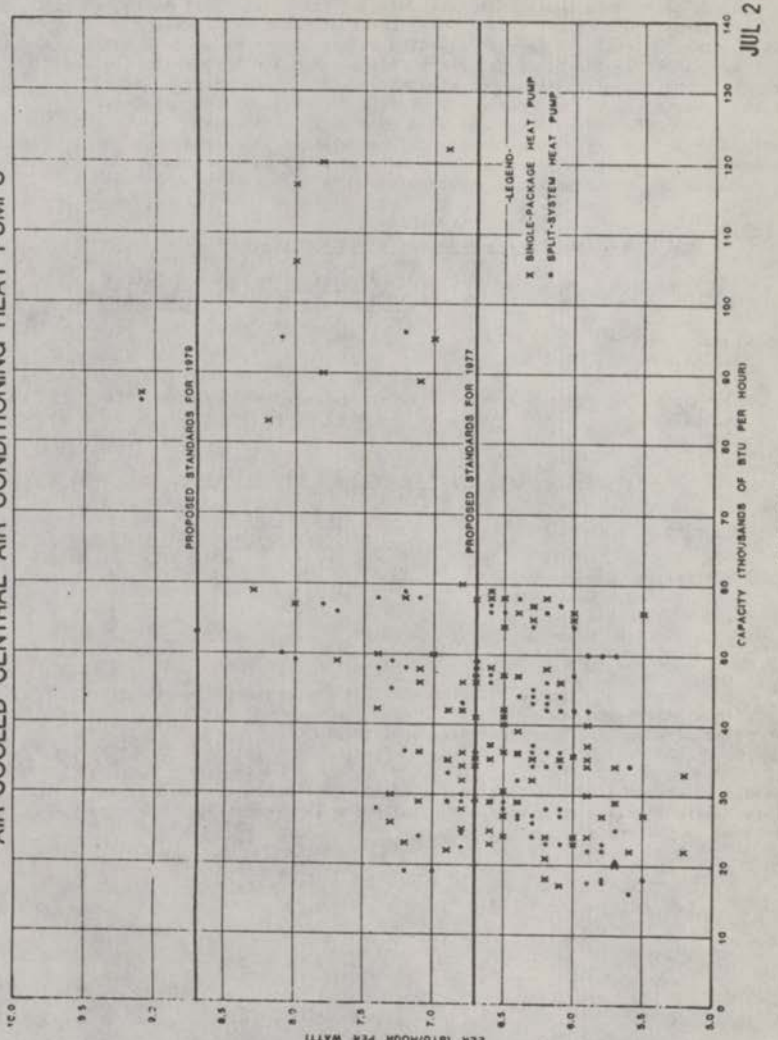

AIR COOLED CENTRAL AIR CONDITIONING HEAT PUMPS
EER (BTU/HOUR PER WATT)
CAPACITY (THOUSANDS OF BTU PER HOUR)
PROPOSED STANDARDS FOR 1979
PROPOSED STANDARDS FOR 1977
-LEGEND-
X SINGLE-PACKAGE HEAT PUMP
• SPLIT-SYSTEM HEAT PUMP
JUL 29 19

Figure 7-12

No refrigerators with partial defrost systems, upright freezers with automatic defrost systems, and refrigerator-freezers with total refrigerated volume over 24 cubic feet listed in the trade directory meet the standards proposed for 1979. Only one single-door refrigerator with partial defrost and four combination refrigerators of over 24 cubic feet are listed in the trade directory indicating that there is little demand for such appliances. Approximately 80% of freezer models listed in the trade directory are not equipped with automatic defrost systems. The fact that the industry has produced some energy efficient refrigerator-freezers with automatic defrost systems indicates that energy efficient upright freezers with automatic defrost systems can be produced due to their similar technology.

Table 7-2. Room Air Conditioners

| Type | Percent of Models Complying* | |
|---|---|---|
| | 1977 Regulations | 1979 Regulations |
| Window | 35 | 14 |
| Through Wall | 22 | 9 |

*Each symbol on Figures 7-8 and 7-9 is considered a model for this analysis.

Table 7-3. Air Cooled Central Air Conditioners

| Type | Percent of Models Complying* | |
|---|---|---|
| | 1977 Regulations | 1979 Regulations |
| Split System, Cooling Only | 52 | 2 |
| Single Package, Cooling Only** | 22 | 0.2 |
| Split System, Heat Pump | 33 | 2 |
| Single Package, Heat Pump | 41 | 1 |

*Each symbol on Figures 7-10 through 7-12 is considered a model for this analysis.
**Includes packaged terminal air conditioners.

The ARI directories include details of models of central air conditioners divided into 15 classifications. The following is a summary of the data included in the trade directories.

Table 7-4

| ARI Classification* | Number of Manufacturers | Highest EER Listed |
|---|---|---|
| SP-A | 54 | 8.7 |
| SPY-A | 44 | 8.7 |
| RC-A | 4 | 11.1 |
| RCU-A-C | 54 | 10.0 |
| RCU-A-CB | 52 | 9.5 |
| RCUY-A-CB | 8 | 7.0 |
| HSP-A | 28 | 9.1 |
| HRCU-A | 26 | 9.1 |
| PT | 6 | 8.0 |
| RCU-E-C | 1 | 8.5 |
| RCU-E-CB | 1 | 8.6 |
| SP-W | 14 | 12.4 |
| RCU-W-C | 1 | 11.7 |
| RCU-W-CB | 1 | 11.2 |
| HSP-W | 4 | 9.7 |

*Classification Legend

| | | | |
|---|---|---|---|
| A | - Air cooled | C | - Coil alone |
| E | - Evaporatively cooled | CB | - Coil with blower |
| W | - Water cooled | H | - Heat pump |
| SP | - Single package | Y | - Year round |
| RC | - Remote condenser | PT | - Packaged terminal |
| RCU | - Split system | | |

In conclusion, there is general agreement in testimony presented to the Commission that, given adequate time, appliances which meet the proposed standards could be manufactured in any combination of capacity and configuration, with the possible exception of light-weight room air conditioners (under 50 pounds net weight), narrow room air conditioners (under 15 inches wide) and some through-the-wall room air conditioners.

(b) Time Limitations

There are some configurations and capacity ranges of appliances where very few models, presently listed in the trade directories, meet the proposed standards. Industry representatives generally recognize that production of high efficiency appliances is attainable but in some cases claim that production of such models by September 1977 is not possible. The staff recognizes this problem and has recommended a two-phase program, the first phase becoming effective on September 15, 1977 and the second on September 15, 1979. The standards recommended for the first phase, for refrigerators, refrigerator-freezers, freezers, central air conditioning heat pumps and other central air conditioners largely reflect



91-931 O - 77 - 51

recommendations of industry representatives to the Commission at its public hearing at Santa Monica on June 29, 1976 (Exhibits 29 and 25). The staff's recommendation for the first phase for room air conditioners is an EER of 7.5 which is generally accepted as the lower limit of the class of room air conditioners frequently referred to as high efficiency models (Exhibit 25). The effective date of the second phase is designed to allow manufacturers a full three years for design, development and tooling of new models where this is necessary (Exhibit 12).

8. Life Cycle Costs

The statute requires that standards must be drawn so that they do not result in any added total costs to the consumer over the designed life of the appliances.

The term "consumer" is not defined in the legislation. Some people consider the consumer to be the person who buys and operates an appliance and pays the electricity bills. Others claim that those who use air conditioners at times of peak demand are being subsidized by those who do not have air conditioners, since the incremental cost to the utilities of peak generation is far greater than the average rates that the consumers pay. On this more general concept, all persons who purchase electricity should be considered consumers rather than only those who use air conditioners. The following discussion assumes that the consumer is the operator of the appliance. If the more general concept is assumed, the standards are dramatically more cost effective. Table 9-4 shows that the proposed standards result not only in reduced operating cost, but also in significantly reduced capital costs.

The Commission's consultant (Exhibits 7A and 21E) made calculations of the life cycle costs to determine whether the proposed standards are responsive to the statutory requirements.

(a) Use Pattern. The Public Resources Code requires the standards to be based on a reasonable use pattern. Use patterns for refrigerators and freezers vary slightly from consumer to consumer based on room temperature, number of door openings and the consumer's defrost procedures. However, a reasonable use pattern has been assumed in the test procedures.

Use patterns for air conditioners vary greatly from consumer to consumer based on weather conditions, building occupancy, indoor temperature, use of ventilation systems, and openable windows. For instance, air conditioners installed in churches in areas with moderate climates are used only a few hours each year, while air conditioners installed in laundries in areas with hot summer temperatures are used thousands of hours each year. In the former situation, little additional expense would be justified in order to obtain a high-performance air conditioner. In the latter case, a substantial additional capital cost could be justified.

The Commission staff has used a weighted statewide average of 500 hours per year compressor operating time in calculating life cycle costs for air conditioners (Exhibit 7A). The alternative of using various hours of operating time

to set different standards for various locations and/or applications is not practical.

(b) Designed Life of Appliances

The designed life assumed for life cycle calculations (Exhibit 22) are as follows:

Table 8-1

| | |
|---|---|
| Refrigerators, Refrigerator-Freezers and Freezers | 15 years |
| Room Air Conditioners | 10 years |
| Central Air Conditioners | 15 years |

(c) Increase in Purchase Price

The Commission's consultant estimates (Exhibit 33A) that the manufacturers should experience increased production costs as follows:

A maximum of 10% of selling price for the food refrigeration appliances.
A maximum of 30% for room and central air conditioners.

The consultant concluded, after studying the cost and performance of several typical food refrigeration appliances that "from this data, it would appear that efficiency doesn't have a direct bearing on price."

The consultant also calculated average additional costs to increase the EER from its present average of 6.5 to 8.7 (Exhibits 21E and 33A). The following are his results:

Table 8-2

| Appliance | Costs to increase EER by one unit | Costs to increase EER from 6.5 to 8.7 |
|---|---|---|
| Room air conditioners | | |
| 7.5 amp models | $18.90 | $41.60 |
| 12.0 amp models | $34.50 | $75.90 |
| Higher voltage models | $40.70 | $89.50 |
| Central air conditioners | $166.00* | $365.20 |

*This average value was calculated by the consultant using several different methods. The highest value obtained was $166.00 per unit of EER increase.

(d) Maintenance Cost, Salvage Value, Insurance and Taxes

Staff assumed that there would be no significant increase or decrease of maintenance cost, salvage value, insurance costs or property taxes when comparing a high performance appliance with a lower performance appliance of similar capacity.

(e) Opportunity Cost

An opportunity cost of four percent was selected by the Commission's contractor for the calculation of life cycle cost (Exhibits 7A and 21E). This discount rate was used to calculate the present worth of the annual operating costs. There are uncertainties in this assumption but staff believes that 4% is a reasonable estimate. (This 4% includes consideration for net inflation and income tax on other opportunities.)

(f) Price of Electricity

Residential sales and revenues for California utilities for 1975 are shown below:

Table 8-3

| Utility | Residential Sales* (kWh) | Revenues* (Dollars) | Average Price (cents/kWh) |
|---|---|---|---|
| Pacific Gas and Electric | 16,582,796,000 | 465,818,000 | 2.8 |
| Southern California Edison | 13,493,387,000 | 564,389,000 | 4.2 |
| San Diego Gas and Electric | 3,074,771,000 | 111,558,000 | 3.6 |
| Los Angeles Dept. of Water and Power | 4,435,480,000 | 159,626,000 | 3.6 |
| Sacramento Municipal Utility District | 2,034,017,000 | 35,188,000 | 1.7 |
| Statewide Total | 39,620,451,000 | 1,336,579,000 | 3.4 |

*From utility submissions to ERCDC for Common Forecasting Methodology, June 1976.

Commission staff have assumed that the average price of electricity for the first year of operation under the proposed standards (September 15, 1977 - September 14, 1978) will be 3.5 cents per kilowatt-hour. This price was used for the calculation of life cycle costs for refrigerators, refrigerator-freezers and freezers.

Commission staff testified on June 29, 1976 (Exhibit 21C) that the California Public Utilities Commission was considering revising its traditional rate setting policies and adopting "lifeline rates" and residential "time of day rates." These rates are expected to become effective in about September 1980. On July 13, 1976, the California Public Utilities Commission ordered lifeline rates.

One of the Commission's consultants (Exhibit 21D) estimated that these rate structure changes would increase the price of electricity charged for operating air conditioners to 2-1/2 to 3 times the price of off-peak supplies. Staff assumed that these higher rates would apply to all electricity used by air conditioners, and would increase from 3-1/2 to 7 cents per kilowatt-hour.

Since these higher rates were assumed not to take effect until September 1980, a new room air conditioner with a design life of ten years, sold at the time the regulations take effect in September 1977, would use electricity at the lower price for the first three years of its design life and at the higher price for the last seven years of its design life. Equivalent rates were calculated as follows:

Table 8-4

| Appliance | Effective Date | Years at 3.5 Cents | Years at 7.0 Cents | Equivalent Rate |
|---|---|---|---|---|
| Room Air Conditioners | 1977 | 3 | 7 | 5.8 cents/kWh |
| | 1979 | 1 | 9 | 6.6 cents/kWh |
| Central Air Conditioners | 1977 | 3 | 12 | 6.1 cents/kWh |
| | 1979 | 1 | 14 | 6.7 cents/kWh |

(g) Cost Effectiveness

Mr. Rettberg of Science Applications Inc. concludes on page 2-8 of Exhibit 21E that minimum efficiency standards for refrigerator and freezers data appear so dramatically favorable that any reasonable standard should be expected to result in reduced life cycle cost to the consumer.

The minimum electricity price which would justify increases of EER for air conditioners are as follows:

Table 8-5

| Appliance | Proposed Standard (EER) | Price of Electricity (cents/kWh) |
|---|---|---|
| Room air conditioners | 8.7 | |
| 7.5 amp models | | 4.7 |
| 12.0 amp models | | 5.4 |
| higher voltage models | | |
| 10,000 Btu/hr | | 5.7 |
| 20,000 Btu/hr | | 2.9 |
| 30,000 Btu/hr | | 1.9 |
| Central air conditioners (36,000 Btu/hr) | 8.7 | 4.7 |
| | 9.2 | 5.0 (6.7)* |

*The price of electricity assumes that the cost of increasing one unit of EER between 8.7 and 9.2 is the same as the cost of increasing one unit of EER between 6.5 and 8.7. The value in parentheses assumes that the cost of increasing EER by one unit, between the values of 8.7 and 9.2 is 2.87 times the cost of the corresponding unit increase between 6.5 and 8.7.

There are uncertainties in the variables used to calculate life cycle costs. These uncertainties require assumptions for costs of raw materials, cost for production changes, cost of capital, costs of marketing, tax conditions and utility rates structures to name a few. The assumptions used here seemed the most reasonable to use at this time.

## 9. Potential Savings Due to Regulations

(Revised November 17, 1976 to reflect changes made in the regulations.)

### (a) Energy Savings

The following is an approximation of the potential savings of energy if the proposed regulations are adopted, using the analytically simple, but somewhat questionable assumption, that if it were not for the California standards, there would be no improvement of efficiency (Exhibit 36).

Table 9-1

| | Millions of kilowatt-hours per Year Tenth Year (1987)* |
|---|---|
| Refrigerators and freezers | 1,145 |
| Room air conditioners | 253 |
| Central air conditioners | 727 |

*Exhibit 36, page 4-1.

If the electricity for these appliances was generated by oil-fired steam generating plants, these annual savings would result in the following savings at the power plant in the tenth year (1987):

Table 9-2

| | Barrels of oil* |
|---|---|
| Refrigerators and freezers | 2,169,000 |
| Room Air Conditioners | 479,000 |
| Central air Conditioners | 1,378,000 |

*Assuming oil at 5,800,000 BTU/barrel, 34.5% generating efficiency and 10% transmision losses.

In addition, the need for new generating capacity in the 10th year would be reduced as follows:

Table 9-3

| | Megawatts |
|---|---|
| Refrigerators and freezers | 250* |
| Room air conditioners | 907** |
| Central air conditioners | 2,605** |

*Assuming nuclear generation with 58% capacity factoor and 10% transmission losses.

**Assuming gas turbine generation with 38% outage rate and 10% transmission losses (Exhibit 21F).

In some cases the requirements for more efficient appliances will result in larger and heavier equipment which in turn requires more natural resources and energy for production. The Commission's contractor (Exhibit 36) has estimated the additional natural resources required and concludes that this increase is not significant.

(b) Capital Savings

Substantial capital investments may need to be made by manufacturers to comply with the proposed standards. As an example, Aeronutronic Ford, which has about a six percent share of the national market for refrigerators and freezers, recently invested ten million dollars (Exhibits 12, 13) in a major redesign program which resulted in the development of a line of high efficiency refrigerators and refrigerator-freezers.

If these improvements in appliance performance are not realized, the California utilities will have to provide additional capacity. Commission staff have calculated the cost of providing additional base load capacity as about $3,100 per kilowatt for nuclear or about $2,400 per kilowatt for coal or about $2,100 per kilowatt for oil when availability, transmission, distribution and other losses are taken into account. Mr. David Goldstein (Exhibit 21F) estimated a cost of $430 per kilowatt for peak load generation.

The following table shows a comparison of the various capital costs involved:

Table 9-4

| Type of Generation | Appliance/Generating Method | Capital Costs $ Per KW |
|---|---|---|
| Base Load * | Refrigerators and Freezers | 1,125 |
| | Nuclear | 3,100 |
| | Coal | 2,400 |
| | Oil | 2,100 |
| Peaking ** | Room Air Conditioners | |
| | 7.5 amp | 48 |
| | 12.0 amp | 55 |
| | Higher voltage | 30 |
| | Central Air Conditioners | 73 |
| | Generating Capacity | 430 |

Although there are several uncertainties involved in the above table, the conclusions are clear. The California consumers when considered as a single large group will pay much less in capital costs if the proposed standards are adopted, in addition to reducing their operating costs.

10. Impact on Industry and Environmental Effects

This information is contained in the studies of socio-economic impacts contained in Exhibit 33.

* Carasso, Bechtel Energy Supply Planning Model, August 1975
** See Exhibit 21F. This number does not account for distribution and other losses.

APPENDIX A

STATE ENERGY RESOURCES
CONSERVATION AND DEVELOPMENT COMMISSION

STATE OF CALIFORNIA

| | |
|---|---|
| In the Matter of: | |
| Proposed Regulations for Minimum Levels of Operating Efficiency for Refrigerators-Freezers and Air Conditioners. | Docket No. 75-CON-3<br><br>LIST OF EXHIBITS ENTERED INTO THE RECORD DURING THE APPLIANCE EFFICIENCY HEARINGS |

| Exhibit No. | |
|---|---|
| 1 | List of Comments received in response to the Order Instituting Hearings dated April 28, 1976. |
| 2 | Proposed Regulations for Appliance Efficiency Standards published May 14, 1976 to be considered for adoption on September 15, 1976. |
| 3 | Staff Report on Appliance Efficiency Program dated May 14, 1976. |
| 4 | Resumes of Don Watson, Marshall Johnson, R. Michael Martin, and Jonathan P. Leber. |
| 5 | List of documents relating to the Appliance Efficiency Standards filed under 75-CON-3. |
| 6 | Edison Electric Institute Statistical Year Book-Table 22-S Energy Sales-Total Electric Utility Industry for 1974 dated November, 1975. |
| 7A | Appliance Efficiency Program Final Report from Science Applications, Incorporated dated March 15, 1976. |
| 7B | Proposal of Science Applications, Inc. entitled Development of Minimum Operating Efficiency Levels for Appliances dated December 1, 1975. |
| 8A | Association of Home Appliance Manufacturers Refrigerator and Freezer Standard No. HRF 1 dated November 1, 1967. |
| 8B* | American National Standard Methods of Testing for Household Refrigerators, Combination Refrigerator-Freezers, and Household Freezers approved May 6, 1969 (Entered June 29, 1976). |
| 9 | Association of Home Appliance Manufacturers Test Procedure to Determine the Freezer Temperature & Energy Consumption of Household Refrigerators, Combination Refrigerator-Freezers & Freezers AHAM No. HRF-2-ECPT dated July, 1975. |

10 Association of Home Appliance Manufacturers American National Standard Room Air Conditioners AHAM RAC-1 (2234.1-1972) dated December 21, 1972.

11 Air-Conditioning and Refrigeration Institute Standard for Unitary Air-Conditioning Equipment-Standard 210 dated 1975.

12 Letter from J. A. Scarlett, Director of Appliance Operations, Aeronutronic Ford Corporation dated May 27, 1976.

13 Letter from J. A. Scarlett, Director of Appliance Operations, Aeronutronic Ford Corporation expressing views and comments dated April 23, 1976.

14 Lennox Industries Inc. - Text of Statement Presented at the June 3, 1976 Public Hearing on Appliance Efficiency Standards at Sacramento, California. (Attachments included)

Exhibits #1 - #14 entered during June 3, 1976 Hearing

15 Arthur D. Little, Inc., "Study to Produce More Energy-Efficient Refrigerators and Water Heaters". (Interim Draft, January, 1976)

16 Federal Energy Administration, "Technical Background Information for Appliance Efficiency Targets: Room Air Conditioners" dated April 13, 1976.

17 John P. Slattery, "Testimony to FEA on Room Air Conditioner Efficiency Targets dated June 8, 1976

18 James C. Wrench, "Factors Affecting Room Air Conditioner Efficiency", ASHRAE Journal dated February, 1975.

19 The Trane Company, "Workshop Presentation to ERCDC" dated May 20, 1976.

20 Letter from William Comstock to Commissioner Doctor Regarding Two Articles Published in Journal of Home Economics and the Home Economics Research Journal Relating to Life Expectancy of Durable Products.

21A Written Testimony of R. Michael Martin dated June 22, 1976.

21B Written Testimony of Marshall Johnson dated June 22, 1976.

21C Written Testimony of John Wiley dated June 22, 1976.

21D Written Testimony of William J. Gillen dated June 22, 1976.

21E Written Testimony of Raymond J. Rettberg dated June 22, 1976.

21F Written Testimony of David B. Goldstein dated June 22, 1976.

22 Table representing Life Cycle Analysis for Refrigerators, Room Air Conditioners, and Central Air Conditioners. (Addition to Marshall Johnson's testimony #21B)

23 Written Testimony of G. R. Munger, President, Air-Conditioning and Refrigeration Institute dated June 29, 1976.

24 Directory of Certified Unitary Air-Conditioners, Unitary Heat Pumps, Sound-Rated Outdoor Unitary Equipment, and Central System Humidifiers dated 1976.

25 Written Testimony by Carrier Corporation dated June 29, 1976.

26 Written Testimony of Joseph A. Pietsch, Manager-Engineering for Central Air Conditioning Business Department, General Electric Company dated June 29, 1976.

27 Written Testimony of William S. Comstock, Vice President Public Affairs, for Association of Home Appliance Manufacturers dated June 29, 1976.

28 Written Testimony of John P. Slattery, Manager-Engineering for Room Air Conditioner Department, General Electric Company dated June 29, 1976.

29 Written Testimony of John Dorn, Product Safety Director, Frigidaire Division of General Motors dated June 29, 1976.

30 Written Testimony of Donald E. Hilliker, General Manager for Refrigerator Engineering Department, General Electric dated June 29, 1976.

31 Written Testimony of Lennox Industries Inc. dated June 29, 1976.

Exhibits #15 - 31 entered during June 29, 1976 Hearing

*Exhibit #8B entered during June 29, 1976 Hearing.

Potential Exhibits* which may be Entered Into the Record at Subsequent Hearings

2B Proposed Regulations for Appliance Efficiency Standards, Published July 29, 1976 to be considered for adoption on September 15, 1976.

3B Staff Report on Appliance Efficiency Program, revised August 6, 1976.

~~32A~~ Initial Study; Appliance Efficiency Program; Refrigerators,
32B Refrigerator-freezers, Freezers, Room Air Conditioners, Central Air Conditioners; Energy Assessment Division, California State Resources Conservation and Development Commission, July 29, 1976.

~~32B~~ Negative Declaration, Appliance Efficiency Program; Refrigerators,
32A Refrigerator-freezers, Freezers, Room Air Conditioners, Central Air Conditioners: Energy Assessment Division, California State Energy Resources Conservation and Development Commission, July 29, 1976.

~~33A~~ ~~Study of Socio-Economic Impact of Appliance Efficiency Standards, Science Applications Inc., July 30, 1976.~~

33 ERCDC Socioeconomic Impact Study dated July 29, 1976.

36 Revised SAI Socioeconomic Report dated August 17, 1976.

* The exhibit numbers assigned in this Appendix were not followed exactly at the hearing of August 24, 1976. Corrected numbers are shown above.

California State Energy Conservation and Development Commission

Conservation Division

Supplement to July 29, 1976 Revision

of

Staff Report on Appliance Efficiency Program

Published

September 24, 1976


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## 1. Introduction

The Commission's revised Staff Report on the Appliance Efficiency Program was published on July 29, 1976. Public hearings were held on August 24 and 26 1976. A revised edition of the proposed regulations is being published on September 24, 1976, concurrently with this document.

This supplement to the Staff Report will discuss:

- further changes to the proposed regulations.
- changes in numerical data resulting from publication of new appliance directories, announcement of manufacturers plans and corrections to quoted source material.
- answers to questions asked of the staff at the hearings.
- important issues raised at the hearings which had not previously been discussed in the Staff Report.
- important issues raised by the Committee of the Commission to the staff.

## 2. Changes to Proposed Regulations

Changes were made to the proposed regulations, subsequent to the publication of the July 29, 1976 edition:

(a) to exclude from the scope central air conditioners with capacity of exactly 65,000 BTU/hour.

(b) to allow tolerances for individual appliances tested.

(c) for editorial clarity.

The changes are explained on Page 2 of the proposed regulations.

The staff may propose one more set of amendments based on the information made available at the October 5, 1976 hearing. These amendments would be available on October 7, 1976.

## 3. Changes of Numerical Data

### (A) New Directories

Figures 7-1 through 7-12 and Tables 7-1 through 7-4 were prepared by staff using the latest directories available at the time of preparation. Several new directories have recently been published. Table 3-1 compares the date of the directories (as printed on the cover).

Table 3-1

| Directory | Date of Issue used by Staff | Date of Latest Issue |
|---|---|---|
| Certified Refrigerators and Freezers | January 1976 | June 1976 |
| Certified Room Air Conditioners | April 1976 | June 1976 |
| Certified Unitary Air Conditioners and Heat Pumps | Jan. 1 - June 30, 1976 | July 1 - Dec. 31, 1976 |
| Applied Air Conditioning Products (includes packaged terminal air conditioners) | Dec. 1, 1975 - May 31, 1976 | June 1 - Nov. 30, 1976 |

Staff has examined the new directories and does not plan revisions to the tables and figures since the new data does not materially change the overall industry picture. One notable exception is packaged terminal air conditioners, where the EER of the most efficient model listed has risen from 8.0 to 8.8.

(B) Company Policies

Amana Refrigeration Inc. products were not included in the figures and tables for refrigerator-freezers and freezers, since they were not included in the earlier AHAM Directories. Based upon the listings in the June 1976 issue inclusion of Amana products would tend to increase slightly, the number of available models which comply with the proposed regulations.

Aeronutronic Ford Corp., the manufacturer of Philco Cold Guard refrigerators and refrigerator-freezers, according to press reports (exhibits 60A, 60B, and 69), has decided to cease manufacturing its refrigerators and refrigerator-freezers as soon as its contractual responsibilities are completed. It is not known at this time whether some other company may purchase Aeronutronic Ford's operation and continue production of the Philco line. If these models are completely abandoned, the percentages in Table 7-1 of the staff report would be reduced. Staff recalculated the data shown in Table 7-1 excluding the Philco products, but making no other corrections. The significant reductions in the ratio of models complying (i.e. reductions of more than two percent) are for refrigerator-freezers in 1979 where the reductions are as follows:

| | |
|---|---|
| top freezer, partial automatic | from 47 to 44% |
| top freezer, automatic | from 26 to 16% |
| side-by-side | from 13 to 4% |

(C) Changes in Source Material

Section 9(a) of the staff report was based on energy savings taken from the Science Application's Inc. report (exhibit 33A). Science Applications Inc. corrected some of the data included in that report. A corrected edition of section 9(a) is attached as Appendix A.

The last sentence of Section 1 is amended to read as follows:

Energy savings associated with the proposed standards are estimated at 2.54 billion kilowatt-hours in the tenth year. Additional energy used to produce the more efficient products is estimated at 0.35 billion kilowatt-hours.*

4. Answers to Questions Asked at the Hearings

(A) Question from Mr. Dorn of Frigidaire

Mr. Dorn at the August 26th hearing (page 209 of the transcript), refering to Table 9-1 on page 29 of the Staff Report requested a response to the following question:

What percentage is the 253 million of kilowatt-hours in the tenth year (expected by staff to be saved as a result of the proposed room air conditioner standards) of the total electricity sales in the tenth year.

The following is the staff reply:

The tenth year is presumed to be 1987. Total sales of electricity in California in 1987 are forecast to be about 280 billion kilowatt-hours.** The savings due to the proposed standards for room air conditioners are therefore expected to be about 253 million kwh/280 billion kwh = 0.09% in the tenth year.

Room air conditioners are estimated to operate only about 500 hours a year or about six percent of the time. The 253 million of kilowatt-hour is therefore a much bigger percent of the total electricity used during those 500 hours, which include the hours of peak demand.

---

* Based on testimony to be presented by Mr. Newhouse on October 5, 1976.

** This value is based on an extrapolation of a California Public Utilities Commission staff forecast, but is considered sufficiently accurate for this calculation.

Question from Mr. Slattery of General Electric

Mr. Slattery at the August 26th hearing (page 196 of the transcript), refering to time-of-day rates asked the following question:

Have you calculated how much investment, how much cost is involved in equipping the homes (with metering equipment etc.)?

The following is the staff reply:

The Conservation Division staff is investigating the costs associated with time of day metering however it has not produced a study in this area at this time.

5. Additional Discussion of Issues Raised at the Hearings

(A) Definition of Appliance as it Relates to Central Air Conditioners

The Warren-Alquist Act does not define "appliance". In interpreting the meaning of this word, the Commission should look to approved usage, keeping in mind the nature and purposes of the statute. Industry usage of the term "appliance" appears to be inconsistent. The Air-Conditioning and Refrigeration Institute (ARI) does not use "appliance" to describe air conditioners. However, the AGA directory does list, under the heading of "appliances," much of the central air conditioning equipment regulated by the proposed regulations.

This uncertainty necessitates an examination of the purposes of the statute. Energy Conservation is the overriding purpose of Section 25402 (c). There is no argument that room air conditioners are "appliances". Since room air conditioners and central air conditioners serve similar functions and are to some extent functionally interchangeable, it would severely undercut the regulatory scheme of Section 25402 (c) if the Commission could establish standards for room air conditioners and not central air conditioners. There is no question that the criteria of the statute for the regulations are equally applicable to room air conditioners and central air conditioners. Similarly, because the regulations cause increased first costs, regulation of room air conditioners and not central air conditioners could make the energy efficient room air conditioners less attractive to first cost conscious builders. Congress, in adopting the Federal Energy Policy and Conservation Act which regulates both room air conditioners and central air conditioners may have had this analysis in mind. In any case, sound regulatory policy dictates defining "appliances" to include central air conditioners.

(B) Definitions of Heat Pumps

Mr. Gilkey of ARI in his testimony (exhibit 47 page 14) provided a definition of unitary heat pump which he suggested should be used in place of the staff's definition of central air conditioning heat pump.



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Staff has proposed different standards for central air conditioning heat pumps, normally certified by ARI, and room air conditioning heat pumps, normally certified by AHAM. Since this is the case, it is important that definitions of central air conditioning heat pump and room air conditioning heat pump be mutually exclusive. As presently written, the ARI definition would cover both types and is therefore not acceptable.

Staff would prefer to use ARI and AHAM definitions without modification. This is not possible due to the problems of overlapping descriptions.

While it is not important to ARI if the definition of appliances which may be tested using ARI procedures is unduly wide, the use of such wide definitions in state regulations could result in a requirement that a particular model of air conditioner must be tested using two or more test procedures.

(C) Special Classifications of Room Air Conditioners

The staff report on page 24 recognizes three classifications of room air conditioners which are more difficult to design to perform efficiently:

- light weight room air conditioners (under 50 pounds net weight)
- narrow room air conditioners (under 15 inches wide)
- through-the-wall air conditioners without side louvers

AHAM and/or General Electric have requested that these types of room air conditioners and room air conditioners with capacity over 18,000 or 20,000 BTU/hr be exempted from regulations or that new classifications with a lower efficiency requirement be established.

A complete exemption of a classification merely because it is inherently inefficient would undermine the energy conservation purpose of the statute. This is particularly true because many of the model types are interchangeable with more efficient types. Whether less strict regulations should be adopted for certain classifications is a policy issue which must be determined by the Commission. Staff does not recommend less strict regulations in 1979.

Staff does not consider that the ease of handling light weight room air conditioners is a sufficient advantage to warrant a special classification with less stringent standards.

There are two types of narrow room air conditioners; sliders (designed for windows which slide open horizontally) and casement (designed to be placed into a 14.5" x 10.75" opening). Some currently available slider models have an EER of about 7.3 which could within one year be improved to 7.5 according to a phone conversation with Mr. Slattery of General Electric. Thus there is no reason to make a special allowance for 1977. Currently casement type air conditioners are very inefficient. There is no compelling reason for giving these units special treatment.

Staff recognizes a special problem for those consumers who wish to replace an existing room air conditioner mounted through the wall, flush to the outside surface of the wall. Staff did not make a special allowance for two reasons. First, the number of applications where a unit must be replaced by another with identical dimensions mounted flush to the outside wall (thereby eliminating the choice of the more efficient side louver models) is relatively insignificant. It is assumed that Mr. Slattery's reference to ordinances in New York and Chicago forbidding overhanging air conditioners implies that the company is unaware of any such ordinances in California. The other reason for rejecting General Electric's request is the difficulty caused by having different efficiency standards for window mount and through-the-wall type appliances. Several companies supply the same model for mounting either way and list their products in both sections of the AHAM Directory. If a special classification were made, window mount units of lower efficiency could be sold provided they were sold as through-the-wall units and the hardware required to mount them in the window were sold separately.

Consideration is being given to whether room air conditioners with the capacity 20,000 BTU and over should be given less stringent standards.

The staff encourages discussion of these points at the October 5th hearing.

(D) Special Classifications for Central Air Conditioners

Manufacturers claim some types of one-piece central air conditioners impose more severe design constraints than with two-piece equipments. Carrier Corporation in written testimony of August 24 (exhibit 49, p. 3) estimated an 8% efficiency handicap for one-piece equipment.

Manufacturers also claim that a hardship will result if cooling standards are adopted in October 1976 for one-piece equipment which both cool and heat, and heating standards are adopted six to nine months later. This results from having to design and certify twice, once for cooling improvements and then a second time for heating improvements.

A redesign would only occur, however, if the equipment failed to achieve minimum efficiency standards. Equipment that meets the 1977 standard would not require redesign until 1979, therefore, no problem would result from a six to nine month delay in setting heating standards. Furthermore, in developing heating standards a later adjustment to the cooling efficiency may prove necessary in order to optimize the minimum efficiency standard for both the heating and cooling functions in the one-piece equipment.

Exempting one-piece equipment while imposing standards on two-piece equipment would greatly distort the market place and have an adverse impact on conservation. The staff encourages discussion on this point at the October 5th hearing.

Lennox recently introduced a new design of central air conditioner whose compressor can operate either at full speed or half speed (Transcript, 8/26/76 p. 168). The compressor operates at full speed when high capacity is required and is tested (at the standard outdoor

temperature of 95°F) when operating at full speed. At low temperatures, the compressor runs at half speed with a resulting increase in efficiency. Lennox claims that the use of the standard test procedure does not reflect the energy savings resulting from the operation, part of the time, at half speed. The importance of this option depends upon the relevant importance placed on energy savings as opposed to generating capacity savings. Staff considers that for air conditioners, energy consumption at times of peak demand is the overriding consideration and recommends no special action.

(E) Energy Factor

The proposed regulations for refrigerators and refrigerator-freezers are based on allowable electricity use (kilowatt-hours per month) for a given "total refrigerated volume" (cubic feet). In the case of refrigerators and refrigerator-freezers, the "total refrigerated volume" is the sum of the "fresh food volume" and the "freezer volume." These volumes are listed in the AHAM Directory for virtually all refrigerators and refrigerator-freezers on the market today.

Several industry representatives have urged that the commission use as its measure of efficiency, the "energy factor" which is defined as follows:

$$\text{Energy Factor} = \frac{\left(\text{freezer volume} \times \text{adjustment factor}\right) + \text{fresh food volume}}{\text{kilowatt-hours consumed per day}}$$

The basis of the adjustment factor is that it takes more electricity to operate one cubic foot of freezer compartment than one cubic foot of refrigerator compartment. There is disagreement between those industry representatives who have urged use of the energy factor as to what this adjustment factor should be, but the values most often quoted are based on the ratios of temperatures under test conditions which are as follows:

| Location | Temperature |
|---|---|
| test lab | 90°F |
| refrigerators | |
| fresh food section | 38°F |
| freezer section | 15°F |
| refrigerator-freezers | |
| fresh food section | 38°F |
| freezer section | 5°F |
| freezers | 0°F |

This results in adjustment factors as follows:

| Appliance | Adjustment Factor |
|---|---|
| refrigerators | $\frac{90^\circ F - 15^\circ F}{90^\circ F - 38^\circ F} = \frac{75}{52} = 1.44$ |
| refrigerator-freezers | $\frac{90^\circ F - 5^\circ F}{90^\circ F - 38^\circ F} = \frac{85}{52} = 1.63$ |
| freezers | $\frac{90^\circ F - 0^\circ F}{90^\circ F - 38^\circ F} = \frac{90}{52} = 1.73$ |

The energy factor concept was developed by industry representatives to enable the Federal Energy Administration to define its energy improvement targets. The staff opposes the use of the energy factor concept in setting minimum energy efficiency standards for the following reason:

The values chosen for adjustment factors (e.g. 1.63 for refrigerator-freezers) assume that the energy used for cooling is directly proportional to temperature differences under test conditions. This is approximately true if the insulation around the freezer compartment is of the same thickness as that around the refrigerator compartment, and may be a reasonable assumption in the case of many of the appliances available today. Staff considers that it would be more reasonable to install additional insulation around the freezer compartment of the appliance than around the fresh food compartment. This principle was followed in the design of the energy efficient line of Aeronutronic Ford (Exhibit 12, page 3) and described on August 26th as "a good design step" by Mr. Elders of Whirlpool (transcript p. 328). If the appliance were designed so that the heat loss from one cubic foot of freezer compartment were equal to the heat loss from one cubic foot of refrigerator compartment, the staff estimates that the insulation around the freezer compartment would need to be about 63 percent thicker than the insulation around the refrigerator compartment.

Industry representatives claim that this change in design has not been made because of the cost of redesign and tooling. The staff does not believe that the additional insulation costs represent a long range problem. Industry also claim that increased freezer insulation will reduce the freezer size to a volume where consumers will either make more frequent trips to the market to replenish their frozen food supply or purchase an additional freezer appliance. This claim is highly speculative and is discussed in the Initial Study dated July 29, 1976 on pages 9 and 10.

To encourage manufacturers to better insulate the freezer sections, the staff recommends an adjustment factor of 1.00. This would give equal weight to the freezer and fresh food volumes as is done in the proposed regulations.

(F) Anti-sweat heater switches

A full discussion of anti-sweat heater switches is included in the staff report (exhibit 3A page 8) and a discussion of the staff philosophy is included in Mr. Foster's letter to Ms. Mary Jane Large (exhibit 34B, pages 2 and 3). The following is a summary of the information found in these documents.

| | |
|---|---|
| Appliances effected | Some refrigerators, refrigerator-freezers and freezers |
| Purpose | To prevent condensation on the outside, around the door |
| Types | Some use electric resistance heaters<br>Some use a post condenser loop system |
| Switches | Used for turning off some of the electric heaters. There is normally no way of turning off post condenser loop type. These switches are presently manually operated on household type appliances. They could be operated by humidity sensors. |
| Alternatives in the Proposed Regulations | A. Test is performed with manually operated anti-sweat heater switches set at their highest energy consuming position. (If switches were controlled automatically by a humidity sensor, test conditions are such that anti-sweat heaters would not be energized).<br>B. Test is performed twice; once with heaters operating and once without heaters operating. An average is used. |

Anti-sweat electric heaters are placed just under the outside surface of the refrigerator cabinet around the door to prevent water condensation under humid conditions. The amount of heating required depends on how well insulated the appliance is and how well the door seals are designed. Industry claims that if a switch is provided, the consumer can turn the heaters off under dry conditions and thereby save energy. Since staff contends that few consumers can determine when the day is dry enough to turn the switch off, and many do not understand the purpose of the switch, it recommends no switch credit. The staff contends that better insulation and door design would both reduce the need for heaters and the heat flow through the walls of the appliance. The staff further contends that giving credit for a switch would only delay additional insulation and improved door design by reducing the incentive for manufacturers to improve the efficiency of this area of the appliance.

(G) Science Application Inc. Questionnaire

At the August 24, 1976 hearing (transcript page 128) Commissioner Pasternak asked for the questionnaires sent to industry representatives. The only questionnaire which was sent out in writing was to the Lennox Corporation. The completed questionnaire is attached as Appendix B.

Appendix B

MANUFACTURER: Lennox Industries Inc.

TELEPHONE #: 515+754-4214

LOCATION: Marshalltown, Iowa 50158

SPOKESMAN: Ted C. Gilles

POSITION: Corporate Manager - Environmental Systems

- What are the quantities of heat pumps, CACs and RACs shipped to California (or nationally) by BTUH capacity?

  This data for the entire industry can be obtained from the Air Conditioning and Refrigeration Institute (ARI).

- What are the locations of plants for shipments into California or within California? (all appliances)

  Fort Worth, Texas and Columbus, Ohio.

- To determine standard inventory levels, is there an industry-wide formula? i.e. percent of sales in inventory (all appliances)

  We use our own computerized method to control both manufacturing and inventories to match anticipated sales.

- What is the average selling price of appliances (all appliances)?

  For us, there is none. Price varies both by capacity and model features, including efficiency characteristics.

- What will you do if faced with a standard with which to comply within 1 year and 3 years?

  - comply Not possible
  - go out of market
  - drop some Calif. sales Yes

  We will market conforming models in California that are basically determined by national competitive patterns.

- What is the relative percent of California market for each product?

  Confidential

- What percent of sales is attributed to slider and casement window air conditioners?

  None

- If you have to improve efficiency by increasing capacity on electric motor, how long will it take?

  Our compressors presently have optimized motor efficiency.

- If you have to develop a new electric motor, how long will it take?

  See enclosed technical paper from Purdue Univeristy Conference. (A 5% to 7% improvement is an extensive change.)

- Given the present efficiency of electric motors, how much farther can they be improved?

  Per the above paper, single phase motors are presently close to the economical and material technological limit.

- To insulate the interchanger (condenser to compressor), how long will it take to incorporate this change?

  Suction line between evaporator and compressor is presently insulated on remote systems. Other insulation not practical.

- Regarding the cycle fan and compressor - on/off (interlock between features) -

  - How long will it take to incorporate?
  - How long did it take to incorporate? (if incorporated already)

  All central air conditioning thermostats have a fan mode selection switch for continuous or intermittent automatic (with compressor) operation.

Mr. DINGELL. Mr. Foster, the committee thanks you for a very helpful statement. I have been reading your statement as you gave it.

The Chair advises that the parent committee, the Committee on Interstate and Foreign Commerce, has need of us downstairs for purposes of a quorum. I think it would be prudent if we were to respect the rules of that body and recess and go down there, and then adjourn up here again.

So the committee will recess briefly and we will return as quickly as possible for further questions.

Gentlemen, I do apologize to you.

[Brief recess.]

Mr. DINGELL. The subcommittee will come to order.

Gentlemen, I apologize to you for the fashion in which we have been proceeding, but it has not altogether been in my control.

The Chair recognizes the gentleman from Michigan, Mr. Stockman.

Mr. STOCKMAN. Mr. Smith, to continue our conversation, I wonder if you could give some information to the subcomittee as to how you decided between those products which would be in the mandatory category, subsection (a), and those which would be in the discretionary category which you have indicated you would not promulgate standards for. Is it basically on energy consumption?

Mr. SMITH. Yes, sir, the 7 product categories that were included in the requirement for mandatory standards were selected because, when we constructed an array of the total of the 13 product categories included now in the Energy Policy and Conservation Act, those 7 were the largest ones. Collectively they accounted for 85 percent of the primary total energy use.

Mr. STOCKMAN. But most of that is furnaces, is it not?

Mr. SMITH. Furnaces are the largest item, yes, sir. But for example, the smallest percentage in the first 7 of the mandatory category of total use is 3.5 percent.

Mr. STOCKMAN. Is this household energy consumption mainly?

Mr. SMITH. That is right, sir: 3.5 percent for freezers, 3.5 percent for room air-conditioners, 3.5 percent for electric ranges and central air-conditioners.

The next largest item in the discretionary category would be electric clothes dryers, which accounts for 2.2 percent of the total consumption. Most of the others are considerably smaller, averaging less than 2 percent. In fact, that is the only one in the discretionary category that is more than 2 percent of total consumption.

Mr. STOCKMAN. Could you submit that for the record? It would be helpful.

Mr. SMITH. Yes, sir, I will be glad to.

Mr. DINGELL. Without objection the document referred to will be placed in the record here.

[The following material was received for the record:]

Household Energy Consumption in 1975 By Product

| | ENERGY CONSUMED END USE | | PRIMARY (TOTAL ENERGY) | | |
|---|---|---|---|---|---|
| | Kwh (Billion) | Btu (Trillion) | Btu (Trillion) | % of Total | Barrels of Oil Equivalent Annual (Million) |
| Refrigerators | 100 | 341 | 1060 | 8.7 | 189 |
| Freezers | 40 | 137 | 424 | 3.5 | 79 |
| Water Heaters | | | | | |
| Gas | | 1200 | 1200 | 9.9 | 214 |
| Electric | 125 | 427 | 1325 | 10.9 | 237 |
| Room A/C | 40 | 137 | 424 | 3.5 | 76 |
| Ranges | | | | | |
| Gas | | 500 | 500 | 4.1 | 89 |
| Electric | 40 | 137 | 424 | 3.5 | 76 |
| Central Air | 40 | 137 | 424 | 3.5 | 76 |
| Furnace | | | | | |
| Gas | | 2200 | 2200 | 18.1 | 393 |
| Electric | 40 | 137 | 424 | 3.5 | 76 |
| Oil | | 2000 | 2000 | 16.4 | 357 |
| Sub-Total | 425 | 7353 | 10405 | 85.5 | 1859 |
| Dishwasher | 9 | 31 | 95 | 0.8 | 17 |
| Clothes Dryer | | | | | |
| Gas | | 84 | 84 | 0.7 | 15 |
| Electric | 25 | 85 | 265 | 2.2 | 47 |
| Home Heating | 15 | 51 | 159 | 1.3 | 28 |
| Television | | | | | |
| Mono | 20 | 68 | 212 | 1.7 | 38 |
| Color | 20 | 68 | 212 | 1.7 | 38 |
| Humidifier | 5 | 17 | 53 | 0.4 | 9 |
| Clothes Washer | 5 | 17 | 53 | 0.4 | 9 |
| Other | 60 | 205 | 636 | 5.2 | 114 |
| Sub-Total | 159 | 626 | 1769 | 14.5 | 315 |
| TOTAL | 584 | 7979 | 12174 | 100.0 | 2174 |

Mr. STOCKMAN. I think that is probably logical and obvious to use this, but there is also the criteria of where you can achieve energy savings or reductions for the least cost.

Did you factor that consideration into your choosing of mandatory discretionary category?

Mr. SMITH. That was a secondary consideration, Mr. Stockman, in the sense that the remaining items, dishwashers, clothes dryers, home heating appliances other than furnaces, television sets, humidifiers, and clothes washers by their nature are principally associated, except for of course the dryers, with just the electric motor consideration.

For example, the dishwasher is treated in terms of the energy consumption of the dishwasher itself. The hot water used in the dishwasher is already incorporated in the analysis of the water heaters, which made it of course one of the principal claimants, actually the second one behind furnaces.

The nature of the mechanics of most of these other appliances is such that the principal place you can find efficiency is in the

electric motor that is associated with it, whereas the others have some kind of heat exchange operation going on, or the, conversion of energy from one form to another, and therefore offer greater technological opportunities for improvement, so the ability to achieve energy savings was also a component of that.

For example, this was the reason for including in the first category some of the fairly small ones that I outlined earlier, such as electric ranges and central air-conditioners. Although each accounts for only about 3.5 percent of the energy consumption, there appear to be reasonable technological opportunities to improve significantly the efficiency of those items.

Mr. STOCKMAN. Because you have heat conversion?

Mr. SMITH. Exactly.

Mr. STOCKMAN. What about the startling technological breakthroughs we have been reading about in the paper for the last couple of weeks with electric motors? Was that factored in at all?

Mr. SMITH. No, sir, it was not factored into the selection of these. We have been in contact with the individual involved, and with both ERDA and the National Bureau of Standards in terms of evaluating the representation. The preliminary reports that I have correspond to those in the newspaper of a couple of days ago and indicate that this appears to be a very real advance in engineering with respect to the consumption of electricity in electric motors.

Under our present authority, electric motors such as this could be considered as integral parte of the appliances.

Mr. STOCKMAN. I want to turn to one other area quickly. The only real criteria you have in establishing the minimum standards would be whether or not it is technologically feasible and economically justifiable?

Mr. SMITH. That is right.

Mr. STOCKMAN. I do not think technologically feasible really provides much restraint because we have proved a lot of things are technologically feasible from the space program and so forth, so that is not a barrier.

The real criteria we are working up against is economically justifiable, but I am wondering what does that mean to you? There are a lot of ways we can go about it.

We had some witnesses at a previous hearing who suggested what I think is a very persuasive and important fundamental rule in the whole energy program area. He said we ought to follow the rule of essential equivalency. That is, you are trying to get an extra barrel of oil or unit of energy, if it costs you more than the prevailing marginal costs to produce it, it is less to conserve it, that is how you decide the conservation strategies and so forth. Would you see some way of working that in here?

When we are talking about appliances, it seems to me if you set the standard very low, at the low range, you could actually have a cost reduction in the economy, because the capital cost that you would use in order to improve the efficiency would be less than the current cost of the energy that you save.

When you get into a middle range, you are going to be substituting capital. You save $x$ amount of energy and you substitute some capital for it, but if it is less than $5, or whatever the marginal price would be, you are still abiding by that rule of equivalency.

It seems to me when you get into some high range or something more exotic in terms of the technology lying behind it, the amount of capital and other things that have to go into the product, you may well be crossing that threshold where the extra capital cost for each unit of energy saved is far beyond what we consider the current marginal cost of energy.

Could you elaborate on that a little bit or does that make sense to you, in the way of interpreting what economically justifiable means?

Mr. SMITH. Yes, sir, I would like to respond by saying first that I think the standard that you set out certainly should be an important consideration, but the President's proposal would amend section 325(a), to advert other considerations to the strictly economic marginal cost of the fuel-saved standard projected there.

Mr. STOCKMAN. Competitive and utility?

Mr. SMITH. Yes, sir, considering the overall impact of the standard, the total projected amount of the energy savings, I think we begin to get to the kind of thing that you are mentioning. When we talk about the savings in operating costs throughout the average estimated life of the product, compared to any increase in the price of the initial charge or maintenance expense of the covered product, any lessening of the utility or performance of the product, so that you in effect are factoring into the cost of not only the money you pay but whether it is still going to do the same job, and the one addition, of the need for the Nation to conserve energy.

Running throughout the President's plan is the explicit condition that this energy saving has to be done in a way that makes economic sense, that there are limits to where conservation makes sense, that all kinds of conservation are not necessarily justified.

Mr. STOCKMAN. What I want to ask is, are there any numbers, any estimates, any parameters available right now which would give you some guidance on that, or are you really starting this whole process de novo in the sense that we have no idea where that line is, or are you just going to kind of stumble into it?

Mr. SMITH. Closer to the latter than to the former, Mr. Stockman, in the sense that we have accumulated only recently the major parts of the data base on what the energy efficiency performances of these various appliances were in 1972, which is the base year from which we measure the increments. We have now begun the analysis.

In our first round of proposed targets, frankly the analysis was at a fairly macro or gross level. As you are aware, we were challenged with respect to certain of the procedural aspects incorporated in that rulemaking early in 1976, and it was stipulated in the settlement of that suit that we propose another round of targets.

Since then, in terms of the analysis work we have done on targets, we have looked at some of this material and formulated some of these considerations. But when we shift the concept from targets to standards, it is going to take additional detail and analysis of the kind that you point out before we are going to be able to support these standards.

Mr. STOCKMAN. But would it be your intention to implement or interpret economically justifiable in the terms that you have generally discussed?

Mr. SMITH. Let me be clear, sir, that it would certainly be our intent and our commitment to start with this as a starting point, but at the same time not necessarily be limited to that in our judgment of what was economically justifiable, by which I mean specifically, not every standard that met that test would necessarily be adopted.

Mr. STOCKMAN. Correct.

Mr. SMITH. It could be rejected on the basis of some of the other considerations here.

Mr. STOCKMAN. I recognize that is kind of your fall-back, your outside parameters, but you would not apply this energy at $20 a barrel?

Mr. SMITH. Precisely. By the same token, certain standards might be adopted that exceeded the standard one would derive from this test by some probably fairly small amount, based on some of the other considerations here.

For example, if you could get a very large energy saving by a slight additional increment over this particular standard, the need of the Nation to conserve energy could conceivably override the actual break-even point that would develop out of this. You would be reasonable about how far you overrode it.

If you are still paying $13.50 for a barrel of oil, you might pay the equivalent of $15, if the difference between those two made a big difference in the total amount of energy the Nation was going to save over the life of the standard, particularly since you expect the real price of oil to increase over the lifetime of the appliance.

The general approach would be to take this as the base line. Then look at the other considerations for reasons to depart from that base line one way or the other. But there is no intention to precisely rule out the technological standard. The equivalent of best available control technology on the Clean Air Act side is precisely the reason for including explicitly this wider range of considerations, which are now incorporated in the EPCA definition of economically justified.

Mr. STOCKMAN. What I am getting to finally here is, the economic impact of the standard really does not say what we have been discussing, and I am wondering if that wording could be improved or sharpened up or elaborated on so that we would know exactly what we are talking about. Otherwise, we have a standardless act. You have limiting standards.

Mr. SMITH. Yes, sir.

Mr. STOCKMAN. In terms of competitive effects and so forth. Without some further elaboration on the words "economic impact" as a standard or the term "economically justifiable," it seems to me that there is no congressional mandate or direction or expression of intent, even though we apparently seem to agree that we want to use some rule of equivalency in the standard.

Mr. SMITH. Yes, sir, it would seem to me that it is not clear exactly how one would phrase this in the language. We will certainly be glad to consider it and work with the committee on language that would be acceptable. I think the economic impact of the standard includes within it the consideration that you have outlined, and also, of course, includes the broader economic impacts on the industry, things like the Consumer Price Index and other

macro effects of any standard that is being set. But clearly the approach to standard-setting would start with the calculations of the kind you have outlined, as I said, as a base line, and would also incorporate the wider range of things spelled out in the suggested amendment to section 325.

I do not want to say we are not going to give an inch on the language here. I certainly would not have any objection to elaborating on that, to see that it included the consideration that you outlined.

We would hope very much in that process we would not wind up restricting it to that one. That would be, in our judgment, much more restrictive a basis for the definition of economically justifiable than we think would be appropriate, for the reasons that I have outlined.

Mr. STOCKMAN. I guess what I am saying is that if you do not want to spend $18 a barrel, we do not want you to spend $18 a barrel on energy to save on appliances.

Mr. SMITH. I do not think there is any disagreement on that score, sir, but let me not mislead you about what I am agreeing to.

We would still like to preserve the flexibility to exceed the actual break-even point from the detailed kind of analysis you are talking about, for a couple of reasons:

One, those analyses are necessarily going to be subject to some margin of error.

Mr. STOCKMAN. Certainly.

Mr. SMITH. Given the long lifetime of the appliances we are talking about, it might be in the long-term best economic interests of the country to exceed that specific break-even point on the initial standard, particularly if one expects imported oil prices to rise. As a result over the lifetime of the appliance in question the standard would become economically justifiable even under the more narrow criterion you suggested within a matter of a few years rather than having to wait and modify the standard later. But let me assure you that there is no intent here to go crazy toward best available appliance technology at all.

Mr. STOCKMAN. That is the main assurance that I think we are trying to get.

Mr. SMITH. Yes, sir, I can give you that unqualified assurance.

Mr. DINGELL. The time of the gentleman has expired.

The Chair recognizes minority counsel for questions.

Mr. HENKE. Mr. Smith, section 201(c) of the President's bill contains an amendment to EPCA which would increase the level of authorizations under EPCA for the appliance program.

As you know I am sure, the committee reported out the FEA authorization bill the other day, and I just want to know if the moneys requested to be authorized in the President's bill are over and above what we authorized for the appliance program in the reported H.R. 6794.

Mr. SMITH. Counsel, I do not have the details of those available right now. With your permission I would like to supply the answer to that.

Mr. DINGELL. I think that is quite appropriate. That is a very important question, Mr. Smith.

Mr. SMITH. Yes, sir.

Mr. DINGELL. And we have some need of that information, in order to make our appropriate judgments in connection with the limitations imposed by this committee under the Budget Act.

Mr. SMITH. Yes, sir, we will provide that at an early date.

Mr. DINGELL. The Chair would like to recognize very briefly Mr. Finnegan for purposes of a question or comment.

Mr. FINNEGAN. On that, Mr. Smith, the figure is more than double what is already in the authorization. I take note of the fact that it is for fiscal year 1977 which is halfway over.

In providing this information, why would we double it at any time, and also, why should we amend the present act, which also provides a figure for fiscal year 1978. The proposal is to have it open-ended for fiscal year 1978 and thereafter.

We would like to know why you are changing that part of the law, too.

Mr. SMITH. I am sorry, Mr. Finnegan, I am not sure I understand the last part. I understand and appreciate your concern with respect to the first part.

Mr. FINNEGAN. The present statute includes a figure of $1.5 million?

Mr. SMITH. Correct.

Mr. FINNEGAN. For fiscal year 1978 as well as 1977?

Mr. SMITH. Right.

My understanding is that the amendment to section 339(a) would establish an authorization of $3.056 million for fiscal year 1977 and for each fiscal—I am sorry, you are correct, for such sums as may be necessary.

Mr. FINNEGAN. Thereafter it is open-ended

Mr. SMITH. You are quite right, and your concern is certainly understandable. I do not know the answer myself but we will provide it for the record.

[The following statement was received for the record:]

The requested authorization level in the National Energy Act (NEA) is $3,056,000. This figure is simply the base amount of $1,577,000 plus the additional $1,479,000 amount requested in our FY 1977 Amended Supplemental Budget for the Appliance Program. This figure would provide for the continuation of work on energy efficiency improvement targets and test procedures through category thirteen and consumer education. It should be noted that the $700,000 authorized by section 339(c) of the EPCA has been included in computing these amounts, so that that separate authorization would no longer be needed.

The committee previously considered and reported H.R. 6794 which authorizes $4,000,000 for the Appliance Program in FY 1977.

FEA's preference at this time is for an open-ended authorization in FY 1978 as requested in the NEA. The open-ended figure for FY 1978 included in H.R. 6831 will allow FEA flexibility in funding as FEA shifts emphasis from an energy efficiency target program to minimum efficiency standards. The figure in H.R. 6831 is greater than what has been included in the EPCA authorization to cover the shift from voluntary targets to mandatory standards.

Mr. DINGELL. The Chair recognizes minority counsel.

Mr. HENKE. I just have one other question and that is, Mr. Smith, how long do you envision it taking FEA to complete promulgation of the test procedures, and then to develop standards as envisioned under the President's bill?

What kind of time frame are we talking about?

Mr. SMITH. It is our earnest expectation that the test procedures for the categories of mandatory projects would be completed no later than the end of this year. Our targeted completion date now is December 20, at which time our test procedures would be in place; however, the majority of the test procedures would be completed by October. We have committed more than we can afford to lose to the chairman to make those target dates.

Under the proposed amendments, the rulemaking requirements for the standards themselves on advance notice of proposed rulemaking would have to be promulgated within 30 days after a test procedure was prescribed, or within 30 days after enactment of the National Energy Act, whichever was later.

This then starts to run a clock that is at least six months long before the standards are promulgated. It has a minimum time of some six months before the standards are promulgated. Then there is another 180-day period after the promulgation of the standard before it can become effective.

Candidly, I cannot promise you that we will have the staff and resources to run all of those standards operations in parallel. I would rather, if I may, ask the staff for a tentative schedule by product category based on the amount of resources we have to spend, and provide that for the record. It is going to be in any case six months at the earliest before we would have the first standard in place. We would expect to start on the most important one and have the first standard in place in the minimum time possible, depending on the complexity involved, so somewhere from six to nine months.

Then we clearly want to finish the first seven of these. We will have some overlap running so it will not be sequential, but we are looking at a period of 9 to 18 months. But I would appreciate the opportunity to ask the staff to work out a detailed estimate of the time.

[The following material was received for the record:]

Schedule for test procedures for mandatory standard products

| PRODUCT TYPE | TEST PROCEDURES PROPOSED | FINAL |
|---|---|---|
| 1. Refrigerators and refrigerator-freezers | 4/21/77 | 9/ 8/77 |
| 2. Freezers | 4/21/77 | 9/ 8/77 |
| 5. Water Heaters | 4/21/77 | 9/ 8/77 |
| 6. Room Air Conditioners | 7/27/76 | 5/24/77 |
| 9. Kitchen Ranges and Ovens | 6/ 9/77 | 10/24/77 |
| 12. Central Air Conditioners | 6/ 8/77 | 10/25/77 |
| 13. Furnaces | 7/28/77 | 12/20/77 |

Schedule for issuance of test procedures for voluntary standards products.

| | Products | Proposed Test Procedure Issued | Final Test Procedure Issued |
|---|---|---|---|
| (3) | Dishwashers | | |
| | Gas | 3/18/77 | 8/ 2/77 |
| | Electric | 3/18/77 | 8/ 2/77 |
| (4) | Clothes Dryers | | |
| | Electric | 4/21/77 | 9/ 8/77 |
| | Gas | 4/21/77 | 9/ 8/77 |
| (7) | Home Heating Equipment (Not Including Furnaces) | | |
| | Gas Vented | 8/ 4/77 | 12/20/77 |
| | Oil Vented | 8/ 4/77 | 12/20/77 |
| | Electric Baseboard | 5/ 4/77 | 9/15/77 |
| | Gas Unvented | 5/ 4/77 | 9/15/77 |
| | Electric Portable | 5/ 4/77 | 9/15/77 |
| (8) | Television Sets | | |
| | Color | 4/22/77 | 9/ 8/77 |
| | Monochrome | 4/22/77 | 9/ 8/77 |
| (10) | Clothes Washers | | |
| | Gas | 5/11/77 | 9/22/77 |
| | Electric | 5/11/77 | 9/22/77 |
| (11) | Humidifiers | 5/25/77 | 10/10/77 |
| | Dehumidifiers | 5/25/77 | 10/10/77 |
| (14) | Consumer products determined by the Administrator to be covered by the Act | products have not been identified at this time by the Administrator | |

Moving from an efficiency improvement target program to minimum standards poses potential problems and will require additional technical and economic analysis beyond what has been done to support the current appliance program. The amount of time required to set minimum efficiency standards can vary significantly depending on the complexity of the appliance and how much work has been done with regard to a particular appliance and the level of resources devoted to the effort. As you know, we have recently added to these resources. We want to assure the Committee that FEA intends to move forward as expeditiously as possible on this critical national program.

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Mr. HENKE. Thank you.

Thank you, Mr. Chairman.

Mr. DINGELL. The Chair recognizes Mr. Finnegan for questions.

Mr. FINNEGAN. Thank you, Mr. Chairman.

Mr. Warshaw, the statement on the last page, you indicate that as new products are brought in under Category 14, and they can be aircraft, boats, attic fans, gardening equipment, a variety of other appliances, new test procedures will be needed. I am sort of puzzled by your reference to the aircraft and boats. In looking at the statutory provisions it talks about household products. You are not really counting those as household products.

Mr. WARSHAW. Yes, sir. The statutory definition is consumer product.

Mr. FINNEGAN. However, section 322(a)(14) says "Any other type of consumer product which the Administration classifies as covered product under subsection (b)" and subsection (b), the Administrator may classify and so forth.

Mr. WARSHAW. Right.

Mr. FINNEGAN. It uses in (b) the word "household."

Mr. WARSHAW. Yes, it uses average annual per household energy use in (b). I was referring there to the definition of consumer product in the law, which is section 321(a), which means any article other than automobile, "which in operation consumes energy which is to any significant extent." That is why I defined it that way. The law refers to consumer product.

Mr. FINNEGAN. Mr. Smith, are you in concurrence in talking about aircraft and boats?

Mr. WARSHAW. Used by consumers.

Mr. SMITH. The honest answer is I don't know. I would like a chance to research that. We haven't considered this question. I confess we had been focusing our attention on household products as well.

Mr. DINGELL. I won't deny there is an ambiguity there. I am not sure I read it to cover boats and aircraft, but if it does, you had better.

Mr. WARSHAW. It is just a personal interpretation, sir, where the definition of consumer product in the law, means anything that the consumer uses.

Mr. SMITH. Would you like me to provide our analysis of what is covered for the record?

Mr. DINGELL. I think it would be helpful, please.

[The following material was received for the record:]

We do not believe it was the intent of Congress in enacting EPCA to include marine equipment, aircraft, and similar products which are not considered home appliances in Title II, Part B of the Act, nor would we administer the Act to include such items.

Section 322(b)(2)(C) of EPCA specifies that the term "household," shall be defined by the Administrator. The definition of the term "household" under consideration by the Administrator is based on the definition used by the U.S. Census:

A "household" is any group of persons living together under one roof or within one curtilage, having an essentially permanent and domestic character, subsiding in common, and directing their attention to a common objective, usually the promotion of their common social welfare."

This definition would cover approximately 97 percent of all consumers. We feel that no reasonable definition of household would include such products as outdoor

recreational equipment (outboard motors, golf carts), aircraft, and outdoor lights. In addition, H.R. 6831 limits further the definition of those products to be included in category 14 by limiting coverage to products whose average per household energy use exceeds 150 kilowatt-hours (or Btu equivalent) per year and whose aggregate household energy use exceeds 4.2 billion kilowatt-hours per year. The following is a list of the products we believe could be covered by category 14 for labeling and test procedures:

Sunlamps
Electric Blankets
Heat Pumps
Gas Lights
Irons
Incandescent Lighting
Sewing Machines
Coffee Makers
Electric Skillets
Window Fans
Crock Pots
Electric Pressure Cookers
Toaster Ovens

Mr. FINNEGAN. One of our witnesses this morning, Mr. Warshaw, referred to your actions and your program and he stated "By supporting only limited definitions of energy efficiency arbitrarily using the systems approach to the analysis of one appliance but not another and expressions of concern that the program should maintain each manufacturer's market share the appliance industry has effectively convinced their former employees now working at the National Bureau of Standards to use the test procedures suggested by AHAM whenever possible, and take circumscribed view of potential efficiency improvements."

Could you comment on that statement, and could you tell us how many of the NBS employees who are working on this are former AHAM employees?

Mr. WARSHAW. Yes, sir, I don't have the exact number but I can give you an estimate and later confirm it for the record. We have some 70 or 80 people who are either working full time or part time on these programs regarding energy efficiency test methods and targets. Of these 70 to 80, there are about 4 or 5 that have from 2 to 35 years appliance industry experience.

We have people who do have experience in engineering, product design, process design, quality control, industrial design and what-have-you relative to the appliance industry, but only of this magnitude, namely, 4 to 5 out of 70 to 80. We also have employees from other industrial areas, but not the appliance area. We hire people who bring in technical expertise to the bureau to aid us in our determination, because we need that efficacy in order to accomplish what we do.

We obviously avail ourselves of all technical resources, including the literature. We avail ourselves of the scientific literature, the engineering literature, existing trade publications, existing voluntary standards or other standards that may have been published by such organizations as AHAM. It is traditional in a scientific or engineering discipline to avail yourself of all the knowledge that is available to aid you in making a decision rather than to reinvent the wheel.

I might say too that we also have a communication, a continuing communication, with the various members of the industry who

come and hold debate with us, critique with us, and talk about technical items, but in all cases, when we come to a decision or recommendation on a technical matter, it does represent our objective, independent thinking. It is based upon existing technology plus the technology that we develop. To suggest that the bureau is influenced by the industry is false. I think you would find members of the industry who have debated technical issues with us at times and opposed us on certain technical issues, but you will always get agreement that we do fill that third party role objectively.

Mr. FINNEGAN. For example, the people that worked on the dishwasher test procedure and the procedures that so far have been published by FEA, could you supply for the record who those people were and what their former affiliations were in the appliance industry?

Mr. WARSHAW. We certainly could and will. I will also comment on specifics regarding the technical opportunities for a systems approach to energy savings in consumer products.

[The following material was received for the record:]

National Bureau of Standards Activities Under
The Energy Policy & Conservation Act

Staff Activities

A. Staffing by Product Area

| Product Area | Test Procedures Number of Persons Full time | Part time* | Targets Number of Persons Full time | Part time* |
|---|---|---|---|---|
| 1. Refrigerators, refrigerator-freezers | 1 | 10 | - | 7 |
| 2. Freezers | 1 | 7 | - | 7 |
| 3. Dishwashers | 1 | 4 | 1 | 4 |
| 4. Clothes dryers | 1 | 5 | - | 4 |
| 5. Water heaters | 2 | 11 | 2 | 6 |
| 6. Room air conditioners | - | 7 | - | 6 |
| 7. Home heating equipment, except furnaces | 1 | 8 | - | 7 |
| 8. Television receivers | 1 | 3 | - | 4 |
| 9. Ranges & ovens | 1 | 12 | 1 | 7 |
| 10. Clothes washers | - | 6 | - | 5 |
| 11. Humidifiers and dehumidifiers | - | 12 | - | 3 |
| 12. Central air conditioning | 3 | 7 | - | 2 |
| 13. Furnaces | - | 12 | - | 6 |

*Staff members in this category usually work on more than one product and are listed under each product area of their activity. Most are full time permanent employees.

B. Staff Experienced in the Appliance Industry

Three engineers on the staff have had prior experience in the appliance industry. The first two, listed in the following, are mature persons who had retired from their companies. All became civil servants and employees of NBS prior to the enactment of EPCA.

1. Staff Member #1

   a. Position at NBS - Section Chief. Joined NBS on July 7, 1974.

   b. Appliance company - Westinghouse Electric Corp. Westinghouse is no longer in the appliance business.

   c. Positions in company - Engineering manager for portable appliances.

   d. Industrial appliance experience - 38 years.

   e. Full or part time - A full time employee who supervises the personnel in the Product Standards Development Section.

2. Staff Member #2

   a. Position at NBS - Project manager for refrigerators, refrigerator-freezers, freezers, and ranges and ovens. Joined NBS on July 7, 1974.

   b. Appliance companies - Philco, Proctor Electric Company. Philco is no longer in the appliance business.

   c. Position in appliance companies - Philco, manager of engineering for room air conditioners and ranges and ovens. Proctor Electric Company - project engineer for toasters, steam irons, and electric range switches.

   d. Industrial appliance experience - 25 years.

   e. Full or part time - A full time employee dividing his time between refrigerators, refrigerator-freezers, freezers, and ranges and ovens.

3. Staff Member #3

   a. Position at NBS - Project manager for water heaters, home heating equipment (except furnaces), humidifiers, and furnaces. Joined NBS on July 14, 1973.

   b. Appliance companies - Bruest Industries, Institute of Gas Technology, Washington Gas Light Company.

   c. Positions in companies - Bruest, manager of Engineering Research. Institute of Gas Technology, supervisor, Applied Combustion Laboratory. Washington Gas Light Company, test engineer, Utilization Laboratory.

d. Industrial appliance experience - 11 years.

e. Full or part time - A full time employee dividing his time between water heaters, home heating equipment (except furnaces), humidifiers, and furnaces.

C. Interaction with Home Economists

There are no home economists on our staff. One is in process of being hired. The only interaction identifiable involves the "standard" menu used by cooks in the Human Factors Laboratory to establish average usage patterns for ranges and ovens. This menu was prepared by home economists in the employ of the appliance industry.

D. Consultants on Contract

No individual persons have been engaged as consultants.

Four companies were engaged on a contract basis, none of which produce appliances. These are:

1. Value Engineering
2. Unified Industries
3. Honeywell
4. Exxon

A Systems Approach to Appliance Energy Conservation

Most appliances in a home interrelate in some way with either other appliances or with the heating or cooling system. For instance, clothes washers and diswashers require hot water from the water heater; clothes dryers, which are usually vented to the outside, exhaust almost a housefull of conditioned air (heated and humidified or cooled and dehumidified) during a drying cycle; a refrigerator or freezer pumps heat from inside its cabinet to the kitchen, and in the summer the air conditioning system must then pump this same heat out of the building.

This functional interdependence and interaction of one product with other products in a house requires that a systems approach be applied to appliance energy conservation. The following typical systems illustrate this interrelationship.

- The Hot Water System
  - Water heater
  - Clothes washer
  - Dishwasher
  - Surroundings
  - Distribution
  - Energy sources
- The Laundry System
  - Clothes washer
  - Clothes dryer
  - Heating, ventilating, air conditioning
  - Water heater
  - Surroundings
  - Distribution
  - Energy source(s)
- The Refrigeration System
  - Refrigerator, R/F, freezer
  - Air conditioner - room and/or central
  - Surroundings
  - Distribution
  - Loading
- The Cooking System
  - Surface units
  - Ovens
  - Microwave
  - Special devices
  - Heating, ventilating and air conditioning
  - Surroundings
  - Energy Source(s)
- Interaction between all systems or Total Appliance System

In many instances it is a simple matter to reduce the energy consumption of individual appliances. A clothes dryer with a low power heater will use less energy, but because of the increased time required for the drying

cycle, it will exhaust more conditioned air from the building. The current approach of focusing on the energy consumption of specific individual appliances which is required in the Energy Policy and Conservation Act (EPCA) does not foster the introduction of additional component products within a system which could result in a net reduction of energy consumption by the total system. A clothes dryer vent damper, for example, will reduce the energy consumed in the total laundry system and yet would not be reflected as an energy conserving feature for a clothes dryer under current test procedures which were developed in accord with the EPCA. A net system reduction in energy consumption can sometimes result from an increase in consumption of an individual appliance. For example, an increase in the spin speed and spin time of a washing machine would result in an increase in its individual energy consumption but would reduce the subsequent drying energy requirement.

In developing energy test methods and energy improvement targets for the individual appliances covered by the Energy Policy and Conservation Act and the Energy Conservation and Production Act the National Bureau of Standards has acquired extensive experience in the energy use and performance of a wide range of energy consuming household appliances. The instrumentation and laboratory test facilities at NBS have been expanded and automated, and are being utilized to explore the energy consumption implications of the various features of a wide range of products from different manufacturers to provide the basic data for the establishment of the energy improvement targets. The broad scope of this testing program at NBS provides an excellent foundation for applying a systems approach to appliance energy conservation.

Mr. FINNEGAN. Again on that test procedure, again on the dishwasher test procedure, FEA indicated that the NBS incorporated the approach contained in the AHAM draft, and the AHAM draft came from the AHAM Dishwasher Engineering Committee, which is composed entirely of members from the industry.

What effort do you make to obtain information from the environmentalists, consumers, other than just industry representatives in this sort of thing?

Mr. WARSHAW. Yes, we do. We are the co-host along with a couple of other organizations in having consumer sounding boards. There are about six consumer sounding boards across the country. We sound out technical issues with these consumer sounding boards.

We have the National Academy of Sciences Evaluation Panel which appraises our efforts annually and biannually. The panel is comprised of about one third consumer organization representatives. They too have participated in this. In the case of the range study, we actually invited a number of consumers in to cook and prepare meals and to observe them in order to get the necessary data that we require in terms of annual energy usage.

Mr. FINNEGAN. On these particular test procedures, on this one of dishwashers and the others that have been actually published by FEA, were these consumer——

Mr. WARSHAW. Yes, the consumer sounding boards and members of our evaluation panels have participated on many of these, and in some cases we have actually had numbers of consumers come in where we have paid them for their time to actually run tests and comment on.

Mr. FINNEGAN. Would you have a summary or copies of their comments on those particular procedures that we might have for the record?

Mr. WARSHAW. I can certainly make that available.

[The following material was received for the record:]

INTERACTION WITH CONSUMERS

Under the Department of Commerce voluntary program of appliance energy labeling, the forerunner to EPCA, NBS had responsibility for all phases of the program including labeling and test procedure development. Further, there were no specified deadlines. Accordingly, considerable time was expended in interacting with consumers, consumer groups, retailers, industry, and other government agencies. Under EPCA, the severe time constraints reduced considerably the interaction with industry, government agencies other than FEA and FTC, and retailers. The nature of interaction with consumers changed and expanded and they now have a more active and participating role in test procedure development.

Under the voluntary program meetings were scheduled with consumer sounding boards, and the American National Standards Institute's consumer panel to review and comment on label design and other program activities. Similar meetings were held with retailers, industry, and other government agencies.

Under EPCA, it is necessary to establish estimated average usage patterns. For ranges and ovens, 58 housewives were hired to cook meals in the Human Factors Laboratory. This study contributed to the development of the test procedure for ranges and ovens.

At Twin Rivers, New Jersey, several homeowner-resident consumers are interacting with NBS in a study of the utilization of their appliances including refrigerators, refrigerator-freezers, dishwashers, clothes dryers, water heaters, kitchen ranges and ovens, clothes washers, central air conditioners, and furnaces.

The furnace test procedures under development are based in part upon two field studies involving oil burners in the New England area—one study involved 429 residences, the other 36.

The central air conditioning test procedure is based in part upon a field study involving central air conditioners in 12 residences.

Refrigerator-freezers were placed in the homes of consumers to study energy used under real-life conditions so as to provide a means of correlating laboratory test procedures with actual usage.

Currently several products (9 each) are being monitored in the homes of consumers to provide additional field test correlations with laboratory test procedures. These products are ranges and ovens, upright freezers, chest freezers, humidifiers, clothes dryers, and dishwashers.

The results of extensive surveys of consumer usage of appliances made by private companies for their own usage were obtained and utilized. These include studies on ranges and ovens, microwave ovens, dishwashers, clothes washers, and television receivers. The first two products were surveyed by the appliance industry, the last two by non-manufacturers.

We believe that the use and participation of consumers in studies of their actual use of appliances as stated above provides an input to test procedure development that is rarely used in such development. It is made possible because of the requirement in EPCA that the test procedures reflect an estimate of average usage.

Mr. FINNEGAN. Mr. Smith, is FEA at the present time required under law to get FTC review of a proposed test procedure and standards from the standpoint of competition?

Mr. SMITH. No, sir.

Mr. FINNEGAN. What is your capability to review it from the standpoint of competition? That is one fo the criteria, talking about what is your capability in FEA to consider that.

Mr. SMITH. Under the current legislation, FEA, the FTC, or any person can request that the Attorney General determine negative effects on competion, for standards only. The Attorney General can also make this determination on his own motion. The Attorney General must submit his determination to FEA in writing together with his analysis of the nature and extent of such negative effects.

Mr. FINNEGAN. On page 17 of the bill, certainly in the proposed amendment to section 325(a), "The Administrator shall consider any negative effects on competition likely to result from the imposition of the standard."

Mr. SMITH. Right.

Mr. FINNEGAN. How is the Administrator going to take into consideration this? Is he going to provide for consultation with the FTC or insure that he gets some sort of FTC input into this? Should the statute make it clear that FTC has some input?

Mr. SMITH. Yes. In the normal course of processing the standard we would, of course, consult with the FTC staff to get their judgment on this.

Moreover, the standard would be published in effect twice: First the proposed preliminary standard, then the actual proposed rulemaking itself in the second round of proposals. The staff would consult with the FTC in the formulation of the proposal, certainly after this initial proposal and anybody who felt the particular standard would have a negative effect on competition would be able to make that presentation in the comment period and at the hearing, in terms of the proposal of the actual detailed standard on the second stage of the standard-making. We would certainly consult with the Federal Trade Commission staff on the analysis of any allegations of anticompetitive behavior.

Mr. FINNEGAN. Mr. Snyder, do you have any comments on that?

Mr. SNYDER. As I read the amendment, it seems to indicate that the Commission could request the Attorney General to make a determination as to anticompetitive effects, and that this be submitted to the Administrator for the Administrator's consideration. Thus, in this sense, the Commission then would be initiating some activity.

I think Mr. Smith has been responding by saying he would be asking the Commission itself for its viewpoints.

Mr. SMITH. We would certainly be asking the Commission for their viewpoints.

Mr. SCHOOLER. Are you reading from the present draft?

Mr. SNYDER. No; I am reading from the amendment which is what I have before me.

Mr. FINNEGAN. Can you tell us where that is?

Mr. SNYDER. The copy I have is an amendment to section 325(a)(6) and it refers to the determinations that have to be made in that section 5 that the Administrator shall consider.

Mr. SCHOOLER. That language does not appear in H.R. 6831.

Mr. FINNEGAN. We don't see it.

Mr. DINGELL. It may have been in an earlier draft that went out. We seem to be having some trouble in that.

Mr. FINNEGAN. It doesn't mention the Attorney General or FTC.

Mr. SCHOOLER. In the present law, EPCA there is a section that requires the Administrator to consult with the Attorney General.

Mr. PARKER. I think under the present EPCA statute now that provision is not in there.

Mr. SCHOOLER. It's not.

Mr. PARKER. I don't think so. I think under the proposed amendment——

Mr. FINNEGAN. I gather you would agree that something like this ought to be in so we make sure there is consultation with the FTC and/or the Attorney General; is that correct? Both of you gentlemen agree with that?

Mr. SNYDER. I would agree. I think it would be most helpful.

Mr. SMITH. My understanding of the present provision, as I stated earlier, is that the Administrator shall not determine there are any negative effects on competition unless the Attorney General, on request of the Administrator or the Commission or any person, or the Attorney General on his own motion makes such a determination and submits it in writing to the Administrator together with his analysis of the nature and extent of such negative effects. Determination by the Attorney General should be made available for public inspection.

Mr. SCHOOLER. That section 325(a)(1)(E) would be eliminated under the proposed bill.

Mr. SMITH. That is right, and I think the purpose for that is that in moving to the more immediate standards provision, we were seeking more flexibility on the part of the Administrator to make a negative determination, or the requirements at least to adjust the standard, because of potential anticompetitive effects, short of the kind of formal procedure embodied in the current legislation.

Again, to be able to get standards out, but certainly we would consult with the Commission before making such a determination. Any language that would indicate we would consult with the Commission or staff before making such a determination would be entirely appropriate.

Mr. FINNEGAN. Okay. There is a vote on the floor. I think we have some additional questions we would want to submit for the record later.

Mr. DINGELL. Gentlemen, I am sure you will cooperate with the staff in responding to questions.

Mr. SMITH. We would be glad to, Mr. Chairman.

Mr. DINGELL. Gentlemen, we thank you all for your assistance and your patience. We have been much delayed in starting matters today and we express our particular thanks for your assistance and patience.

The committee will stand in recess until tomorrow morning at 10:00 a.m.

[The following letters and mailgram were received for the record:]

ENERGY RESOURCES CONSERVATION AND DEVELOPMENT COMMISSION,
*Sacramento, Calif., May 25, 1977.*

HONORABLE JOHN D. DINGELL,
*Chairman, Subcommittee on Energy and Power of the Committee on Interstate and Foreign Commerce, Room 3204, House Office Building Annex No. 2, 2nd and "D" Street, S.W., Washington, D.C.*

DEAR CHAIRMAN DINGELL: The following are my responses to your questions, dated May 16, 1977. I hope that they will assist your subcommittee in drafting good, strong appliance efficiency legislation.

1. What special state or local interests would justify state appliance efficiency standards when federal standards are in place?

An action involving pre-emption of the California Energy Commission's appliance efficiency standards is now pending before the Federal Energy Administration. It would not be prudent for me to preview our specific arguments in that matter. However, as a general matter, state standards would be justified in situations where

there is a special state need to reduce energy demand beyond what is being achieved by the federal program. This special need could arise when there is an especially high state electricity growth rate or a unique peak demand problem; when there are special seismicity, water resource availability and/or air quality problems that substantially hinder the development of new nuclear or coal plants; and when there is a unique state market for a particular type of appliance. Obviously, if the federal standards are strict and comprehensive it will be difficult to show a special state interest.

2(a). Under what administrative procedures were the California regulations developed?

The administrative procedures used by the Energy Commission were designed to ensure full public participation in the development of the appliance efficiency standards for refrigerators, freezers, and air conditioners. Preliminary staff-proposed regulations were distributed to all interested persons. Staff workshops were conducted throughout the state with interested public (mostly manufacturers) and summaries of the workshops were distributed. The workshops led to numerous improvements in the staff-proposed regulations.

Hearings before a committee of two Commissioners were then held on the improved staff-proposed regulations. The Commission staff presented testimony and evidence to support their recommendations and meet statutory requirements. The testimony of staff and other witnesses were subject to limited cross-examination by interested persons. All written testimony was circulated several days in advance of the hearings to facilitate cross-examination. As a result of these hearings, several major amendments were made to the regulations.

A final hearing to consider adoption of the staff-proposed regulation was held before the full Commission. The procedure for this hearing was similar to a legislative hearing.

A copy of the complete administrative record developed by the Commission could be made available to your subcommittee upon request.

2(b). How long did each of the procedures take?

The original staff-proposed regulations which were the result of approximately 6 months of staff effort, were distributed in February, 1976, and workshops were held through May, 1976. The first Commission committee hearing was held in early June and the hearings were completed in October. The final date of adoption was November 3, 1976.

2(c). Should deadlines be placed upon the federal government in developing standards, and, if so, what should those deadlines be?

While they cannot ensure timely action, it has been our experience that reasonable deadlines do tend to discourage unnecessary delay in administrative processes. Unnecessary delay in implementation of a comprehensive federal appliance efficiency program would not be in the public interest. The Energy Commission does not have a specific recommendation on what would be a reasonable deadline.

3(a). Please describe your participation, if any, in the petitions before the Federal Energy Administration to pre-empt the California appliance standards.

FEA has not yet officially acknowledged receipt of the various petitions to pre-empt the California standards. Therefore, there has been no opportunity to participate formally before FEA. The Commission has sent correspondence to the FEA to encourage the expeditious development of a hearing procedure that would ensure full deliberations on this matter.

3(b). What should the proper procedures for handling such petitions include?

It is our understanding that FEA will soon be promulgating proposed procedures to be used in considering the pre-emption petitions and will afford interested persons an opportunity to comment on the procedures. The Energy Commission will offer its specific comments to FEA at that time. The Commission would recommend that federal legislation establish the following procedural guides for FEA, in addition to what is already provided for in the EPCA.

1. Require at least one month's notice mailed to all interested persons of any deadline for receipt of written comments or testimony prior to a hearing.

2. Require public hearings to receive oral comment on pre-emption petitions, at least one of which must be conducted in the affected state.

If you have any additional questions that you would like the Energy Commission to address, please let us know.

Sincerely yours,

ROBERT FOSTER,
*Division Administrator, Conservation Division.*

THE COMMONWEALTH OF MASSACHUSETTS,
EXECUTIVE OFFICE OF CONSUMER AFFAIRS,
*Boston, Mass., May 10, 1977.*

CONGRESSMAN JOHN D. DINGELL,
*Chairman, Subcommittee on Energy and Power of the Committee on Interstate and Foreign Commerce, Rm. 3204, HOB Annex #2, Washington, D.C.*

DEAR MR. DINGELL: This letter is in reference to the hearings you have planned for H.R. 6831, the National Energy Act. Specifically, I would like to comment on the Energy Efficiency Standards for Consumer Products, (Title 1, Part B-Energy Efficiency of Consumer Products-Subpart 1). If you feel the Committee would find the following comments valuable, feel free to submit them into the record.

I firmly believe that every product which uses some type of energy, should be manufactured to use its energy as efficiently as possible. And to provide incentive to manufacturers to make these products energy efficient, I am advocating the requirement of labels clearly stating the energy efficiency rating to be attached to each product. This will enable consumers to choose the products they plan to purchase not only by comparing their price, but also by comparing their cost once they are in the home.

Here in Massachusetts, we currently have a law requiring each refrigerator and freezer on sale to display a highly visible label indicating its Energy Efficiency Ratio. Although this law was passed with good intentions, it is worthless to the average consumer as the E.E.R. is not listed in dollars and cents terms. Therefore, I would advise the Committee, when considering plans for establishing energy efficiency standards, to insure that they are made available to the public in plain English.

As our state laws have not yet been revised to insure that the E.E.R. is understandable to all consumers, I have begun a program of informing state residents of the energy costs of different products. I began this program with a study done by my Energy Policy Office showing the energy costs of top-selling refrigerators in the Greater Boston area. For your information, a copy of that study is enclosed.

It is important to note that the energy cost for these products are higher in Massachusetts than they are in other parts of the country. This is due to the higher costs Bay State residents must pay for energy in comparison to other regions of the country.

In the future, I will have similar energy cost studies on air conditioners, stoves, and other consumer products.

It is my understanding that Commerce Secretary Juanita Kreps is also interested in advising consumers of appliance energy efficiency ratings. I hope the legislative branch would also consider the importance of requiring energy performance standards on all products in addition to requiring energy efficiency standards for consumer products.

Sincerely yours,

CHRISTINE B. SULLIVAN,
*Secretary.*

Enclosure

ENERGY COST SURVEY OF TOP SELLING REFRIGERATORS IN GREATER BOSTON AREA

September-October 1976

The formula used to calculate energy costs is:

$/KWH × 12 months × years × average KWH use

This study does not purport to include all top selling frost-free refrigerators in the Greater Boston area.

Listed in Order of Energy Cost

Note: These refrigerators are numbered in order of total cost over a ten-year period minus maintenance, from cheapest to most expensive. Please remember that cubic-foot size varies and should always be considered in determination of purchase.

| No. | Brand | Price | + | Energy Cost | = | Total Cost |
|---|---|---|---|---|---|---|
| 1 | Whirlpool 17.2 cu.ft. | $449.98 | | $ 736.56 | | $1,186.54 |
| 2 | Hotpoint 15.7 cu.ft. | $389.88 | | $1,026.72 | | $1,416.60 |
| 3 | General Electric 15.6 cu.ft. | $419.95 | | $1,034.16 | | $1,454.11 |
| 4 | Hotpoint 17.7 cu.ft. | $369.88 | | $1,093.68 | | $1,463.56 |
| 5 | Whirlpool 15.1 cu.ft. | $359.95 | | $1,119.72 | | $1,479.67 |
| 6 | Hotpoint 20.8 cu.ft. | $469.88 | | $1,030.44 | | $1,500.32 |
| 7 | General Electric 20,8 cu.ft. | $479.95 | | $1,030.44 | | $1,510.39 |
| 8 | Frigidaire 17.0 cu.ft. | $459.95 | | $1,071.36 | | $1,531.31 |
| 9 | Sears 17.1 cu.ft. | $489.99 | | $1,063.92 | | $1,553.91 |
| 10 | Frigidaire 20.6 cu.ft. | $519.88 | | $1,086.24 | | $1,606.12 |
| 11 | Sears 17.1 cu.ft. | $559.99 | | $1,063.92 | | $1,623.91 |
| 12 | Sears 17.1 cu.ft. | $429.99 | | $1,201.56 | | $1,631.55 |
| 13 | Sears 15.2 cu.ft. | $439.99 | | $1,197.84 | | $1,637.83 |
| 14 | Sears 19.2 cu.ft. | $599.99 | | $1,075.08 | | $1,675.07 |

Listed in Order of Total Cost, by Size

| 15 Cubic Feet | Brand | Price | Total Cost |
|---|---|---|---|
| 15.7 | Hotpoint | $389.88 | $1,416.60 |
| 15.6 | General Electric | $419.95 | $1,454.11 |
| 15.1 | Whirlpool | $359.95 | $1,479.67 |
| 15.2 | Sears | $439.99 | $1,637.83 |
| **17 Cubic Feet** | | | |
| 17.2 | Whirlpool | $449.98 | $1,186.54 |
| 17.7 | Hotpoint | $369.88 | $1,463.56 |
| 17.0 | Frigidaire | $459.95 | $1,531.31 |
| 17.1 | Sears | $489.99 | $1,553.91 |
| 17.1 | Sears | $559.99 | $1,623.91 |
| 17.1 | Sears | $429.99 | $1,631.55 |
| **19 Cubic Feet** | | | |
| 19.2 | Sears | $599.99 | $1,675.07 |
| **20 Cubic Feet** | | | |
| 20.8 | Hotpoint | $469.88 | $1,500.32 |
| 20.8 | General Electric | $479.95 | $1,510.39 |
| 20.6 | Frigidaire | $519.88 | $1,606.00 |

COX, LANGFORD & BROWN,
*21 Dupont Circle, N.W.,*
*Washington, D.C., May 13, 1977.*

HON. JOHN D. DINGELL
*U.S. House of Representatives,*
*2221 Rayburn House Office Building, Washington, D.C.*

Re: H.R. 6831—To Establish a Comprehensive National Energy Policy

DEAR JOHN: This statement is submitted on behalf of the Consumer Electronics Group of the Electronic Industries Association (EIA/CEG) for which I am Special Counsel. EIA/CEG represents substantially all of the domestic manufacturers of television receivers and some Japanese manufacturers which have manufacturing facilities in the United States.

At the hearings before your Subcommittee on Energy and Power on Wednesday of this week (May 11) on the appliance efficiency provisions of H.R. 6831, certain witnesses urged that the bill be amended to provide for preemption of state action on appliance efficiency not only for products which the bill would make subject to mandatory standards, but also for products for which the bill would give the Administrator discretionary authority to prescribe energy efficiency standards.

It is the position of EIA/CEG that television receivers should not be included in the program, even as they are in the pending bill as part of the "discretionary" list. Color television receivers of current makes use only about as much energy as a light bulb, and black and white receivers use only 40 watts or less. Great strides have been made in reduction in energy consumption by television receivers through the total

shift by the industry to solid state design and by the elimination of the "instant-on" feature. Since the greatest number of receivers are in the lower screen sizes, average wattage use is likewise lower.

Television receiver manufacturers have long had a strong economic interest to engineer for lower energy consumption. Since reduction of energy use in television receivers permits lower operating temperatures and increased reliability, this in turn results in lower warranty costs and lower servicing costs. In addition, reduction of energy use in television receivers permits use of fewer components and brings about dollar savings in manufacture of the product.

It is important, however, to leave some room for new performance features such as digital tuners which may involve relatively minor increases in energy use.

Commonly used figures on "average viewing time" for television receivers, such as 2,200 hours per year, reflect only a figure of interest to advertisers and broadcasters as to how long at least some television receiver in a household television receivers in use. EIA/CEG figures show that at least three-fourths of American households have more than one television receiver.

This is obviously not a case where more insulation could be built into an energy-using product. It is not a case where energy reduction is held back by any reluctance by the manufacturing companies to spend money and effort.

EIA/CEG strongly supports the proposition that the bill should preempt state action on products on the "discretionary" list, Congress will have decided that that is the appropriate nationwide regulatory parameter for that product, and therefore state action in attempting to impose energy efficiency standards and labeling requirements for such "discretionary" products should be precluded.

Our products are sold nationally, and incredible dislocation would result from trying to comply with different standards in different states on energy efficiency.

The television manufacturing industry is subject to intense profit and competitive pressures. Television prices have a remarkable record in relation to the Consumer Price Index. Television receivers entered the Consumer Price Index in 1950 at 159.7. By December 1974, the Consumer Price Index average for all items had risen to 147.7, but television receivers were at 98.9.

We are grateful for the fact that television receivers have been included in the "discretionary" rather than the mandatory list. However, for the reasons stated, we are convinced the energy conservation program will not be enhanced by inclusion of television receivers, even in the "discretionary" list.

In any event, we support preemption of state action both for products on the mandatory list and for products on the "discretionary" list.

I respectfully request that this letter be included in the record of the hearings on the appliance efficiency program before your subcommittee.

Best wishes.

Sincerely,

J. EDWARD DAY.

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MAY 20, 1977.

CONGRESSMAN JOHN D. DINGELL,
*Chairman, Subcommittee on Energy and Power, Interstate and Foreign Commerce, House of Representatives, Washington, D.C.*

DEAR MR. CHAIRMAN: My name is Jack M. Lynch. I am President of Energy Conservation Consultants, Inc., located in Minneapolis, Minnesota, a consulting firm formed to assist energy users in reducing their consumption of energy.

I wish to present testimony strongly urging that you recommend the use of the Infra-red camera survey to check all houses which are retrofitted with insulation, particularly where insulation is applied to an enclosed space which cannot be visually checked.

Permit me to tell what the camera does. The Infra-red camera detects heat loss from faulty insulation, inefficient window systems and defective heating, ventilating, and air conditioners in buildings. ECC's Infra-red camera takes heat pictures of buildings. These pictures, called Thermograms, are then analyzed to determine where heat or air onditioning is being lost, and how these heat losses can best be corrected.

Each structure is scanned inside and out for thorough analysis. Exterior camera scans show heat loss areas as light patches. Interior scans show cold areas as dark patches where heat is not retained.

The science of thermography is not new. There have been industrial applications in use for years and the military has used Infra-red cameras as far back as WW II for detection of troops and equipment.

Thermography has a multitude of applications. Included among those are electrical power line and substation surveillance and analysis to detect faulty insulators, switches, transformers, etc., locating defects in masonry structures, smokestacks, industrial furnaces, cancer detection and a host of many other applications in the medical and pollution-control fields.

A typical survey by ECC would include Thermovision scanning of a structure, analysis of building's window systems by air infiltration testing equipment and entering relevant data onto input forms which are then transmitted to the computer by means of a portable terminal. The portable terminal enables an evaluator to communicate directly with a computer from any ordinary telephone installation. He can get accurate energy usage information in minutes and pinpoint BTU losses and assign dollar values to those losses. The results are obvious. The building owner knows exactly where his energy losses are and can take corrective action without guessing at what means he should use in reducing energy costs.

Our common goal is the reduction of energy waste. Homeowners need to be educated and encouraged in the various ways to accomplish this goal. Many people in the country need insulation but are wary of being "ripped off" by insulation contractors—in fact, home improvement contractors of all kinds, not just insulation contractors. They are afraid and hesitant to deal with any such contractor.

If an Infra-red check were to be made a prime part of the insulation sales contract, however, it could provide the needed reassurance that each homeowner would be guaranteed a proper insulation job done on his home. The word would spread and more people would feel confident in getting insulation installed in their homes.

This has already happened where insulation contractors do offer an Infra-red thermographic check on their work as part of their sales contract. In Minneapolis, Jim Harding of Harding Home Insulators says his business has doubled in the last year since he started offering an Infra-red check as part of his sales contract.

The cost of an Infra-red heat-loss check on a house done on a reasonably high volume basis would run no more than fifty dollars per house and probably less in the future. The cost would come back in many more ways than may appear at first glance. Some of the advantages of such a check are:

1. It could lead to a sharply increased number of homeowners insulating their homes and, therefore, a much increased energy conservation rate across the country resulting in savings to the homeowners.
2. An Infra-red check would also serve as a quality control and policeman in an industry where, unfortunately, some contractors and insulation application people are inept, or careless, or ignorant of proper insulation methods.
3. These people, who do a disservice to a valuable industry, would be removed from the insulation retrofit field because they know their work cannot stand up to the test of an Infra-red check before final payment.
4. Applicators, whether using foam, mineral wool fill and cellulose or any insulation retrofitting materials, will be considerably more careful about doing the job right when they know their work can be checked.
5. An Infra-red check would catch the inevitable voids and omissions where insulation is not completely or properly done in a certain number of houses from week to week and month to month.
6. There should be far fewer error-prone jobs because the camera check will show them up.

The use of the Infra-red camera check would be the single most effective action to provide certain necessary basic requirements for good insulation practices in the retrofitting of homes. The same principle applies to any structure, whether used for manufacturing, storage, office buildings, etc. It's almost one hundred percent protection—as close as practically possible.

The Infra-red camera is an invaluable tool to evaluate efficiency of retrofit measures.

Sincerely yours,

JACK M. LYNCH,
*President, Energy Conservation Consultants, Inc.,*
*9001 E. Bloomington Freeway, Bloomington, Minnesota 55420.*

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WESTERN UNION MAILGRAM

HONORABLE JOHN D. DINGELL,
*Chairman,*
*Room 3204, House Office Building, Annex 2, Washington, D.C.*

HONORABLE CHAIRMAN DINGELL: Please consider the following remarks related to President Carter's appliance energy conservation legislative programs to be pre-

sented before the Energy and Power Subcommittee of the House Interstate and Foreign Commerce Committee on Wednesday, May 11, 1977.

Litton Microwave wholeheartedly supports the goals of the Energy Policy and Conservation Act. As far back as last February, 1976, we became involved with clarification of the goals of the program and sought to develop our own program in early compliance to the act. After meeting with FEA officials announce our program last May, 1976, in Washington. Both government officials and the media were informed.

Microwave ovens are already great energy savers using one-fourth to one-half the energy of conventional electric ranges. With a projected market saturation of 50 percent by 1985, microwave ovens users could save 32.3 billion kilowatt hours of electricity and 1.1 billion dollars at current energy rates. Recognizing this potential, we introduced our energy labeling and conservation program for our microwave ovens and ranges. We felt that consumers had a right to improved retail information describing the annual cost of operation of a product they were intending to purchase.

Our annual cost of operation tags placed on products as early as last May allow the consumer to make side by side comparisons of microwave ovens, double oven ranges, combination ranges, and conventional electrical ranges. The consumers are the ones entitled to this information to make a wise purchase decision which we feel they can if they are provided with pertinent facts.

Today, the question of whether voluntary improvement targets should be replaced by mandatory efficiency standards is being debated. There is a compelling argument toward minimum standards, with the certainty that consumers will be able to assert their purchase options in the most constructive manner.

Energy development has been suggested as an alternative to energy conservation. In the case of major appliances, such as ranges and ovens, development of technologies that inherently reduce energy should be supported.

Microwave ovens, as a singular unit or as the second oven of a standard conventional electric range, can reduce energy consumption dramatically without the required discipline of a conservation effort. A labeling program that measures the total energy required to complete a task is far more realistic than labeling component parts.

Therefore, microwave ovens and ranges, both double oven and combination ranges, should be considered one unit and labeled accordingly. An appliance energy program would offer the greatest motivation for energy reductions. Consumers could make purchase selections with considerations for the product offering greatest energy reductions.

Overall, Litton Microwave Cooking Products supports the Energy Policy and Conservation Act and has already proceeded with a program to implement the goals implicit in the Act.

1. We have developed comprehensive testing procedures to do a side by side comparison for cooking appliances in the home.

2. Annual cost of operation is still the most meaningful way for consumers to relate to energy consumption. This can be reduced to dollars and cents, the language that every consumer understand—their pocket book.

3. We at Litton Microwave Cooking Products have daily communications with consumers through our toll free 800 line. Among the 5,000 consumers that call us each month, we have frequently heard the need for energy comparison facts at the retail level.

4. Litton has an internal commitment to further reduce energy consumption in our products by 20 percent by 1980 without passing along additional costs to the consumer.

5. Creative design and advanced technology can allow creative solutions to reducing energy consumption in appliances without necessarily adding cost to the product.

6. Microwave ranges should be labeled as one unit, not the component parts.

Litton Microwave Cooking Products feels committed to reducing energy consumption in the production and design of our appliances which can then be passed on to the consumer in reduced electrical costs in the home. If we can present our program as an example of industry seeking to work cooperatively with government, we would be happy to work further with your department.

Regards,

VERNA M. LUDVIGSON,
*Director, Consumer Affairs, Litton Microwave Cooking Products,*
*1405 Xenium Lane North, P.O. Box 9461, Minneapolis, MN 55440.*

[Whereupon, at 5:50 p.m., the subcommittee adjourned, to reconvene at 10 a.m. May 12, 1977.][1]

[1]The proceedings of May 12 and 13 may be found in part 2 of these hearings.

# NATIONAL ENERGY ACT

MONDAY, MAY 16, 1977

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY AND POWER,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
*Washington, D.C.*

The subcommittee met at 10 a.m., pursuant to notice, in room 2322, Rayburn House Office Building, Hon. John D. Dingell, chairman, presiding.

Mr. DINGELL. The subcommittee will come to order.

The subcommittee is meeting this morning to consider part C of the National Energy Act. This part proposes a program of Federal grants to States which will then use the funds to assist public and nonprofit private schools, undergraduate colleges and hospitals to implement "energy conservation measures." The States will use the money to finance up to 40 percent of any project and the remaining 60 percent must come from non-Federal sources. The administration proposes to authorize the expenditure of up to $900 million for this program.

The Chair is very much aware of the importance of this program in helping to conserve energy and, particularly, in helping schools, colleges and hospitals deal with the staggering increases in energy costs experienced over the past few years.

The Chair is, however, aware of a number of very serious questions about the program as authorized in the recent proposal.

Before proceeding with a discussion of some of these questions, the Chair would like to point out that part C, as submitted by the administration, contains an error in the numbering of sections. The section numbered 303 should actually be section 392 and all the subsequent sections should be renumbered accordingly.

All across the country today, schools, colleges, hospitals and State and local governments are experiencing serious problems in raising capital funds. At full funding, this proposal would require that they find the means to raise $1.4 billion additional capital in order to avail themselves of the $900 million Federal contribution.

It would be a cruel joke to enact this program only to find that the institutions it is designed to help cannot raise the funds to use it and this is one of the questions the Chair will be addressing itself to this morning.

This is not the kind of decision that can be based on guesses or estimates made in Washington. This subcommittee will require proof that non-Federal funds are reasonably available to make the program work. Let me stress, we will require proof, not assurances.

Parenthetically, I will make the comment that the administration has been rather less than careful in presenting the necessary assurances with regard to a number of immediate programs that have been coming forward and the Chair does intend to see to it that the hard information that the committee needs is made available, if it is available, to the administration and if not, the Administration quite clearly points out that it does not have the information.

Questions have been raised as to whether the 40 percent Federal contribution is sufficient to trigger such massive capital expenditure as this measure contemplates. This subcommittee would like to know how that breakdown was arrived at and what evidence there is that it will stimulate the necessary action on the part of States, local governments and institutions. Were the non-Federal people who will be involved in implementing the program consulted? If not, why not? In this connection, the Chair notes that of all the non-Federal sources that the subcommittee staff talked to in preparing for this hearing, only one had been consulted or, in fact, ever even heard of the proposal before it was presented to Congress.

It has been suggested that institutions may be able to finance energy conservation projects out of the savings that they will experience in energy costs. This is a very nice response to a question, but it is potentially a very deceptive suggestion. There is no question that savings will be achieved, but increased fuel costs and inflation in general can more than eat up those savings.

Indeed, the committee found that increases in cost because of lower consumption tended to keep prices to consumers almost as high or perhaps higher than prior to the time that the conservation measures went into place. An example comes to mind. The Lincoln, Nebraska school system reports that although it decreased its energy consumption by 36 percent in one year, its energy costs actually increased. To be sure, without conservation they would be paying more, but to automatically assume that conservation will bring about equivalent reduction in expenses could lead to serious financial problems and it could be very deceiving.

It is important also that we know with some exactitude what the program will achieve, what its goals are. The Federal Energy Administration has indicated that implementation of the program at full funding will reach 35 percent of the Nation's schools, colleges and hospitals and result in energy savings equivalent to 125,000 barrels of oil per day by 1985, when the full effect of the program is expected to be felt.

One must inquire as to why we are reaching 35 percent of the schools when we ignore the other 65 percent. Other sources, however, have indicated that this program may only reach 24 percent of the Nation's primary and secondary schools. The subcommittee will expect the Federal Energy Administration to come forward with specific goals and to provide reasonable substantiation of these goals. In this connection, the Chair feels that the lack of a state-

ment of purpose in this part is a flaw which should be corrected and requests the FEA's assistance in setting clear, accurate and reasonable goals in the legislation.

There are two other areas of major concern.

First, three years seems to be a very short period of time in which to implement a $900 million program reaching thousands of schools, colleges and hospitals across the country, particularly in light of the fact that setting up the administrative machinery could take as long as 300 days under this bill. We seldom resolve problems of such magnitude by just standing back and throwing money at them. It may be well to consider stretching out the program over a longer period of time and providing more time for planning at the beginning.

Second, a number of the administrative problems that the subcommittee has observed under this proposal seem to arise from a lack of appreciation of the problems of hospitals, schools and colleges and the existing State laws regarding them. The subcommittee would like to consider ways of building awareness of these important factors into the mechanism that would implement this legislation.

In closing, the Chair hope that the witnesses this morning will address themselves to two areas of apparent discrimination in the bill. The first is the language that seems to exclude parochial schools and religious institutions which I understand was not the intent of the Administration.

The second is the language that would discriminate against the aging by barring the 3,803 private, nonprofit nursing homes in the Nation as well as the 937 nursing homes owned by State and local governments from the program. It is hard to understand the reason for eliminating these institutions from the program, many of which are old and energy inefficient and most of which are terribly burdened by energy costs.

There are a number of other matters of concern to the subcommittee which we hope to develop in questioning. Now is the time, however, to welcome our first witness, the Honorable David J. Bardin, Deputy Administrator of the Federal Energy Administration.

Mr. Bardin, we are pleased to have you with us. If you will identify yourself fully for the record and the two associates with you, we will be pleased to receive your statement.

I would suggest it might be prudent to insert your full statement in the record and to summarize.

**STATEMENT OF DAVID J. BARDIN, DEPUTY ADMINISTRATOR FOR POLICY, FEDERAL ENERGY ADMINISTRATION, ACCOMPANIED BY ROBERT F. HEMPHILL, JR., ASSOCIATE ASSISTANT ADMINISTRATOR FOR CONSERVATION POLICY, AND HARRY YOHALEM, ASSISTANT GENERAL COUNSEL FOR LEGISLATION**

Mr. BARDIN. I will be happy to do that, Mr. Chairman, and let me express my appreciation for an opportunity to assist this subcommittee in its diligent and careful work on behalf of the Congress and the American people in these series of hearings you are conducting on President Carter's proposed National Energy Act.

I am David J. Bardin, the Deputy Administrator for Policy of the Federal Energy Administration. Accompanying me at the table, at your left, Mr. Chairman, is Mr. Robert Hemphill, the Associate Assistant Administrator for Conservation Policy. At your right is Mr. Harry Yohalem, the Assistant General Counsel for Legislation. Also accompanying me in the room are professional staff members, Mark Friedrichs, Program Analyst, and Julie Richardson, attorney-advisor. They will undoubtedly be able to assist me at points in handling questions I might not otherwise be fully expert upon.

We have a statement which I ask be included in the record in full.

In connection with the Chair's opening remarks I would like to point out that appended to my statement are relevant portions of the bill as introduced, with the typographical error in section numbers corrected by hand for the convenience of the committee and readers of the testimony.

Mr. DINGELL. We thank you for that, Mr. Bardin.

Mr. BARDIN. The proposed energy conservation program for schools and hospitals appears in title I, part C of H.R. 6831. That bill contains the entire proposed National Energy Act President Carter sent up to the Congress for its consideration. The program for schools, including colleges and hospitals that is under discussion today should be considered in the context of the entire conservation program for the so-called commercial buildings sector. The commercial building sector includes hotels, office buildings, profit-making buildings of all kinds as well as governmental buildings, governmental offices, and the particular buildings under discussion.

The total program to conserve energy in the commercial building sector includes several initiatives, notably the additional 10 percent investment tax credit for existing commercial buildings, which appears in another portion of H.R. 6831.

There are also programs not involved in this legislation, including funding to be made available under the local public works jobs program, which President Carter signed last week. He called for an emphasis on using that program for conservation purposes in existing buildings as well as new construction, and that would reach public buildings, including city halls, firehouses, public libraries, as well as schools or hospitals.

There will be a Federal buildings program where, by Executive order, the President will direct conservation measures in the Federal building portion of this sector; the accelerated development of performance standards for all new buildings, including the commercial buildings in this sector; and there will be the overall impact of the energy tax and pricing proposals.

All told, this package of proposals is intended to treat all energy users equitably and to share the cost of energy conservation investments so the total job gets done.

Now, let me focus upon the particular sector at issue in the portion of the bill under discussion today, Mr. Chairman, the public and nonprofit elementary and secondary schools, colleges and universities and hospitals.

This subsector uses about 2.3 quadrillion Btu's of energy per year. That is the equivalent of 1.15 million barrels per day of oil, and that is about 3 percent of total U.S. energy consumption.

This subsector, which I refer to as the schools and hospitals subsector, spent over $4 billion last year to meet its energy needs. That was an increase of more than 50 percent over the expenditures in 1973. It lost 40 million pupil days last winter due to gas shortages in 13 States forcing school closures. In many cases those days lost will not be made up.

The subsector owns over 200,000 buildings with about 7.1 billion square feet of floor space. That represents about one-quarter of the total floor space of the entire commercial building sector. So it is a significant element in building fuel use.

Saving energy in existing buildings is essentially a two-step process. The first step identifies and implements operational and maintenance actions. These operational and maintenance actions can save on the order of 15-30 percent of the fuel use in the buildings. These actions are the relatively low-cost actions.

The second step would make energy-conserving capital improvements, costlier improvements, and these steps are estimated to save an additional 15 percent of fuel consumption.

Not nearly enough has been done. I think there are 3 major reasons to holding back retrofitting for conservation in this sector. There is the problem of a lack of technical expertise in the thousands and thousands of school districts and other organizations that own and manage these buildings. There is the problem of obtaining financing; the difficulties that you, Chairman Dingell, alluded to in your opening statement. Finally, there is the simple problem of other priorities in management and in budgeting for these systems.

If I could illustrate with an experience we have had in New Jersey, which cabinet I just left, where they had a situation in one of the towns, West Milford, which was fortunate in having a candidate for the school board coming from the engineering department of one of the big national manufacturing companies in the country. He promised, if elected, he would implement fuel conservation measures which would save at least 15 percent of the fuel use in the school buildings of West Milford and get it done within 6 months.

He was elected. He carried out his programs, actually achieved a 20 percent fuel saving within 6 months and did it at virtually no cost by changing the way in which the buildings were operated, the existing facilities were operating, without an investment in new equipment or new facilities.

Now, West Milford would like to go further on the capital investment portion, but they have come up against costs which total thousands of dollars per school building. As far as technical expertise goes, West Milford was fortunate that they had a conscientious, public-spirited, competent engineer who ran for office and, in effect, gave them free engineering service.

That is so far the exception rather than the rule, and one of the key elements of a helpful Federal program will be to provide and stimulate that kind of expertise to school districts and other energy-using nonprofit organizations throughout the country.

The Federal Energy Administration, the Energy Research and Development Administration, and other agencies, including the Department of Health, Education, and Welfare, are trying to help

schools and hospitals obtain technical assistance, and this Congress has acted to get that program of technical assistance started.

The additional proposal that President Carter has put before you will, if enacted by the Congress, provide up to 40 percent of the costs of energy-conserving capital improvements, and that is the subject of today's hearing. By combining the two, these efforts will hopefully establish the necessary commitment, stimulate the necessary momentum by States, school districts, hospital administrations, and the like.

The provisions of the bill include a 3-year program beginning in fiscal year 1978, which begins October 1 of this year. They include Federal grants to the States in the amount of $300 million per year. States would be funded to make grants of up to 40 percent of the cost of implementation and would administer the program subject to Federal guidance for schools and hospitals within the States.

Assuming that the States used a 40 percent grant across-the-board, the non-Federal organizations, either the institutions, themselves, or the institutions assisted perhaps by State aid, would have to put up $450 million per year as their share. That $450 million per year represents less than 5 percent of the annual capital outlays by schools and hospitals by this subsector for all capital purposes.

That $450 million per year represents less than 15 percent of the annual expenditures by the subsector to meet its energy needs. That $450 million should be returned in savings, as compared with what they would be paying otherwise at whatever will be the fuel prices—a separate question, in my judgment—in less than 4 years. That is a pretty good payback.

The intention of the Carter administration is to provide financial assistance to as broad a range of schools as possible, as you correctly stated, Mr. Chairman, at the opening.

The bill does contain language which excludes facilities from which such assistance might be constitutionally impermissible. We certainly do not want to trench on any constitutional provisions. It is our intention to reach any parochial school facilities for which such assistance is constitutional.

I might say that when a school is on fire, we send in the fire department to act. We don't ask, is it a parochial school or prep school or public school; we send in the fire department to put out the fire. Now in this case America's house is on fire. We are just burning too much energy; with case after case of waste. It is important, subject only to the limits of what the Constitution prescribes, that we reach out to the situations of waste and see to it that we end the unnecessary consumption of energy and the waste of fuel.

This is certainly a program dealing with energy. It is not a school program. As I have emphasized at the outset, we are dealing with energy all across-the-board in the total bill and particularly energy consumption within the commercial building sector. That is the critical point of departure.

One of the choices that has to be made in administering the bill at the Federal level and again at the State level would be the cost-effectiveness of energy efficiency measures, and factors such as

climate and need. That is where the focus will be. The focus will not be on education. Certainly, there are two reasons to exclude the chapel in a sectarian college. Aside from constitutional questions, the fact is there are a relatively few hours in a week that such a chapel is used.

So we want to focus the expenditure of Federal money, the timing and the emphasis of the program on the maximum benefits and concerns of energy conservation. Ninety percent of the funds under the bill would be allocated to the States by a formula to be based on population, climate and other appropriate factors. Ten percent would be allocated by the Administrator according to need so that we have an adjustment factor to supplement a formula factor that will be developed.

States would be required to give equitable consideration to all eligible institutions regardless of ownership. We are going to give the States considerable latitude, but it is going to be a supervised latitude in running the actual grant program. The use of funds for State administrative costs would be limited. The States would be required to see to it that operational and maintenance actions be taken in addition to the capital investment actions.

The bill would specify the eligible conservation measures which could be funded under the terms of the bill.

I brought with me, Mr. Chairman, one example of an automatic energy control device. This is an attachment to existing radiators that has been developed by one of the leading control companies. It is under test by ERDA now. It enables you to make a thermostatic setting from minimum to maximum, for what temperature you want in the room. The thermostat inside which is a very little piece of equipment, controls an aperture which allows more or less steam or hot water—it works on either system—into the radiator and thereby you can retrofit the radiators which are so common in our older buildings. It can be used in private homes and office buildings as well as the school and hospital sector.

The experiences from the preliminary report ERDA gives us from testing this equipment with the housing authority in New York City is they are achieving fuel reductions of 10-15 percent with this equipment alone.

Mr. DINGELL. Is that on the market? Are there problems with the private standardmaking sector?

Mr. BARDIN. In answer to that question, Mr. Chairman, I am told as follows: This particular device will not be on the market until the testing is over this summer. But it could be on the market very quickly, and they don't think there is any problem getting it on.

Mr. DINGELL. Is there any problem with the private standardmaking institution, American National Standards Institute? We seem to be having substantial difficulty with those folks in terms of making them move in getting things on the market.

Mr. BARDIN. I am delighted to take the occasion of your question to supply an answer for the record after we touch base with them. I would be surprised if there is a problem, and I think it would be a good occasion to check that out.

This equipment was estimated to cost $25 initially, with estimates that effective mass production would reduce it very drastically to a fraction of that amount.

Interestingly, I am told that 20 years ago we had such devices in use in America. I am told comparable devices are common in Europe. So it is not as if we are inventing the wheel. It is really a question of learning how to reuse this kind of equipment and put it to work.

[The following information was received for the record:]

Generally, local building codes do not restrict the application of devices, such as thermostatic radiator valves, that pose no apparent risk to the building occupants. Furthermore, applications in both Europe and the United States of the thermostatic radiator valve under question, as well as similar devices, have demonstrated that they can be effectively and safely utilized. Other types of thermostatic valves have, in fact, been used successfully in the United States for many years. Consequently, the device displayed to the subcommittee could be marketed in the United States without the formal approval of the private standards-making organizations, such as the American National Standards Institute. Nevertheless, because there are no accepted standards for the manufacture and use of this type of thermostatic radiator valve in the United States, the manufacturer is working with professional groups established under the auspices of the American National Standards Institute in order to develop consensus standards to govern the quality of such devices manufactured in the futures.

Mr. BARDIN. The bill before you, Mr. Chairman, would authorize the necessary funds for FEA's administrative costs, including both grant processing and technical assistance. If fully funded, the program would finance improvements saving 25-30 percent in energy in the buildings involved, which we estimate at over one-third of all school and hospital buildings in the country, and that, in turn, would save the equivalent of 100,000-125,000 barrels per day of oil, which is roughly one out of 10 barrels that the sector as a whole is now consuming.

In my personal judgment, after reviewing the assumptions underlying these estimates, which I believe have been furnished to the staff of the committee—and we certainly want to share with the committee—there is an element of conservatism in them that you should be aware of. It assumes that the whole program works on an equal-per-square-foot basis all over the country, whereas, in fact, we are going to be asking the States to concentrate on those opportunities for maximum fuel efficiency, so if a building is used 7 days a week in one case and one day a week in another, there should be a priority on the higher usage. If one part of the State has a more severe climatic problem than another, that should be taken into account, and the like.

That concludes my summary of the bill, Mr. Chairman, and I would be delighted to undertake to respond to such questions as the subcommittee may have.

[Mr. Bardin's prepared statement follows:]

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

Mr. Chairman and members of the subcommittee, I welcome this opportunity to discuss with you President Carter's proposal to establish an Energy Conservation Program for Schools and Hospitals by Title I, Part C of the National Energy Act (attached).

I will not reiterate what others have already said about the need for conservation. I think it is important to emphasize, however, that the proposal to establish an Energy Conservation Program for Schools and Hospitals is only one of several key proposals made by President Carter to encourage energy conservation in the commercial buildings sector. Specifically, the President has proposed an additional 10

percent investment tax credit for energy conserving capital improvements to those existing buildings owned by commercial businesses. For existing buildings owned by State and local governments, other than schools and hospitals, the President has directed the Secretary of Commerce to encourage applicants for funds under the local public works program to include energy conservation measures for existing buildings. With respect to existing Federally-owned buildings, the President will issue shortly an Executive Order directing all agencies to develop plans aimed to achieve a reduction of 20 percent in energy use by 1985. All newly constructed commercial buildings would be covered by the energy performance standards now being developed by the Department of Housing and Urban Development. The President has called for the accelerated development of these standards and their rapid adoption by the States. In addition, the energy tax and pricing provisions of the National Energy Act would provide added incentives for all energy users, including commercial businesses, and schools and hospitals, to further reduce their energy use.

I hope it is clear that the President's proposals are designed to treat all energy-users equitably. Individual energy users, particularly those who consume excessive amounts of energy, would prefer unlimited financial assistance for conservation without any of the necessary increases in energy prices. But the costs to the Federal Treasury and, ultimately, to taxpayers would be unacceptably high under such an approach. Consequently, it is important that the costs of making our existing stock of energy using equipment and facilities more energy efficient be shared. The proposed Energy Conservation Program for Schools and Hospitals is no exception to this rule.

Before I discuss the specific provisions of the President's proposal for schools and hospitals, I would like to discuss the energy use characteristics of this sector and some of the problems it has faced in taking effective actions to conserve.

Nonprofit elementary and secondary schools, colleges and universities and hospitals consume about 2.3 quadrillion Btu's of energy per year or the equivalent of about 1,150,000 barrels of oil per day. In 1976, these institutions spent about $4.0 billion on energy; this represents about a 50 percent increase over their energy expenditures in 1973.

These increasing energy costs and the shortages of natural gas of this past winter have adversely affected all sectors of the U.S. economy, but have probably hit schools and hospitals harder than almost any other sector. Because public schools and other institutions often operate on fixed budgets, they are experiencing much difficulty in absorbing these increases. In many cases, school administrators are being forced to curtail educational services in order to pay for the energy they consume. In addition, during the past winter, over 40 million pupil days were lost in 13 States due solely to fuel shortages, and it is estimated that only about one-third of these lost days will be made up.

There are estimated to be over 200,000 school and hospital buildings in the United States, with a total of about 7.1 billion gross square feet of space. This represents about 25 percent of the total square footage in the commercial buildings sector. Generally, these buildings were constructed so as to minimize the initial cost, without regard to the costs of energy that would be economically justifiable given today's energy prices and the increases that are anticipated. Furthermore, most of these buildings will still be in use 20 or even 30 years from now. Fortunately, a wide variety of actions can be taken to increase the efficiency of energy use in these buildings.

There are two essential steps that can be taken by schools and hospitals to save energy. The first step is to survey existing buildings to determine how much energy they use and to identify and adopt energy conserving operating modifications. These conservation measures, such as adjusting lighting, ventilation and temperature levels, do not require major capital investments and can readily save 15 to 30 percent of the energy used in an average building. The second step is the implementation of capital improvements, such as added insulation, which increase the overall energy efficiency of the building. Such capital improvements can be expensive, but would normally result in the realization of an additional 15 percent reduction in energy use. The resulting dollar savings should more than offset the costs of the initial investment.

Although implementing such a conservation program could save millions of dollars a year, only a small percentage of all schools and hospitals have taken effective action. There are three major reasons why conservation measures are not being implemented. First, a general lack of technical expertise has made it particularly difficult for school systems to take effective actions to conserve. Second, it has sometimes been difficult for these institutions to obtain financing for major capital expenditures to improve the thermal efficiency of their buildings. For public schools,

large capital investments are often not possible without additional bond referenda, which have normally resulted in substantial time delays and have often been rejected by the communities. Third, schools, hospitals and States have often placed higher priority on objectives other than the establishment of effective conservation programs.

The Federal Energy Administration and the Energy Research and Development Administration have initiated several efforts to help schools obtain the technical assistance necesary to initiate a conservation program. With respect to the financing of capital improvements, the President's proposal for Federal grants to States for schools and hospitals would provide 40 percent of the cost of eligible projects. Furthermore, the clear statements by the President concerning the necessity for energy conservation, together with the commitment of Federal financial and technical assistance, will hopefully establish the commitment on the part of States and other participating institutions that is essential to an effective conservation program for schools and hospitals.

I would now like to turn to a detailed discussion of the provisions of Title I, Part C of the proposed National Energy Act. These provisions of the President's legislative proposals would establish a 3-year Federal program of grants to States for energy conserving capital improvements to existing schools and hospitals. Federal grants of $300 million for each of the 3 years, beginning in Fiscal Year 1978, would be authorized to pay for 40 percent of the project costs incurred under the program. Sixty percent of the costs would have to be borne by the States, local governments, and institutions participating in the program. If the full authorization is appropriated, the required matching funds would amount to $450 million per year. This represents less than 5 percent of the total annual capital outlays of these institutions, and less than 15 percent of the annual expenditures of these institutions on energy. Furthermore, it is our estimate that these initial costs will, on average, be returned to the participating institutions in less than 4 years. Therefore, I do believe that the Federal funding that would be provided by the legislation represents a reasonable share of the total costs of making energy conserving capital improvements.

In developing this program, it was the Administration's intention to provide financial assistance to as broad a range of schools as possible. However, the definition of eligible school facilities does contain language which was intended to exclude those facilities for which such assistance would be constitutionally impermissible. It is our intention to reach any parochial school facilities for which such assistance is constitutional.

Ninety percent of the Federal funding under this program would be allocated to the States according to a formula based on population, climate and other appropriate factors and 10 percent would be allocated by the Administrator after taking into account the availability and cost of energy used in schools and hospitals, as well as other factors. The intent of these provisions of the bill is to ensure that the funds are allocated to those States where energy costs are particularly high and the prospect of shortage great. Under the legislation, States would be required to establish procedures to ensure that equitable consideration is given to all eligible institutions regardless of type of ownership.

There are also provisions in the legislation to ensure that the funds are used for the purposes intended and that administrative costs are minimized. First, the legislation would direct the Administrator to issue regulations limiting the amount of funds which may be expended by States for administrative expenses. Second, the energy conserving capital improvements eligible for assistance are specifically set forth in the bill. Third, there are provisions which would ensure that the energy savings resulting from the program would be maximized, such as a requirement that States establish procedures for implementing the low-cost, energy conserving operational and maintenance practices which should always be the first step in any conservation program for buildings.

Finally, the proposed legislation would authorize such sums as may be necessary for each of Fiscal Years 1978, 1979 and 1980 to cover the Federal Energy Administration's administrative costs for this program. It should be noted that funds will be essential not only for the prompt development of the necessary regulations and the processing of State grant applications, but would also be used to develop and make available to the States information to assist them in establishing effective programs in these areas.

If this legislation is promptly enacted and fully funded, we estimate that approximately 35 percent of all eligible school and hospital buildings would receive financial assistance for energy conserving capital improvements under this program; saving

from 0.2 to 0.25 quadrillion BTU's per year by 1985 or the equivalent of 100,000 to 125,000 barrels of oil per day.

In conclusion, we believe that the legislation under consideration represents a substantial and essential contribution of Federal resources to the achievement of energy conservation in schools and hospitals. To be successful, it will also require the commitment of significant resources by States and the participating institutions. But by making such a commitment, we estimate that these institutions would be able to reduce their energy expenditures by 25-30 percent on average—sufficient to rapidly pay back their initial investment. Furthermore, these benefits would continue to increase over the years. Clearly, it is in the interest of the Federal Government, the States and schools and hospitals to join together in working to achieve energy conservation in this sector.

I would now be happy to answer any questions you may have.

Mr. DINGELL. Thank you, Mr. Bardin.

The Chair recognizes the gentleman from Louisiana, Mr. Moore, for 5 minutes.

Mr. MOORE. No questions.

Mr. DINGELL. The Chair recognizes counsel for questions.

Mr. BARRETT. Just for the sake of the record, Mr. Bardin, could you indicate whether that device you have shown the subcommittee this morning would be qualified under the administration proposal?

Mr. BARDIN. Yes, Mr. Barrett. The proposed section 391 that would be added by this legislation to the Energy Policy and Conservation Act, includes a definition of the eligible energy conservation measures. That would be 391(2). And under that, you will find (c), Automatic Energy Control Systems.

I think it is important to appreciate, and I appreciate your highlighting it with your question, that automatic control systems doesn't necessarily mean a piece of fancy computer technology way out there in the space age and all the rest. It can mean something as simple as the hardware that I have with me here today.

Mr. DINGELL. If counsel would yield, could I ask this question?

I observe you have listed, and I think wisely so, a large number of items which can be covered under section 391.

Now, would we not be prudent to say "means but is not limited to," because under that section, as I read it, it could be limited to just those things which are enumerated?

Mr. BARDIN. I understand your question, Mr. Chairman, and the philosophy of administrative flexibility that it suggests I would normally be very sympathetic with. In this case we have tried our best to come up with a good list, and we think we have a good list in terms of present technology. I grant you we hope the technology will evolve. Other people may suggest modifications, and we would be happy to look at any changes people have in mind for the list. But harking back to a point you made in your opening statement, it seems to me that you have a problem in getting these programs started off and rolling.

So, at least initially, I would urge upon you the principle of including a defined list in the Act of Congress so that we can get moving as fast as possible. If, in the light of the experience in running the legislation for the first couple of years it seemed that it was necessary to add flexibility, so be it. But there is a great virtue in a new program—knowing how slow it has been to start some of these other conservation programs which Congress has already provided for—in settling on a list for this purpose, so that it is not a

subject of bickering, or debate, and uncertainty between the Federal Government and the States and between the States and the grant recipients.

Mr. DINGELL. Mr. Barrett?

Mr. BARRETT. Mr. Bardin, there has apparently been a policy decision to exclude nursing homes from the legislation. Could you explain to us why nursing homes, if they are not for profit, if they are State or private institutions which are not for profit, should be excluded?

Mr. BARDIN. The Federal Government has less experience, I believe, with nursing homes than it does with programs for hospitals, Mr. Barrett, and I believe one of the factors that led to the particular formulation that you have before you is the fact that most of the nursing homes are investor-owned, so that the investment tax credit is relevant.

Of course, one of the fundamental underlying factors in this portion of the bill is that the investment tax credit is of no help to the nonprofit sector.

We believe that most States do not have experience in managing a Federal program that assists nonprofit nursing homes and that they may not be as urgently called for. On the other hand, if the information developed by the committee suggests that the nonprofit nursing home or the public nursing home sectors have these needs and ought to be considered, we would be ready to work with the committee and its staff to consider that extension.

Mr. DINGELL. I would point out to you, Mr. Bardin, that there is a fair probability that given the feeling of folks in the nursing home business, at least in the nonprofit aspect of the things, that States and local governments would put forth a major effort to achieve that particular end. I am not prepared to tell you what the consequences of that effort will be, but there is every possibility they will prevail, and I would suspect the administration would be prudent to move toward getting language with which the administration can live in this area at an early time.

I am not telling you to endorse it, but I am suggesting that you do face the possibility of being overrun and having less than adequate or desirable response by the Congress to the request to the folks in that particular industry. So I would suggest in the interest of all of us that you commence with drafting down there what you want as a matter of policy and the best thing you think you can live with.

Mr. BARDIN. I understand the suggestion, Mr. Chairman. I think one of the striking facts in reviewing the material available to the administration in putting the proposal together is the extent to which the school sector has over the last couple of years put together very comprehensive information on their fuel and energy problems, and, of course, one suggestion I would have, in turn, to the subcommittee is to see the extent to which the nursing home sector, the nonprofit nursing home sector, has that kind of information that it is able to put forward to guide your policy.

I would strongly suggest that the profit-making nursing home sector, which I understand accounts for over 70 percent of the nursing homes, be covered by the programs for other profit-making, tax-paying commercial businesses.

Mr. DINGELL. I made it clear to you I don't speak on behalf of including that segment of the nursing home industry, the profit-making sector in the legislation before us.

Mr. Barrett?

Mr. BARRETT. In your statement on page 7, Mr. Bardin, you indicate that it is the intention of the legislation to reach any parochial school facilities for which assistance is constitutional, but, as I read the proposed legislation, page 36 of the bill, lines 8-15, it would seem that it excludes all parochial institutions and all the facilities thereof.

Am I reading that correctly or incorrectly?

Mr. BARDIN. This is a good question, Mr. Barrett, and I wouldn't want to mislead you as to the particular language of the bill. There are two definitions that are relevant. One is the definition of school, which appears on page 35 of the bill, line 4, and that definition is certainly broad enough to cover the nonprofit parochial schools. As far as I know, all the parochial schools are nonprofit. So there is no problem with the definition of the school.

The question arises on page 36, line 8, the definition of school facilities. Now, that definition, as I understand it, comes from language that Congress adopted in the Higher Education Facilities Assistance Act, and those who have reviewed it feel confident that that will meet any constitutional test. In that context, if you think of a college, say, a sectarian-supported college with 20 buildings, 8 buildings might be dormitories, and 1 building might be a chapel and 2 buildings might be laboratories, and 1 administration building and a cafeteria, and the rest would be classrooms. I would assume that there is no question that the dormitories are eligible facilities, even if people pray in the morning and pray in the evening when they rise and go to bed, et cetera.

At the other end, I assume that the chapel is clearly a place for religious worship, although you might have a university or college that uses a chapel mainly for dramatic purposes or conservatory musicales or something else, but if it is just a chapel, that would be that.

Then you have the administration building, the cafeteria, and what-not, where I would assume the overwhelming purpose in any reasonable administration of this language would have to take account of the purposes involved.

Now, the question would arise if you have an innercity college, everything is in one high-rise building. I would hope the language allows reasonable latitude, reasonable flexibility to come up with a sensible result.

From the energy point of view, I say again, our purpose is to send out a powerful signal from Washington of what we would like people to do and fortify that by a grant program that would reach the best opportunities for saving energy. So, if it is constitutional, yes, we would be happy to consider any suggestions that the committee or its members wish to put before us and to consult with the legal talents available to us on that score.

We certainly wouldn't want to mix up the one with the other. This is a separate matter. Anything that is constitutionally impermissible, we don't want to touch, but what is allowed, we want to

distinguish so that we can foster it or require that that be part of the conservation effort.

Mr. DINGELL. The Chair is troubled with this. You have before us, I think, Mr. Bardin, a 3-year program, $300 million a year. Have you considered the problem of State legislatures that meet only every other year for purposes of considering certain things? For example, one year they will have budget, and the next year they will have substantive law before the legislative body.

Question: Do you build enough time into this program to afford your states the time to craft the necessary supporting State legislation so that they could qualify for Federal grants and have the program which would meet the approval of FEA for purposes of funding?

Mr. BARDIN. I would like to supply that for the record, Mr. Chairman, if I may. My experience in another Federal program, the water pollution program, certainly emphasizes the startup problem and the need for a carry-forward kind of provision.

[The following statement was received for the record:]

It is our belief that the vast majority of the States and eligible institutions would have sufficient time to develop plans and submit applications for assistance during Fiscal Year 1978, if the proposed legislation is enacted and the necessary funds are appropriated swiftly. Only five States, Montana, Nevada, New Hampshire, Oregon and Texas are not likely to hold legislative sessions during calendar year 1978, and we understand that all of these states have the authority to establish the administrative mechanisms necessary to participate in the program in Fiscal Year 1978 and to commit at least some State funds for matching purposes. Furthermore, although virtually all those States with annual budgets will shortly settle their Fiscal Year 1978 budgets, it is our understanding that Fiscal Year 1979 will commence for all but one of these States on or before July 1, 1978. Those States with biennial budgets, but with legislative sessions scheduled for 1978, have budget review procedures which would permit the appropriation of State funds for this program before the end of the Fiscal Year 1978.

Although a limited number of States and institutions may not be able to fully participate because of delays in developing their applications for assistance or in obtaining the necessary matching funds, it is our conclusion that the authorized level of funding for Fiscal Year 1978 contained in the President's proposal could be effectively utilized within that year. Nevertheless, so as to ensure that all States and institutions are treated equitably under the program, it may be desirable to carry over to the next fiscal year the funds that would be appropriated in Fiscal Year 1978. We are now examining the possibility of seeking a no-year appropriation.

It is important to emphasize that delay in providing this financial assistance would most severely affect those schools and hospitals which have already made a commitment to energy conservation and are, as a result, best prepared to make the energy conserving capital improvements eligible for assistance under this program.

Mr. BARDIN. On the other hand, the fact that you authorize $300 million in this fiscal year, if you do, as President Carter is recommending, gives the program the intent of the Congress of the United States, a kind of credibility in the eyes of the State administrators who have to go to their legislature, in the eyes of the Governor and all the program people at the State level, which otherwise would be a problem.

I know certainly in New Jersey that the school budgets are made now for the calendar year beginning January 1, so there is a problem in getting it started.

Somebody asked me outside this room whether there is enough funding here, and, quite frankly, I am concerned to get a message out to America; I think this Congress ought to be and will be

concerned to get a message which stimulates activity right away. But I would think that the early authorization makes sense because if you don't have that money in the bank, if you are not assured that commitment has been made by the Congress, you have the opposite problem. You get people geared up and fired up to get started, and then just in the normal process there may be a delay until the funds are forthcoming.

Mr. DINGELL. Mr. Bardin, I appreciate that fully, but the question here is, are the legislatures going to be able to conduct their affairs so to take advantage of this program in the time limits which you have set forth, and I appreciate your concern, and I join you in it, but I am troubled that they might not be able to do so.

You have indicated that you would submit that for the record, and I think that would be most helpful. But we are anxious to craft here a workable program, and I am sure you understand this is an important point.

Now, if we could go a little further, if you please. Can you convince us how the figure of $300 million was selected? I don't know what the amount of the market here is or whether you are going to wind up insulating some schools and hospitals and institutions of that sort, and not insulating others. Can you advise us, (a) how the figure was arrived at; (b) what is the amount of the investment that can be made; and (c) what is the total amount of need in this area, please?

Mr. BARDIN. I can give you some observations in response to your question, Mr. Chairman, but let me preface them with a fundamental observation.

There is a great deal of uncertainty in this area. The uncertainty, in my judgment, will be dispelled only by starting the program. You will have an oversight response, as we will in the executive branch, if this program starts.

What was done here is the following: Efforts were made to review the literature on what needed to be done; surveys of school buildings to see where there were opportunities for savings. One survey involved, as I recall, 765 school buildings, or thereabouts, around the country. That was a fairly general kind of survey. It involved not only the Federal Government but non-Federal organizations.

A much more intensive effort is now underway—actual on-site engineering inspections of just 10 schools around the country; what we call maxi-audits. On the basis of a series of studies the people involved reached the conclusion that at least 50 percent of the schools and hospitals, 50 percent of this subsector's phase, could reasonably be expected to benefit from a substantial effort involving not only the low-cost or virtually zero-cost operating and maintenance changes, but the capital improvement measures.

I want to caution you that that over 50 percent is an extrapolated judgment from relatively limited data.

The next step, as I understand it, was to try to figure out how much it would cost on the basis of average per-square-foot cost. Now there are roughly 5 different studies, a summary of which I think we furnished to the committee, and they indicate a very wide and disparate range of per-square-foot cost. As I recall, they range from a few cents per-square-foot to as high as $3 per square foot. Taking

both the construction investment cost and the estimated architect/engineering cost, the studies that were used by the administration came up with a figure of 88 cents per square foot as an estimated average cost.

I have got to warn you, somebody who would oversee the program, that this is not a solid figure. I don't personally believe you will have a solid figure until you undertake around the country the conservation measures not just in dozens, or even hundreds, but in thousands of buildings and begin to see what are the variables, what are the cost determining factors. Until that literature is collected by the engineers, and the building administrators, and, if need be, by the Federal Government, we won't have a very good handle on it.

It is estimated that the requested authorization of $300 million per year, for three years, would provide 40 percent of the costs of making energy conserving capital improvements to school and hospital buildings accounting for abut 35 percent of the total gross square footage of the eligible institutions. The requested $900 million over 3 years represents a substantial and, we believe, sufficient contribution of Federal resources. Furthermore, given our limited knowledge of the actual costs of making such investments, the requested authorization was designed not to exceed the total need in this sector. Using our current estimates, the total cost of retrofitting all of the existing school and hospital buildings that could justify such energy conserving investments should exceed $3.12 billion. If the proposed program is fully funded by the Federal Government as well as non-Federal institutions, a total investment of at least $2.25 billion would be made in existing school and hospital buildings or a little over 70 percent of the estimated need. Of course, these estimates are subject to numerous uncertainties which argue, we believe, for caution in the consideration of any proposal to increase the funding of the proposed program.

Mr. DINGELL. There is another question. The budget for fiscal year 1978 is due at the Budget Committee by May 15. The question is, will there be a request for a waiver of the act made by the administration? Has the Office of Management and Budget agreed to support a request for waivers of the Budget Act to give out this $300 million for 1978?

Mr. BARDIN. Mr. Chairman, I haven't personally consulted the Office of Management and Budget, but this is the President's program.

[The following information was received for the record:]

It is anticipated that the administration will request funding for this program, together with others, in late August or early September of this year.

We are advised that the Office of Management and Budget does not have a role in requesting or supporting waivers, but certainly supports the President's funding proposals on all programs. According to our information, Section 402 (b) of the *Budget Act* (PL 93-344), with respect to emergency waivers in the House, states that if the Committee on Rules determines that emergency conditions require a waiver of subsection (a) with respect to any bill or resolution, such committee may report and the House may consider and adopt, a resolution waiving the application of subsection (a) in the case of such bill or resolution. Subsection (a) section 402 referred to, as we understand it, holds out of order in either the House or Senate the consideration of any bill or resolution which authorizes enactment of new budget authority for a fiscal year unless that bill or resolution is reported on or before May 15 preceding the beginning of such fiscal year.

Mr. DINGELL. Mr. Bardin, we have dealt with many Presidents' programs, and we have found that the Office of Management and Budget is not necessarily helpful in accomplishing Presidents' programs. We receive one transmission saying that this is the President's program in terms of legislation, and a little later, when we try to fund it, we receive a message from the Office of Management and Budget that the implementation of that legislation for which the administration worked so hard and over which the Congress labored so long, is not a part of the administration's program.

I would appreciate a response to that particular question, because I tend to be rather distrustful of OMB, based on some 20 years' observations of their labors.

Mr. BARDIN. I will take your point to heart, Mr. Chairman, and check into that personally. I do have to say I have had many helpful comments from OMB people along the years, and I look forward to working with them, but I will certainly check on this very important point that you raise.

Mr. DINGELL. In that regard, Mr. Bardin, I never looked forward to working with them.

We thank you for your assistance, Mr. Bardin.

Mr. Moorhead?

Mr. MOORHEAD. There is only one thing that I would like to ask. You know so many of us find hospitals and schools are hard pressed for money these days. Would it not be more effective to try to push for the adoption of these energy-saving programs in new schools and new hospitals than it would be to try to get them to go into old buildings that are presently in operation where there will just not be the money to do it.

Mr. BARDIN. I understand your point, Congressman Moorhead. When you look at the total national energy plan that President Carter has put forward, the building standards provision will do exactly what you suggest. They will cover new buildings and schools and hospitals and they will be mandatory as to the new structures.

The program under discussion today is a grants program that would be voluntary. Let's say the school or the hospital will not have to take the funds if it can't see its way clear to using them.

Our estimate is with a grant of 40 percent for the Federal Government and 60 percent State and local funds, these would be a payback through reduced fuel bills in less than four years for the school district or the hospital in the typical case. That is to say, the fuel bill may go up anyhow if the cost per gallon or cost per cubic foot goes up, but they will be paying that much less as a result of the conservation and within less than four years they will have gotten back what they have invested. We think this is extremely important and, of course, if you want to get the maximum middle term effects, conservation effects, this is a good way to do it. It costs much less to the economy as a whole, taking both the Federal and non-Federal share, than to provide that energy by an extra barrel of imported oil. It costs less than half.

Mr. MOORHEAD. In our area they are scrambling for every extra penny they can get hold of from the taxes and there are not many people willing to vote for extra money.

I see in your testimony that you have estimated that about 35 percent of all the eligible schools would go into the program. Where did you get the figure of 35 percent?

Mr. BARDIN. That figure simply represents a mechanical estimate of how far the money would go assuming we could divide it up proportionately per square foot. Obviously we would want to emphasize the most cost effective opportunities.

Perhaps I could tell you a choice story from my experience with the New Jersey State government which is not right in point on the provisions of this bill but right in point on the concerns you have. Last November we passed a statewide $80 million bond issue for rehabilitating State-owned institutions and agencies; hospitals, prisons and such facilities. We had a study made by a commission headed up by the leaders of the business community, labor and other interests in the State with professional staffing by people who were skilled in financial matters. One of the underlying reasons for that bond issue was 35 furnaces and boilers—ancient ones in State-owned institutions—were performing so inefficiently that we concluded that replacing them, with the State picking up 100 percent of the cost, would pay its way within four years. That cost close to $8 million and the bids are out on that program. One of the telling arguments to the voters in New Jersey on a statewide program like that was its basic good financial sense.

I think one of the difficulties some of the school districts are in, realistically, is the way in which the bonding referendum works. The people who are using the facilities and the people who vote are not necessarily the same people. You have to have a fair program that reaches out and is persuasive to all the people involved. That is why we propose grants of Federal money for up to 40 percent of this capital cost to assist the school districts.

Mr. MOORHEAD. Have you had any kind of an energy audit or are you planning one to be sure that the work, when done, will actually make an improvement in the energy efficiency of the buildings?

Mr. BARDIN. Yes, that would definitely be a feature of the program and the bills would require that the States, who would be the middlemen in the grant program undertake that.

Mr. MOORHEAD. Thank you very much.

Mr. DINGELL. The Chair recognizes the gentleman from Pennsylvania, Mr. Walgren.

Mr. WALGREN. No questions at this time.

Mr. DINGELL. Mr. Bardin, one more question which troubles me greatly. I understand a number of States would have in their State constitutions prohibitions against the granting of State funds or funds under the custody of the State to nonprofit or to private or to religious institutions or some mixture of the three. Can you tell us whether or not in the instance of States of that sort, whether or not these funds can be flowed through to the potential nonprofit recipients?

Mr. BARDIN. We are checking into that question, Mr. Chairman. Our understanding is that it is not a problem in any large number of States where Federal funds are involved but that is something we are checking with the State people and obviously if it is a problem we are going to want to make provision for it because the program

is designed to reach out across the country and not depend on the particular differences in the way the States operate.

Mr. DINGELL. The Chair would request you give a response to the committee with regard to private, nonprofit, and religious institutions, and the constitutional problems which exist or do not exist.

The Chair would also appreciate some comment from you in regard to the question of the time that the funding would go into place and the States' ability to take advantage of the programs, to receive the money and to in turn spend it.

Last of all, we would appreciate receiving from you some further amplification with regard to whether or not there is need of a technical amendment to cover the question of going the full sweep of grants for energy conservation for schools, hospitals, et cetera, which are not used at least in those portions not used for a religious undertaking?

If I read the legislation the way you indicate, it appears to me your interpretation is correct. However, if technical changes are needed, it would be much appreciated.

[The following information was received for the record:]

There appears to be some uncertainty as to whether the administration's proposal could be fully implemented in all States because of State law limitations inhibiting State governments from assisting certain private institutions. In view of this uncertainty, the administration would not oppose an appropriately drawn amendment that would allow the opportunity for participation in the program by all schools and hospitals which meet the eligibility requirements established by the bill.

* * *

Although individual States and institutions may confront unusual delays in preparing the required plans and submitting acceptable applications, most eligible institutions would be able to participate in the program during Fiscal Year 1978 if the proposed legislation is enacted and the necessary funds are appropriated swiftly. Furthermore, it's our understanding that a substantial number of eligible institutions are technically prepared to make qualifying energy conservation capital improvements almost immediately. Consequently, any delay in offering Federal assistance could result in the unnecessary postponement of further conservation actions by those schools and hospitals that have been most actively committed to such programs. (Reference response to an earlier question raised by Mr. Dingell).

Our intention in drafting this bill was to extend the opportunity for financial assistance to as many eligible school facilities as possible. It is our understanding that the subcommittee staff is re-drafting the definition of the term "school facilities" to delete the language which excludes facilities used for worship or sectarian instruction. The administration has no objection to that deletion.

Mr. DINGELL. Are there further questions for our panel? The Chair hears no such request.

Thank you very much, gentlemen.

The next panel is the Educational Facilities Panel:

Dr. Shirley Hansen, Associate Director, American Association of School Administrators;

Dr. Charles Saunders, Director of Government Relations, American Council on Education;

Mr. James Orsburn, Chief, Bureau of School Facilities Planning, California State Department of Education; and

Mr. George E. Reed, General Counsel, United States Catholic Conference.

STATEMENTS OF GEORGE E. REED, GENERAL COUNSEL, UNITED STATES CATHOLIC CONFERENCE; DR. SHIRLEY HANSEN, ASSOCIATE DIRECTOR, AMERICAN ASSOCIATION OF SCHOOL ADMINISTRATORS; JAMES H. ORSBURN, CHIEF, BUREAU OF SCHOOL FACILITIES PLANNING, CALIFORNIA STATE DEPARTMENT OF EDUCATION; AND DR. CHARLES B. SAUNDERS, JR., DIRECTOR OF GOVERNMENT RELATIONS, AMERICAN COUNCIL ON EDUCATION.

Mr. DINGELL. Mr. Reed, will you proceed?

STATEMENT OF GEORGE E. REED

Mr. REED. Mr. Chairman, we have submitted a formal statement and I have given the Clerk a copy of that statement, together with several corrections.

Mr. DINGELL. Without objection, your full statement will appear in the record.

Mr. REED. I represent the United States Catholic Conference, a national-level agency of the Catholic Bishops in the United States. We are confident that our Catholic Institutions wish to participate in the President's energy program and will do so to the best of their ability. When we read the President's program, his address to the Nation and his address to the Congress we noticed he specifically emphasized the proposition that nonprofit schools and hospitals would be included in the energy program.

There was no limitation whatsoever in his statement. Emphasis was placed on an all-inclusive program and upon the principle of fairness. White House spokesmen reaffirmed this position on several occasions to the press.

We recently learned about the possible difference between the staff position and the President's address. For example, section 391, subparagraph 10 of H.R. 6831 would, in our opinion, disqualify any school or college which provides sectarian instruction or religious worship on its premises.

When we analyzed this bill, we again contacted White House spokesmen who indicated that the President intended to include all nonprofit schools.

We then discussed the matter with other White House officials who informed us that this language was inserted because of potential constitutional difficulties. A long session was held with these officials, but without any definite understanding that our schools as a whole would participate.

We therefore urge the Congress to make its own constitutional inquiry, to determine the validity of the staff proposition. We ourselves have made an analysis of the constitutional implications of H.R. 6831 and we are of the opinion that the position of the staff is not tenable. This is not the first time that the issue has arisen. We think the President's statement is definitely consistent with other efforts to conserve critical resources. During World War II the administration of President Roosevelt established a system of priority controls to conserve critical resources. At an intermediate level of the War Production Board, a regulation was issued which in

effect excluded parochial schools. An appeal was made to the highest executive office with the result that it was rescinded, a new ruling was established providing that all nonprofit schools including parochial schools should participate on the same basis as the public schools.

Again, in 1974, in the Disaster Relief Act of 1974 this Congress emphasized the fact that all nonprofit schools should participate and they have participated in that program.

We think that the key constitutional principle in this whole issue is one which was enunciated last year by the Supreme Court of the United States. There the courts in the case of *Roemer* v. *Maryland Board of Public Works*, stated: "Religious institutions need not be quarantined from public benefits that are available to all."

This is basically our position. We think that subparagraph 10, section 301 of this bill violates that constitutional principle. Morover, we think it is inconsistent with the position which the President stated and restated in his address to the Nation and to the Congress. His emphasis was on fairness. We really do not feel that the President wishes to exclude parochial schools, or other church-related schools and colleges on the basis of religion.

This issue, of course, cannot be approached from the standpoint of simplistic constitutional considerations. The Supreme Court has emphasized that over and over again. It has laid down a three-part test to enable us to arrive at valid decisions. The court has emphasized the proposition that in order for legislation to meet the mandate of the First Amendment, particularly the establishment clause, it must have a secular legislative purpose

Secondly, it must not have a primary effect which advances or inhibits religion.

Thirdly, it must not involve government and religion in excessive entanglement.

In the development of the constitutional cases involving education we have observed that this tripartite test is invariably applied in the light of a critical constitutional fact or facts. Here the critical constitutional fact is the fact that the educational process is not directly or indirectly affected by the purpose of this legislation, nor the means to carry it out. Let us apply these three tests to this legislation. Certainly participation in such a preeminently important national purpose satisfies a secular public purpose. We have no doubt about that.

What about the question of excessive government entanglement? That has been before the courts frequently in the last three or four years. This again must be read in the light of the fact that the program itself has no relationship to the educational process. There is no opportunity, if this language is deleted, for the government to monitor school programs. On the contrary, if this language remains in the bill, you have a serious constitutional difficulty. An applicant sponsored by a church school would be subject to some form of monitoring to determine whether there is religious instruction, or whether religious worship is conducted. So the very basis is laid for an unconstitutional situation in this particular subparagraph.

It is for this reason and for additional reasons, that we have urged that this language be deleted.

Now, with respect to aid to religion, again we cannot approach this from a simplistic constitutional standpoint. The court has laid down guidelines to which we must adhere. The court has stated again and again that legislation which provides "secular, neutral and non-ideological services, materials and supplies," meets the test of the First Amendment. Here we have a classic example of neutral secular and nonideological materials.

Again and again the argument is proposed that if you give money to a church school—granted it serves a public purpose—it releases funds which the school or church could use for some sectarian purpose. The courts last year in *Roemer* v. *Maryland Board of Public Works*, denounced this proposition and cited a whole series of Supreme Court cases in which it has again and again held that this is not a valid constitutional consideration.

Finally, this approach, without considering the definitive guidelines, can and frequently does create new church-state issues. Here a new church-state issue has been created because a burden, a handicap is imposed on the parochial schools and the church-related colleges.

This is a serious matter. It is a matter to which the Supreme court has addressed itself in the development of the church-state literature. In the case of *Everson* v. *Board of Education*, the Court stated that "obviously to cut off church schools from services so separate and indisputably marked off from the religious function would make it more difficult for them to operate. But such is not the purpose of the First Amendment. The state must be neutral and not the adversary of religion." These propositions, I submit, are the definitive principles to which we must adhere in evaluating this very important situation.

Mr. DINGELL. Mr. Reed, I think you have given us a very helpful statement here and it would be very useful if you would get us at your earliest convenience the suggested changes that you have set out in terms of legislative forms, in order that we may have the staff review them, clear them with the agencies and try to see to it that we accommodate your concerns as best we might. I want to make it very plain it is my purpose, as chairman of the subcommittee, to see to it that we save energy and not fight religious wars. On that I think we agree.

Mr. REED. I would be happy to do that.

[Mr. Reed's prepared statement follows:]

TESTIMONY OF UNITED STATES CATHOLIC CONFERENCE ON ENERGY CONSERVATION PROGRAM FOR SCHOOLS AND HOSPITALS (PART C OF THE PROPOSED NATIONAL ENERGY ACT—H.R. 6831) GEORGE E. REED, GENERAL COUNSEL, U.S.C.C.

The United States Catholic Conference is the national level agency of the Catholic bishops of the United States. It conducts programs in many areas of interest to the Church and the Catholic people of the Nation, including education and health affairs.

H.R.6831, the proposed National Energy Act includes in Part C, a proposed Energy Conservation program for Schools and Hospitals, and it is that part of the bill which is the subject of this statement.

In his address to the Nation on April 18, President Carter began with the following statement:

"Tonight I want to have an unpleasant talk with you about a problem that is unprecedented in our history. With the exception of preventing war, this is the greatest challenge that our country will face during our lifetime."

"The energy crisis has not yet overwhelmed us, but it will if we do not act quickly. It's a problem that we will not be able to solve in the next few years, and it's likely to get progressively worse through the rest of this century."

"We must not be selfish or timid if we hope to have a decent world for our children and our grandchildren. We simply must balance our demand for energy with our rapidly shrinking resources. By acting now we can control our future instead of letting the future control us."

The President closed his address with this statement:

"There should be only one test for this program—whether it will help our country. Other generations of Americans have faced and mastered great challenges. I have faith that meeting this challenge will make our own lives even richer. If you will join me so that we can work together with patriotism and courage, we will again prove that our great Nation can lead the world into an age of peace, independence, and freedom."

Throughout his address to the Nation, and again two days later in his Address to a Joint Session of the Congress, the President stressed the need for energy conservation, the need for sacrifice, and the need for fairness. He said: "The fifth principle is that we must be fair. Our solution must ask equal sacrifices from every region, every class of people, and every interest group..."

Conservation of energy was described as the "cornerstone" and the "first goal" of the Nation's program to meet the crisis brought about by dwindling supplies of oil and natural gas and growing consumption. Among the proposals for conservation in homes and buildings, the President listed:

"First, direct Federal help for low-income residents; Next, an additional 10-percent tax credit for business investments in conservation; Third, Federal matching grants to nonprofit schools and hospitals; and public works money for weatherizing State and local government buildings."

The Catholic Church in the United States sponsors and operates a vast number of nonprofit charitable, educational and health care institutions and facilities. The 1976 Official Catholic Directory lists 245 Colleges and Universities serving 432,000 students; 969 Diocesan and Parochial High Schools serving 563,000 students; 647 Private High Schools serving 332,000 students; 8,139 Parochial Elementary Schools serving 2,500,000 students; 345 Private Eelmentary Schools serving 64,000 students; 109 Protective Institutions serving 9,207 students; 660 General Hospitals with a total bed capacity of 161,000; 90 Special Hospitals with bed capacity of 7,782. In addition, there are 205 Orphanages and Asylums with 15,350 resident children; 458 Homes for the Aged with 53,000 guests.

We cannot tell you how many energy consuming buildings and structures are involved in this private, voluntary effort to serve the people of this nation. Certainly there are many thousands of school buildings and hospital structures, including hundreds of dormitories and residential halls.

We are confident that all of the Catholic organizations and institutions which operate these many buildings are willing and indeed anxious, to participate in the national program to conserve energy and insure the future well being of the Nation—a vast national effort which President Carter has described as "the moral equivalent of war, except that we will be uniting our efforts to build and not to destroy."

All of our schools and all of our hospitals, as well as the other charitable institutions, would like to share in the common effort and join in the common sacrifices. They will do so to the extent that the Congress and the President permits them to do so and to the best of their financial ability.

The cost of fuel for heating and cooling of school buildings and hospitals is a substantial portion of the operating expenses for all of these Catholic organizations and institutions. The increased cost for fuel resulting from increased demand, inflation and the tax measures proposed by the President's program will be a great burden. The costs must be borne almost entirely by the patrons of our elementary and secondary schools, and for the most part by the students and their families in the case of colleges and universities.

The ability of Catholic and other nonprofit schools and hospitals to adopt energy conservation measures desired by the national program will be dependent to a large extent upon the provisions of Part C of H.R. 6831.

Part C would authorize a three-year, $300 million program of grants to schools and hospitals to pay for up to 40 percent of the cost of installing certain specified energy conservation materials and equipment. The eligible projects are listed in Section 391(2). Included are such things as insulation of walls, ducts and pipes, double glazing of windows; energy control systems, solar heating and cooling systems, furnace modifications; caulking and weather stripping.

In his address to Congress, and in the fact sheets given to the press and public, the President several times described the program provided in Part C as authorized Federal matching grants to "nonprofit schools and hospitals." Nothing was said to indicate that it was intended to limit participation in the program to those nonprofit elementary and secondary schools which are not Church-related. There was no indication that elementary and secondary schools sponsored by Churches and other religious organizations and which thereby fall into the category of operating facilities for "sectarian instruction" and "religious worship" would be barred from participation in the energy conservation effort provided through the Federal matching grants.

Nor was there any indication that those colleges and universities which desire to participate in the program would be required to accept a restriction upon present and future use of their building so as to prevent such buildings from ever being used for any amount of sectarian instruction or religious worship.

The U.S.C.C. was surprised upon reading H.R. 6831 to discover, in Section 391(10), the following language:

"(10) the term 'school facilities' means buildings housing classrooms, laboratories, dormitories, athletic facilities, or related facilities operated in connection with a school, *but does not include any facility used or to be used for sectarian instruction or as a place for religious worship*, or any athletic facility used primarily for athletic exhibitions, contests, games or other events for which admission is charged to the general public." (emphasis added).

What does this language mean, and why is it included in a bill devoted to conservation of energy and installation of such items as storm windows and solar furnaces?

While there seems to be some differences of opinion among members of the White House and the Administration as to reasons why this restriction is proposed to be imposed on the use of school facilities, there can be no doubt about what the effect of this language would be.

First, the effect would disqualify from participation in the program of Part C about 90 percent of the more than 14,000 nonprofit elementary and secondary schools in this nation. This is so because these schools are Church-related and Church-sponsored. They are, almost without exception, by definition, engaged in "sectarian instruction." Their buildings are frequently used as a place for "religious worship" although their primary purpose is to provide quality education, of both a sectarian and secular nature.

Second, the effect of this language would be to disqualify from participation in the program a large number of buildings on college and university campuses, particularly on the campuses of private, Church-related college and universities. This would result because buildings, including classroom and residential structures, are used as a place for carrying on sectarian instruction and religious worship. The religious dimension at the typical private Church-related college is not confined to the college chapel.

Students frequently form and are encouraged to form religious clubs on both private and public college campuses. There are such groups on almost every college campus in the nation. Their meetings, their worship services, their prayer sessions are conducted in numerous structures. All such structures would be disqualified from participation, or, in the alternative, the college would be required to agree never in the future to use such buildings for sectarian instruction or religious worship.

We do not want to overstate the case, but the Congress should be aware that this language is not an insignificant impediment to the success of Part C. Much more is involved that a handful of chapels. The number of college structures that would be disqualified, or restricted as to future use, willl run into the thousands.

The U.S.C.C. has sought an explanation for the inclusion of such a religious-test restriction. We have received no formal reply, but have been advised informally that the White House staff came to the conclusion that such a restriction is necessary to avoid potential constitutional problems. We urge the Congress to make its own inquiry and to reach is own decision as the validity of this conclusion by the White House staff. Later on in this statement, the U.S.C.C. will offer its own conclusions as to any constitutional implications which might be involved.

Before going into the legal analysis of relevant provisions in the Constitution and court decisions, we would like to point out that it is only in this one section defining school facilities that H.R. 6831 contains a restriction on religious usage of buildings by beneficiaries of Federal grants, tax subsidies and other economic incentives provided to a wide variety of individuals and organizations, both nonprofit and profit-making. There is no religious restriction imposed on the use of commercial and

industrial property, even though H.R. 6831 calls for a great variety of grants and tax subsidies. Presumbably such tax subsidies will go to at least some commercial enterprises that are engaged in business activities involving sectarian instruction and religious worship.

Fortunately, the bill doesn't attempt to place a religious-use restriction upon the homes of the poor people who are to be assisted by Federal grants for the installation of weatherproofing and furnace modifications.

Also, Part C of H.R. 6831 doesn't attempt to place a prohibition on religious worship in the hospital buildings and related facilities which will be eligible for Federal matching grants. And so, the Catholic and other religiously-sponsored hospitals will be able to participate without closing their chapels. It is a well-known fact that most Catholic hospitals contain chapels for the use of their patients and the friends and relatives who visit the hospital.

Thus, it is only when H.R. 6831 gets around to defining a "school facility" that it has been found necessary to impose religious restrictions and thereby bring about the disqualification of thousands of Church-related elementary and secondary schools and impose great limitations upon the participation of colleges and universities.

This statement will not attempt to go into great detail about some of the administrative problems which the religious restrictions in the school section will impose upon the Federal and State governments, in addition to those imposed upon college administrators. The Committee can easily identify these problems. We would like to emphasize that this restriction would apparently continue for the life of any structure involved in the program, even though ownership might change. Some provision would need to be made for Federal and State officials to police compliance, perhaps through periodic inspections and visitations to college classrooms and related buildings.

The U.S.C.C. most emphatically is opposed to this provision of H.R. 6831 which seeks to impose unnecessary limitations upon the President's national energy program. We urge that this Committee delete the entire religious restrictions upon the use of the project grant funds which will insure that these funds will be used and can only be used to provide a share of the cost of energy savings materials and equipment.

We can think of nothing more remote than the possibility that a school or college might use storm windows, insulation and furnace pilot lights to teach religion or conduct religious worship. Certainly such items are well within the classic description of permissible aid which the United States Supreme Court has repeatedly said is constitutional, in the words of Chief Justice Burger—"secular, neutral, non-ideological services, materials and facilities."

The Committee is hearing today from representatives of public schools, public and private colleges, State governments, and public and private hospitals. We have consulted with some of these representatives and know that there is a large amount of agreement among us on various problems presented by Part C of H.R. 6831, that are not related to, or only indirectly result from the President's decision to include private nonprofit institutions in his program. We wish to call attention to two matters which we consider to have a considerable potential for thwarting the success of this portion of the national energy program. We would urge the Committee, with its expertise and experience to study these matters in detail and rewrite the bill to solve the problems which we foresee.

First, there is the problem created by the procedure by which grants will be made to State governments before they are, in turn, made to public and private schools and hospitals. Experience, particularly in the National School Lunch program, has shown that somewhere around half of the States have constitutional and other legal impediments to making grants to private institutions, both Church-related and secular. These impediments are among the reasons why the Congress in 1963 developed the method by which Higher Education Facility Grants and Loans are made directly to institutions under a system of State allocations and priorities. A similar procedure has been used for many years in the Hospital Construction Acts, such as Hill-Burton, and this Committee is acquainted with the details since this Committee originates such legislation.

We also ask the Committee to examine closely the language in the proposed section on Nondiscrimination—Section 309. That same language was considered by Congress last year as part of the Revenue Sharing Act of 1976 and rejected in favor of a more precise wording developed in the Senate.

We do not know why it has been considered necessary to include a nondiscrimination paragraph in Part C of H.R. 6831 since all of the schools and

hospitals involved are already covered by the provisions of both Title 6 and Title 7 of the Civil Rights Act of 1964, as amended, as well as the provisions of the Federal Contract Compliance regulations and the non-discrimination regulations of the Internal Revenue Service.

If the nondiscrimination provision in H.R. 6831, Part C, is deemed necessary, then we recommend adoption of the same language contained in the Revenue Sharing Act. This will avoid creating problems by deviating from the provisions of the Civil Rights Act. Specifically, Title 6 of the Civil Rights Act does not contain the words "religion" or "sex." Title 7 contains special provisions relating to employment discrimination by churches and other religious institutions, including colleges and hospitals. Also, the prohibitions on "sex" discrimination by schools and colleges in Title IX of the Education Amendments of 1972, are very detailed and specific to avoid interfering with the enrollment and hiring practices of Church-related schools and colleges, and also the enrollment and faculty practices of elementary, secondary and undergraduate schools for men and women.

As contained in H.R. 6831, the nondiscrimination section is subject to interpretation that participating schools could not limit their enrollment to members of one sex.

We will be pleased to submit additional information to the Committee on this problem of nondiscrimination should it be desired.

Earlier in this statement, a reference was made that our testimony would provide the conclusions U.S.C.C. reached on the legal and constitutional implications of Part C. We now turn to that part of our testimony.

## Part II—Constitutional Considerations Involved in H.R. 6831

As indicates earlier in this statement the President in his address to the Congress and to the nation, emphasized the following principles:

First, the necessity for conservation of energy, and

Secondly, the necessity for fair treatment.

The President's position with respect to nonprofit schools and fairness characterizes the history of this country concerning conservation of natural resources. During World War II, the administration of President Roosevelt established a system of priorities to conserve critical resources. This policy was administered by the War Production Board, which treated nonprofit schools and nonprofit hospitals in the same manner as public schools and public hospitals. A specific issue arose with respect to nonprofit schools and particularly parochial schools. In short, could they be given the same priority treatment as public schools. The War Production Board ruled at the highest level that the same treatment must be afforded. Similarly, Congress in enacting the Disaster Relief Act of 1974 (PL 93-288) included all nonprofit schools in need of disaster assistance. Section 4(a) of the Act contains the following highly relevant finding:

"The Congress hereby finds and declares that there has been substantial damage to educational institutions as a result of hurricane and tropical storm Agnes; that disaster relief for public educational institutions is adequately covered by legislation heretofore enacted; that nonprofit private educational institutions are not provided disaster relief benefits comparable to those provided to public educational institutions; that nonprofit private educational institutions have a secular educational mission; that students attending nonprofit private educational institutions that have to be provided for in public institutions if the former institutions are not restored; and that these facts compel enactment of special measures designed to provide nonprofit private educational institutions which were victims of this catastrophe with disaster relief benefits comparable to those provided for public educational institutions."

It is submitted that this is an appropriate legislative precedent for guiding the Congress in dealing with the issue raised with respect to nonprofit schools. PL 93-288 is but one of the many Federal laws which included all nonprofit schools within their benefits. Other highly relevant statutes are:

The National School Lunch Act, PL 79-396 (1946);

The Surplus Property Act of 1944, as amended, PL 92-362 (1972);

Title III of the National Defense Education Act, PL 85-864 (1958) which entitled schools to borrow funds at low interest rates for equipment and minor remodeling to be used in connection with the teaching of science, mathematics, and languages;

The Elementary and Secondary Education Act, PL 89-10 (1965);

and many other Acts which reflect the proposition enunciated in 1976 by the Supreme Court in *Roemer* v. *Board of Public Works of Maryland*, 96 S.Ct. 2337 (1976). There the Court asserted that:

"Religious institutions need not be quarantined from public benefits that are neutrally available to all."

Despite the presidential mandate for fairness and the necessity for using the most efficient means to conserve energy, H.R. 6831, the Bill introduced to implement the President's program would have the effect of excluding approximately 90 % of all the nonprofit schools of the nation.

Subparagraph 10 of Section 301 of the Amendment to the Energy Policy and Conservation Act provides as follows:

"(10) The term 'school facilities' means buildings housing classrooms, laboratories, dormitories, athletic facilities, or related facilities operated in connection with a school, but does not include any facility used or to be used for sectarian instruction or as a place for religious worship, or any athletic exhibitions, contests, games, or other events for which admission is charged to the general public."

This provision is not consistent with the President's message to the Congress nor to the people. No reference was made in either address to the exclusion of 90% of the nonprofit schools and, understandably so, because the message was predicated upon fairness. We find it hard to believe that the President intended to exclude any portion of the nonprofit school system of our country and especially not on the basis of religion. Not only is it inconsistent with his enunciated principles of equity, but it would adversely affect the conservation of energy.

An analysis of the whole conservation program discloses the following essential characteristics:

1. An increase in the cost of energy due to taxation;
2. A provision of rebates to individuals to offset the increase;
3. A provision of tax credits to commercial consumers to moderate the impact of the increased cost of energy;
4. Rebates and tax credits to encourage conservation policies;
5. Matching grants to stimulate the development of conservation procedures.

Clearly, in light of the President's message to Congress and to the nation and to his consistent devotion to principles of equity, it is hard to believe that there is an intention to exclude 90% of the elementary and secondary schools of the country because sectarian instruction is provided during a part of the day in addition to basic secular instruction. The principles of separation of church do not warrant this conclusion.

In the first place, the decisions invalidating aid to church related schools are not controlling for the proposed legislation and its specific purpose bears no relationship to the educational process. Nor does it violate any of the tests adopted by the Supreme Court of the United States for determining whether legislation amounts to an establishment of religion. The Court has repeatedly declared that legislation is constitutional if it has the following characteristics:

1. A secular legislative purpose;
2. A primary effect which does not advance nor inhibit religion;
3. Does not result in excessive governmental entanglement with religion.

Certainly, inclusion of all nonprofit schools in the President's energy program is consistent with a legitimate public purpose. H.R. 6831 itself reflects a national purpose of the highest order and participation in this program partakes of this national purpose.

Several cases involving aid to educational functions in parochial schools have been declared to be unconstitutional on the ground that the legislaton is of such a nature as to require a continuing surveillance of religious institutions to insure that statutory restrictions are obeyed. [*Lemon* v. *Kurtzman*, 403 U.S. 602 (1971), *Meek* v. *Pittenger*, 95 S. Ct. 1753 (1975).] In the words of the Court in *Lemon* v. *Kurtzman, supra*,

"These prophylactic contacts will involve excessive and enduring entanglement between church and State."

This rationale could not be applied to legislation which merely permits church related nonprofit schools to participate in the energy program. The installation of energy saving devices certainly would not constitute even a potential for entanglement. On the other hand, the bill as presently drafted with the restriction on sectarian instruction would require government monitoring to determine whether the applicant facility would be used for religious or sectarian purposes. In short, the present legislation is constitutionally vulnerable on the ground of entanglement.

Finally, it can not be argued with any degree of conviction that allowing church related schools to participate on an equal basis in the energy program will have "a primary effect of advancing religion." The legislation does not build new schools nor add new classroom facilities. It is not designed to aid schools, let alone religion. On

the contrary, the compelling public purpose is the preservation of a resource which is linked to the stability of this country.

The resolution of the "primary effect" criterion must be resolved on the basis of the principle enunciated in *Tilton* v. *Richardson*, 403 U.S. 672 (1971), and related cases. There the Court laid down a guiding principle to which it has consistently adhered. It stated:

"Our cases from *Everson* to *Allen* have permitted church related schools to receive government aid in the form of secular neutral or nonideological services, facilities, or materials that are supplied to all students regardless of the affiliation of the school which they attend."

This is the relevant and controlling test for determining the issue with respect to the constitutional character of government aid. No argument is needed to demonstrate that the installation of energy saving material and devices are nonideological materials which have no connection with religion or religious education.

Despite development of these critical tests for determining the constitutionality of legislation the "no aid" concept is frequently used in a reckless manner in an attempt to draft legislation which avoids the church-state issue. For example, to strictly implement subparagraph (10) and deprive the church related schools of an opportunity to participate would place a burden on the free exercise of religion. This is the critical church-state issue. This very principle is reflected in the majority decision of the key case of *Everson* v. *Board of Education*, 330 U.S. 1, 67 S.Ct. 504, 91 L.Ed. 711 (1947). There the Court stated through Mr. Justice Black:

"Of course, cutting off church schools from these services, so separate and so indisputably marked off from the religious function, would make it far more difficult for the schools to operate. But such is obviously not the purpose of the First Amendment. That Amendment requires the state to be neutral in its relations with groups of religious believers and non-believers; it does not require the State to be their adversary. State power is no more to be used so as to handicap religion than it is to favor them."

We submit that the language of subparagraph 10 in light of the whole energy program would "handicap religion." The taxation of energy would result in additional cost of maintenance of nonprofit schools. Nonprofit schools having a tight budget particularly those schools in the ghetto areas which are serving all religions might be forced to close. Certainly, they would not be able to spend additional money to weatherize the buildings and conserve energy, though they would try.

The language of subparagraph 10 is also susceptible to the interpretation that if a building devoted exclusively to purely secular activities contained a chapel, then it could not participate in the program for the term "school facilities" as defined excludes any place where there is not only sectarian instruction but religious worship. Most universities have chapels and there is a strong possibility that the language in subparagraph 10 could adversely affect universities as well as elementary and secondary schools though, admittedly, the basic thrust is in the area of elementary and secondary institutions.

## STATEMENT OF DR. SHIRLEY HANSEN

Dr. HANSEN. Mr. Chairman, I am Shirley Hansen, associate director of the American Association of School Administrators.

I have a prepared statement which I would like to have submitted in the record.

Mr. DINGELL. Without objection, your full statement will appear in the record.

Dr. HANSEN. First, let me say AASA has a membership of about 20,000. We are primarily representing school superintendents who have learned how to read the right-hand side of the menu and find out that the costs are going up and up.

We have noted in the two years after the embargo the cost of energy went up 48 percent. The costs were like $514 million more for the schools in that two-year period. Working from that, the energy cost escalation has been given by the Department of Commerce and the projection in costs from the Department of Defense. In 1980 the cost of energy to the schools is projected at $3 billion or three times what it was during the embargo.

We have worked diligently trying to find ways to help school administrators conserve energy and we appreciate the opportunity to present our concerns before you at this time, primarily directed toward part C, section 301. I got half way there on changing the numbers in the sections. I have the 39 sectionss, but I missed the two sections so they are one number off.

Section 394 is actually 393 now as I understand it.

I would like to call to the subcommittee's attention the fact that assuring elementary and secondary schools will be served under this legislation as presented is strictly to the mercy of the Governors. Should the States not request funds or should their State plan not be approved, no recourse under the present language, no matter how desperate the schools are, will provide the schools the financial assistance they need. I only ask that you look back over the track record for Federal assistance through the States to the schools and you will see why we are so concerned.

To date, Federal legislation in educational facilities has highly favored higher education. State plans to assist higher education facilities will alleviate mounting energy pressures on that portion of their own State budgets. This is compounded by the fact that the little school district does not have much grantsmanship built in compared to schools of higher education. I am not suggesting that the institutions of higher education do not need assistance to conserve energy, they do, but I would urgently request the committee consider some way to define "equitable consideration" under section 39(b)(6) so the schools are protected in the authorization of financial assistance.

I am also concerned with the absence of technical assistance in the language, and responding to the chairman's earlier question, if the technical assistance were put in there and the lengthening of time under which this is permitted, we might assure better expenditure of the dollars allotted.

The Energy Conservation and Production Act which has under it the audit provisions does not clearly treat this issue for the schools.

I would call the committee's attention to the laundry list under section 391. The definition for energy conservation measure is too general in some instances, too specific in others, and some energy conserving opportunities, such as reducing fenestration, are not noted.

In the sixties we built a lot of glass boxes out there and yet the language does not address the needed cut back on that glass.

I mentioned before the Saving Schoolhouse Energy project and the cost effective things we recommended.

Mr. Bardin suggested this was one of the studies that was used to find out how much the cost would be per square foot. We deliberately used a very conservative criteria for cost effectiveness, using a recovery rate of 12 years or less based on 1976 local fuel prices, escalated at 10 percent per annum and adjusted for capital interest rates. That is very slight in relation to the problem out there. We did it because we know schools have very little capital funding and we have highlighted the things they should do first.

91-931 O - 77 - 56

In the ten elementary school demonstration sites—approximately 40,000 square feet each—we found through computer-assisted engineering analyses that a mean expenditure of $25,823 would reduce energy consumption an average 50 percent across all sites. Again, these expenditures figures are conservative and much can be done to save energy beyond what our study suggests. The management summaries for these ten sites are attached for the record.

I think there needs to be some way to help schools who do understand how to conserve energy to be able to fund it. I am happy that part C is directed toward providing this capital funding. I would mention we were the one group testifying on the panels today invited in to talk with the national energy planners and appreciated the opportunity to do so. Unfortunately, we didn't get our way on all things, but at least we are appreciative that this is in the bill.

I do think the magnitude of the problem is something that should seriously concern this committee; that the schools consume 11 percent of the space heating and cooling energy was suggested a couple of years ago by FEA. The National Bureau of Standards said the schools waste at last 50 percent of that. All those little glass boxes out there, most of them built on first-cost basis during the baby boom times following World War II are mostly what we use today.

Education dollars are going up the chimney in smoke, both increasing taxpayers' burdens and cutting down educational programs offered in schools

Mr. Chairman, I had a conversation with Superintendent Davenport of Wyandotte and I think this is an area of interest to you.

Mr. DINGELL. Mr. Davenport is a rather special friend of mine.

Dr. HANSEN. Then he can probably cry on your shoulder better than I could do secondhand.

From 1975-76 fuel costs to the projected cost based on fuel suppliers' figures for 1977-78, their costs of fuel are going to double in two years for their oil, gas and electricity in 1977-78. They are going to pay an additional $436,000. I don't know where it is coming from up there. I don't think the superintendent does.

I might add this is during a time when they have reduced their energy consumption and costs have still gone up like that.

So we do need help in the schools and we need it desperately. I would like to address the funding levels in part 2. If, as I have heard, the hospitals receive approximtaely one-third of the appropriated funds and institutions of higher education get one-third of that remaining, elementary and secondary schools would be able to get about five percent if the funding was at about sixty percent and if fully funded, which is highly unlikely, eight percent of the schools would be done this coming year.

If we had the best of all worlds and if the elementary and secondary schools got funding proportionate to square footage, and if it was fully funded, the elementary-secondary section would get 11 percent of their schools taken care of.

Now, let me back up and say that, according to FEA, in their figure of 88 cents, they are figuring in 10 percent for administrative costs. I have not even figured that in to the above figures. If I did it would be even less than that.

I also would like to express concern that under the 40-60 split of the $900 million, it would come out to $2.25 billion.

FEA says this portion of the bill would carry 7.1 billion square feet—not including those areas brought up in previous discussions today.

If I do a little division of 7.1 billion square feet into $2.25 billion, I come up with 31 cents a square foot and if, as suggested earlier, we only do 50 percent of the schools, and you double that, it is only 62 cents a square foot. I don't think we have really come close to meeting the needs of the schools.

Ironically, much of these escalating fuel costs are going to keep the schools from coming up with their 60 percent of the funds. You have asked if the schools will be able to raise matching dollars. First of all, let me say local school districts must raise their funds by bonding referendums. Getting the dollars is relatively easy. It is getting the voter authority to do so that is really tough. That is why low guaranteed loans or low interest loans do not do the job.

It would be easier selling it to the public if it said 50-50 instead of 40. You could say, "For every dollar you come up with, the Federal Government will come up with $1."

I also think there will be some incentive in talking to the public on reducing energy consumption. As members of this committee know, the mood of the voter is exceedingly hard to predict. What we really ask when we ask if the schools can come up with 60 percent is, do the voters wish to vote that kind of support?

I might also add one other thing that I think does impinge on the 60 percent ability and that is the total effect of the National Energy Act on the schools. The energy situation, of course, is both complex and critical and every sector is going to have to take it on the chin, but our analysis of the total energy package is that public schools will be particularly hard hit. Wellhead taxes will raise fuel costs directly. Industrial wellhead and user taxes will hit schools indirectly in the products they must buy and the general energy inflation will impinge the school budget. As the committee well knows, the National Energy Act provides relief through tax credits. Schools are not eligible for tax credits. As these costs go up, they only have two choices: Raise the revenues or cut educational programs.

I do believe, in addition to those problems like debt limitation, the one already addressed in terms of State and local school district budgets, that some resolution can be brought about, but it takes time and it takes persuasion.

I am also concerned in this matching thing that the FEA Assistant Director said they will direct State plans to come up with the most energy inefficient buildings. The respective school districts may not necessarily have the matching money. Therefore, we may have an irregularity there.

I cannot pass up the opportunity to make one additional comment. I think the students were shortchanged educationally during the recent winter of 1977. They lost over 40 million pupil days. There will be students this fall who will be inappropriately placed because of those 40 million pupil days.

They will be either advanced when they are not ready to be or retained when they should not have been. I don't think there is any

member of the Federal Government, be they administration or Congress, who is suggesting that the students should give up their education in order to assure that they have fuel in the future.

I thank you much for giving me the opportunity to present these concerns to the committee.

[Dr. Hansen's prepared statement follows:]

# AASA

*American Association of School Administrators*

STATEMENT ON BEHALF

OF THE

AMERICAN ASSOCIATION OF SCHOOL ADMINISTRATORS

Before the

Subcommittee on Energy and Power

of the

House Committee on Interstate and Foreign Commerce

Concerning

HR 6831

NATIONAL ENERGY ACT

Submitted by

Dr. Shirley J. Hansen, Associate Director
American Association of School Administrators

May 16, 1977

*1801 N. Moore Street, Arlington, Virginia 22209 703/528-0700*
*An Equal Opportunity Employer*

Mr. Chairman, I am Shirley Hansen, Associate Director of the American Association of School Administrators (AASA). With a membership of nearly 20,000, AASA represents school superintendents across the nation. On behalf of the Association, I wish to express our appreciation for the opportunity to appear before this Committee today to address the energy legislation which has been proposed by the Administration.

Superintendents are the chief school officials at the local district level. As such, they have the responsibility for the educational program and all its operational aspects -- including school plants and budgets. In the two years following the oil embargo, school superintendents saw their fuel costs escalate by 48.3%. In just two years, school fuel costs increased by $514 million dollars -- enough money to pay 43,000 teachers at current salaries, or to purchase all the textbooks bought across the nation in a year's time. It is no wonder that AASA found superintendents rating energy as their "Number One" federal issue in the fall of 1975.

Since that time, AASA has worked diligently to assist school administrators to find ways to conserve energy and to bring national attention to the plight of the schools as they face the energy dilemma. From the vantage point of an educational association which assumed an early and active role in the energy area, we commend President Carter for bringing forth a national energy plan and accompanying legislation for consideration by the Congress.

We further appreciate the growing evidence that Congress will thoroughly review and weigh the relative merits of this sweeping legislation. We certainly welcome the opportunity to present to you the energy concerns of the schools, particularly as they relate to Part C of the proposed National Energy Act.

Since Part C, Sec. 301, deals specifically with "Energy Conservation Program for Schools and Hospitals," I would like to direct my comments to that portion of the bill and then to draw in broader considerations as they impinge on implementation of Part C.

The Committee is respectfully and urgently requested to consider legislative means of assuring that elementary and secondary schools will, indeed, be served under this legislation. The language of Sec. 394 clearly leaves the schools at the mercy of the Governor. Should the State not request the funds or not submit an approved plan, as required in Sec. 395 (b), the local school district has no recourse under the present language -- no matter how desperate they are for assistance or how anxious they are to conserve energy.

If the funding must be disbursed through the Governor's office, as provided in this bill, then we urge the Committee to examine the bricks and mortar track record for federal assistance through the States to elementary and secondary schools. It is not comforting.

To date, efforts of States to incorporate local school district energy needs into their State energy efforts and plans have been spotty and often cursory.

Of the approximately 6 billion square feet in educational facilities, two-thirds are in elementary and secondary plants. However, Federal legislation for educational facilities has highly favored insitutions of higher

education. State plans which assist higher education facilities to conserve energy will alleviate the mounting energy pressures on that portion of their own state budgets. If funds are disbursed on an application basis, the small school districts, and there are lots of them, will be no match for the grantsmanship inherent in colleges and universities. All this is not to say that institutions of higher education do not need assistance to conserve energy. They do. But the interests of elementary and secondary schools desperately need protection in the language of this bill. Perhaps "equitable consideration" under Sec. 396 (b)(6) might be specifically defined as some stipulated apportionment.

Mr. Chairman, I respectfully draw the Committee's attention to the absence of any provisions in Part C to provide technical assistance to the schools. Of the nearly 17,000 school districts in this country, nearly 5,000 (about one-third) have less than 300 students. These small districts simply do not have the staff capability to identify energy needs and to find remedies. The Energy Conservation and Production Act which has some energy audit provisions does not clearly treat this issue for schools. The interface between technical assistance and the grants provided in the Part C language is critical if the desired energy savings are to be achieved with this limited capital investment.

Under Sec. 391, the "laundry list" to define "energy conservation measure" needs further consideration. In some instances it is too general; in others too specific; and some energy conserving opportunities, such as reducing fenestration, are not noted.

In an effort to provide guidance to school administrators in the most cost-effective energy conserving measures available to them, AASA initiated the Saving Schoolhouse Energy project last year. "Cost-effective" was defined very conservatively, using a recovery rate of 12 years or less based on 1976 local fuel prices, escalated at 10% per annum and adjusted for capital interest rates. This criteria has enabled us to highlight the ways schools can most effectively invest their very limited capital to conserve energy. In the ten elementary school demonstration sites (approximately 40,000 sq. ft. each) we found through computer-assisted engineering analyses that a mean expenditure of $25,823 would reduce energy consumption an average 50% across all sites. Again, these expenditure figures are conservative and much can be done to save energy beyond what our study suggests. The Management Summaries for these ten sites are attached for the record.

We now have a clearer indication of how energy can be conserved. The difficulty is finding the funds to do it. Part C would help the schools secure some of this desperately needed capital. It is gratifying that the schools' needs are addressed in this bill. Energy concerns of the schools are pervasive and oppressive. The Federal Energy Administration has stated that schools consume 11% of the space heating and cooling energy consumed in this country. Of this, it has been estimated that schools waste 50%. Most schools in use today were built on a first-cost basis in "baby boom" times when classroom space was critical and energy was not. As a result, the nation and education are paying for those buildings today. Education dollars are going up the chimney in smoke, increasing tax payers' burdens and denying children educational services they so critically need.

However, the authorizing level in Part C is not adequate to meet a problem of such great magnitude. If, as I have heard, the hospitals receive approximately one-third of the appropriated funds and the institutions of higher education get one-third of that remaining, the elementary and secondary schools would be able to do only 5% (using the costing in our study) of the schools in this nation next year at 60% funding. If fully funded, which is highly unlikely, only 8% of the schools would be renovated this coming year.

If we had the best of all worlds...IF the elementary and secondary schools received funding proportionate to their square footage of the institutions considered under Part C; i.e., 4 billion sq. ft. of 7.1 billion sq. ft.,...AND IF the bill were fully funded, the elementary/secondary sector would be able to do 11% of the schools. These optimum conditions are not enough to meet a clear and prevalent need that reaches into every community in the country. Mr. Chairman, this is like trying to put out a roaring inferno with a damp baby blanket. It just won't do the job.

But the schools' energy and financial woes do not end there. Under the provisions of this bill, the schools must pick up the bigger share of the burden, sixty percent. I have been asked if the schools will be in a position to raise matching dollars.

Matching dollars in most all instances must be raised by a local bonding referendum. Getting the dollars is relatively easy; it is getting the voter authority to borrow the money that is hard. That's why low interest or guaranteed loan programs are usually of little value to the schools. The opportunity to bring matching federal dollars will add some incentive -- 50/50 would have been much easier to sell; i.e., "for every local dollar...a federal dollar." The need to conserve energy and the

cost to be avoided by reducing energy consumption might help sell some of the voters too. But, as every Member of this Committee knows, the mood of the voter is exceedingly hard to predict.

The total effect of the National Energy Act also has implications for school budgets, money to match, and potential passage of school bond issues.

We recognize that the energy situation is both a complex and critical issue and that every sector of the economy "must take it on the chin," but our analysis of the total energy package suggests that public schools will be particularly hard hit. Wellhead taxes will raise school fuel costs directly, industrial wellhead and user taxes will hit the schools indirectly in the products they must buy, and general "energy inflation" will pinch the school budget, as well. Unlike other sectors of the economy, public schools cannot incorporate higher fuel taxes in the cost of their product. Public schools cannot even raise tuition or hospital fees as others covered under Sec. 301 can. The public schools have only two choices: raise revenues or cut educational programs. Voter reluctance to raise revenues is well known. It is surely not the intent of the leaders of our Federal government to ask the youth of our country to give up some of their education to assure their future fuel supply.

The financial situation of public schools is further complicated by fiscal barriers; i.e., statutory debt limitations, state and district budget processes, etc. Budgets will probably be set by the time funds are available under this program. They can be adjusted, but it takes time and persuasion.

Can schools raise their share? It will be exceedingly difficult -- even more difficult in view of the total energy package.

Unfortunately, those school districts which are in the best position to help themselves will be most likely to find the matching funds to get federal assistance. The rich will get richer and the poor will continue to see education dollars drift away in wisps of smoke.

Children have already been short changed educationally due to the energy situation. Over 40,000,000 pupil-days were lost in the "Winter of 77." Children will be inappropriately placed this coming year due to those days they missed. Some of the nation's students will be advanced a grade; some children will be held back -- children that should not have had to pay that price. Jeopardizing even one child's education should not be an additional burden born of this energy crisis. It should not have happened.

We can ill afford to have it happen again next winter. With a program of school renovation to conserve energy, the same number of BTU's can keep schools open more days next winter. AASA strongly urges you to move forward with the concept proposed in Part C of this bill and to provide the desperately needed financial assistance which schools need to conserve energy. To do less is a waste of human resources as well as energy resources.

Again, Mr. Chairman, thank you for the opportunity to present these views for your consideration. I would be pleased to respond to any questions you or Members of the Committee might have.

# Public Schools Energy Conservation Measures

MANAGEMENT

SUMMARIES

DRAFT

SAVING SCHOOLHOUSE ENERGY

AMERICAN ASSOCIATION OF SCHOOL ADMINISTRATORS

## SAVING SCHOOLHOUSE ENERGY

The project, Saving Schoolhouse Energy, was initiated to demonstrate the desirability of modifying school buildings to achieve energy conservation, and to develop guidelines by which school administrators could identify the most cost-effective energy conserving opportunities in their buildings.

It should be stressed that the emphasis in this study is on cost-effective capital investments for energy conservation. In this type of study the recommended capital investments should not be implemented without first undertaking a comprehensive operational and maintenance program. This implies that sound energy management procedures, such as appropriate scheduling, periodic inspections, and routine maintenance are a continuing function. It further assumes that the human element--all building personnel and students--is cooperative and appreciative of the intent of the function desired.

The project is designed in five phases: (1) site selection and engineering analyses to identify and recommend cost-effective energy conserving opportunities; (2) architectural and design work; (3) installation, construction, or modifications to implement recommendations; (4) monitoring post-modification energy use to verify the projected energy savings; and (5) dissemination of the findings.

This publication summarizes the PRELIMINARY results of Phase 1. The Federal Energy Administration*, which funded this phase, is in the process of approving the final reports.

## PHASE 1 -- MANAGEMENT SUMMARIES

### PUBLIC SCHOOL ENERGY CONSERVATION MEASURES, REPORTS #1-10

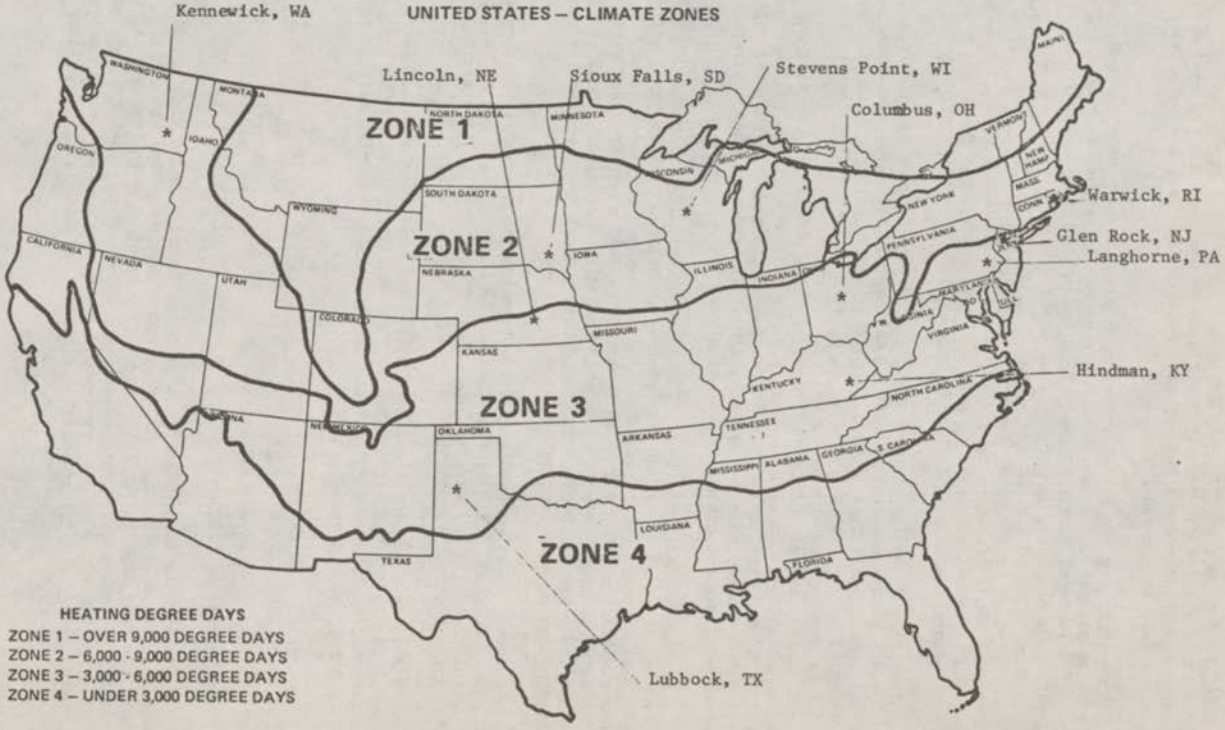
A thorough and comprehensive engineering analysis of ten representative elementary schools across the nation was undertaken to identify cost-effective energy conserving opportunities. The reports of these studies are designed to provide school administrators, engineers, architects, and associated technical personnel with indicators of potential energy savers in similar buildings. The following information is a brief compilation of these findings and abbreviated management summaries of these ten reports.

The demonstration sites selected were constructed between 1925 and 1973, they were multi-level and single-story, and varied from double-loaded corridors to pod and open space schools; and they were widely dispersed geographically (Figure 1). Six of the schools used natural gas as a fuel source; two used oil; and two had gas/oil option. Fuel costs at the time

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*Federal Energy Administration Contract No. CR-04-60711-00. The views and conclusions contained in this summary and in the engineering reports are those of the authors, and should not be interpreted as necessarily representing the official policies of the U.S. Government.

FIGURE 1. DEMONSTRATION SITES



studied ranged from $1.13/MCF to $3.36/MCF for natural gas and was approximately $0.34/gal for oil. All schools were heated; two used unit air conditioners; and one had central air conditioning. All ten schools operated on a standard school year.

Cost-effective energy conserving opportunities have been recommended for implementation at all sites. "Cost-effective" is defined as recovering the cost of investment within 12 years from the predicted energy savings. Calculations are based on current fuel costs with 10 percent per annum escalation adjusted for interest rates. By using the rather conservative 12-year payback period, the recommendations highlight the most cost-effective ECO's that should first be considered by school administrators -- remembering that school districts generally have very limited capital funds and must seek the most advantageous way to spend those funds.

Preliminary results show recommendations vary in cost by site from $1,000 to $80,425 with a mean recommended expenditure of $25,323. Preliminary projections suggest these expenditures will reduce energy consumption an average of 50 per cent across all ten sites. While modifications to the building envelope represent a significant portion of the total recommended expenditures, the most frequent recommendations were to adjust controls and to reduce outside air intake. Generally, they had the quickest recovery rate as well. Table 1 gives an overview of recommendations with associated capital cost estimates and recovery rates by site. Table 2 indicates the specific recommendations and estimated cost by site.

The recommendations made are for existing buildings with the characteristics as described. They offer guidelines for analyzing buildings with similar characteristics. However, suggested energy conserving opportunities must be weighed in terms of the fuel used, its cost and associated savings, as well as capital expenditure considerations. While it is not the primary intent of this report to address new construction concerns, the findings do have implications for such work.

It should also be noted that, in a free market, availability is reflected in cost. However, fuels have not had such a history. As long as fuel costs or supplies are in any way regulated, actual fuel availability may transcend the cost-effective characteristics of a modification.

As soon as the phase 1 engineering reports have been approved by the Federal Energy Administration they will be available at cost. An order blank is attached to this summary for your convenience. Inquiries related to the study should be addressed to:

Dr. Shirley J. Hansen, Director
Saving Schoolhouse Energy
AASA
1801 No. Moore St.
Arlington, VA 22209

or to AASA's consulting engineer:
JCox Associates
Engineers-Consultants
245 West Maple Avenue
Vienna, VA 22180

Following the summary tables is a brief description of each school and more details on the energy conserving opportunities (ECOs) recommended. Also noted are ECOs studied but not recommended, at current fuel rates. As the cost of fuel exceeds the rate used in the calculations, such ECOs may become cost-effective and should be reviewed. Any reconsideration should not view adjusted energy and dollar savings in isolation; materials, labor, interest rates, etc. must also be assessed.

TABLE 1. Demonstration sites, related information; ECOs, associated cost, and recovery rate.

| Report No. | School | Location | Year(s) built/ sq. ft. | Fuel | Cost-effective ECOs | Est. Cost | Recovery rate avg. yrs. |
|---|---|---|---|---|---|---|---|
| 1 | Scott | Warwick, R.I. | 1965,67/ 27,610 (pod) | gas | 1.reduce outside air<br>2.night setback<br>3.replace boiler<br>4.add roof insulation | $ 42,800 | 7 |
| 2 | Central | Glen Rock, N.J. | 1925,39,50/ 45,384 | oil | 1.reduce outside air<br>2.replace boiler<br>3.chg.temperature settings<br>4.dampers<br>5.roof insulation<br>6.reduce infiltration | 39,550 | 6 |
| 3 | Everitt | Langhorne, Pa. | 1954,58,67/ 49,314 | oil | 1.reduce outside air<br>2.replace boiler | 21,200 | 7 |
| 4 | Hindman | Hindman, Ky. | 1957,66/ 32,338 | gas | 1.increase boiler efficiency<br>2.reduce glass 60% | 13,659 | 6.3 |
| 5 | Fairmoor | Columbus, Ohio | 1949,55/ 42,765 | gas | 1.shut down unit vents, summer<br>2.improve boiler efficiency<br>3.night setback<br>4.reduce outside air | 25,700 | 3 |
| 6 | P.F. Brown | Lubbock, Tex. | 1949,50,56/ 36,802 | gas | 1.update & improve controls | 1,000 | 1.5 |
| 7 | Eastridge | Lincoln, Neb. | 1954,55/ 32,029 | gas/ oil | 1.reset & rebalance air handling units<br>2.night setback | 10,000 | 6 |
| 8 | Garfield | Sioux Falls,N.D. | 1952,56/ 33,700 | gas/ oil | 1.reduce outside air<br>2.night setback<br>3.improve boiler efficiency | 20,000 | 8 |
| 9 | Plover Whiting | Stevens Point, Wisc. | 1973/44,000 (open space, CAC) | gas | 1.improve air conditioning usage schedule<br>2.improve indoor lighting schedule<br>3.air temperature reset<br>4.reduce outside air | 3,900 | 1 |
| 10 | Washington | Kennewick, Wash. | 1957/40,124 | gas | 1.mechanical adjustments<br>2.night setback<br>3.roof insulation<br>4.reduce glass<br>5.replace incandescent lighting | 80,425 | 7.5 |



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TABLE 2. Types of recommendations by site.

Given in cost/recovery rate, in years.

| Site | Building Envelope | | | Lighting | Mechanical (HVAC Systems) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | Boilers | | A.C. | Controls | | | |
| | Insulate roof | Reduce glass | Infiltration | | Improve efficiency | Replace | | Reduce O.A. | Night Setback | Change Temp. | Adjust u.v., dampers, controls |
| 1. Scott | $17,300/7 | | | | | $19,500/9 | | $6,000/5 | $0/I* ($1535) | | |
| 2. Central | 7,200/7 | | $6,000/6<br>1,350/2 louvers | | | 20,000/6 | | 5,000/5 | | $0/I* ($565) | |
| 3. Everitt | | | | | | 20,000/11 | | 1200/2 | | | |
| 4. Hindman | | $ 5600/7 | | | ← | × | × | → $ 8,059/5 | | × | → |
| 5. Fairmoor | | | | | $10,000/3 | | | 7200/4 | 8500/3 | | Unoccupied shut down $0/I* (844) |
| 6. Brown | | | | | | | | | | | 1000/1.5 |
| 7. Eastridge | | | | | | | | | baseboard radiators 8000/8 | 2000/4 | |
| 8. Garfield | | | | | 9,000/12 | | | 3000/3 | 8000/8 | | |
| 9. Plover Whiting | | | | Schedule $0/I* ($3214) | | | Schedule $0/I* (2934) | 3000/3 | | 900/6 | |
| 10. Washington | 35,407/11.8 | 5447/4.2 | | Replace Incandescent 29,571/9.38 | | | | | | | 10,000/3.08 |

* I for "immediate return. ( ) gives estimated first year savings.

DEMONSTRATION SITE NO.1: Harold C. Scott Elementary School
Warwick, Rhode Island

Building Characteristics:

1965 single story pod or modified open space school -- 27,610 sq.ft. with library, multipurpose, and administration areas. Walls are 4" face brick, 4" loose insulation, and concrete block with approximately 22% single pane glass. Roof has 2 1/2" insulrock supported by steel beams.

The building is heated by natural draft gas-fired boilers. Unit ventilators are in all classrooms, library, and multipurpose area. Convectors, radiators, and cabinet heaters are used in offices, toilets, and corridors. Gas consumption averages (85 MBTU/sq.ft.)

Illumination is primarily fluorescent. KWH/sq.ft. for all electrical demands averages 3.88.

400 students, K-6; 25 staff. School day: 9:00 a.m.-3:00 p.m. School year: early September-late June.

Total Annual Energy Consumption: 89.6 MBTU/sq.ft. @ 5550 Deg. Days.

Energy Conserving Recommendations:

- Rebalance unit ventilators to reduce outside air 500 cfm to 250 cfm (R.I. code 10 cfm/stu)
  Estimated cost: $6,000. Recovery Rate: less than 5 yrs.
- Revise occupied/unoccupied cycle - from 4:00 a.m.-4:00 p.m. to 8:00 a.m. to 3:00 p.m.; override for night use
  Estimated cost: $0.00. Recovery Rate: immediate. Projected savings lst year: $1,535
- Replace gas-fired boilers with oil-fired boilers
  Estimated cost: $19,500. Recovery rate: 9 years
- Add roof insulation during re-roofing
  Estimated Cost: $17,300. Recovery rate: 7 years

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All recommendations: $42,800 (est.). Recovery: 7 years.

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ECOs not recommended warranting future review: double glazing all windows

# # # #

DEMONSTRATION SITE NO. 2: Central Elementary School
Glen Rock, New Jersey

Building Characteristics:

Constructed 1925, 2 levels; 1939, one level addition similar construction. 45,384 sq. ft. Wall is 4" face brick, 2" air, 8" concrete block with plaster interior finish with 35% glass, double hung single pane. Roof is built up roofing over plywood deck; 3' drop in interior ceiling finished with plaster board or acoustical tile.

1958 addition is single level. Wall is 4 "face brick on 8" concrete block with 60% single pane casements. Roof is built up over wood sheathing with air space, 2" insulation and acoustical tile on interior surface.

Heated by (2) 1925 oil-fired low steam boilers (converted from coal). Unit ventilators and radiators in classrooms and auditorium. One pump for original structure and first addition; second pump for '58 addition -- controlled manually. Fuel consumption averages 0.94 gal/sq.ft.(131.6 MBTU/sq.ft.)

Illumination is primarily fluorescent. KWH/sq.ft. for all electrical demands averages 3.5.

300 Students, K-6; 30 staff (includes district administration personnel). School day 9:00 a.m.-3:00 p.m.; staff 8:00 a.m. to 6:00 p.m. School year: early September-late June. 15 adults 8:00 a.m.-6:00 p.m. in July. Vacated in August.

Total Annual Energy Consumption: 158 MBTU/sq.ft. @ 4590 Deg. Days.

Energy Conserving Recommendations:

- Reduce outside air
  --500 cfm to 175 cfm (state code)
  Estimated cost: $5,000. Recovery rate: 5 years
- Replace boiler with modular hot water boilers
  Estimated cost: $20,000. Recovery rate: 6 years.
- Reduce thermostat settings: 70 F to 68 F
  Estimated cost: $0.00 (maintenance). Recovery rate: immediate. Estimated savings 1st year: $565.00
  Install motor operated damper to close louvers and roof ventilators in auditorium
  Estimated cost: $1,350. Recovery rate: 2 years.
- Install roof insulation: -- blanket type in existing 3' airspace. Estimated cost: $7,200. Recovery rate: 7 years.
- Infiltration reductions:
  --weather stripping windows and doors
  --automatic damper at roof ventilator
  Estimated cost: $6,000. Recovery rate: 6 years.

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All recommendations: $39,550 (est.). Recovery rate: 6 years

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ECOs not recommended warranting future review: institute warm-up cycle with dampers closed.

# # # #

DEMONSTRATION SITE NO. 3: Samuel Everitt Elementary School
Langhorne, Pennsylvania

Building Characteristics:

Constructed 1954 with two additions (1958, 1967); all have similar structure. 49,314 sq.ft. Walls are 4" face brick, air space, and 8" concrete block with approximately 45% glass in single pane casements. It has a built-up roof over 3 1/2" Insulrock supported by exposed steel beams.

Heated by (2) oil-fired hot water boilers. There is a 5.5 ton air conditioning unit for office area controlled by a 7 day time clock and two manually controlled window air conditioners for the library. Unit ventilators and radiators are used throughout the building. Fuel consumption .68 gals/sq.ft. (93.8 MBTU/sq.ft.).

Illumination is primarily fluorescent. KWH/sq.ft. for all electrical demand averages 3.27.

Everitt has 559 students, K-5. School day: 9:00 a.m. to 3:00 p.m. School year: early September to Mid-June. Used five nights per week and the office all summer.

Total Annual Energy Consumption: 108.9 MBTU/sq.ft. @ 4590 Deg. Days.

Energy Conserving Recommendations:

- Reduce outside air intake
  --500 cfm to 175 cfm (state req.)
  Estimated cost: $1,200. Recovery rate: 2 years.
- Replace boilers with modular hot water boilers
  Estimated cost: $20,000. Recovery rate: 11 years.

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All recommendations: $21,200 (est.). Recovery rate: 7 years

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ECOs not recommended warranting future review: double pane glass, and/or panel over clearstory glass.

# # # #

DEMONSTRATION SITE NO. 4: Hindman Elementary School
Hindman, Kentucky

Constructed in 1957 with addition of similar structure in 1966. Walls are 4" face brick, 2" air space, and 4" concrete block with 49% glass of 1/8" plate glass with aluminum frame. The roof is 1 1/2" rigid insulation, air space, and 2 3/4" blanket fiberglass on steel deck. Total area is 32,338 sq.ft.

Hindman is heated by a gas-fired cast iron sectional boiler with forced hot water circulating through convectors. Four sections were added in 1966 to accomodate addition. Classrooms do not have thermsotats. Building is controlled by zone of exposure. Annual fuel consumption .8CCF/sq.ft. (80 MBTU/sq.ft.).

Illumination is primarily fluorescent with level at approximately 60 foot-candles. Annual electrical consumption 2.58 KWH/sq.ft.

611 students, 1-7, and 32 staff occupy building from 8:30 a.m. to 3:30 p.m. 180 days, mid-August to mid-May.

Total Annual Fuel Consumption: 88.4 MBTU/sq.ft. @ 3320 Deg. Days.

Energy Conserving Recommendations:

- Increase boiler efficiency to 80%, reduce outside air, and repair zone control
  --clean, adjust boiler; establish appropriate controls
  --set unit ventilators for reduced outside air; close dampers on night set back
  repair and correct zone thermostats and 3-way valves
  Estimated cost: $8,059. Recovery rate: 5 years.
- Reduce glass by 60%.
  Estimated cost: $5,600. Recovery rate: 7 years.

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All recommendations: $13,659 (est.). Recovery rate: 6.3 years

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# # # #

DEMONSTRATION SITE NO. 5: Fairmoor Elementary
Columbus, Ohio

Original structure build in 1949 was 23,500 sq.ft. on 3 levels. The walls are 4" brick face on 8" concrete block with 28% glass, N/S facing. Roof was rehabilitated 3 years ago with 2 1/2" insulating board on steel deck.

A 19,200 sq.ft. addition was added in 1955 bringing total square footage to 43,765 sq.ft. The addition is a single level. The walls are 4" brick face on 12" concrete block with 58% glass, E/W facing. The addition roof consists of built up roofing on 2 1/2" Tectum panels with no ceilings.

Fairmoor is heated by 2 gas-fired boilers converted from coal. There are unit ventilators in all classrooms -- steam in original section, hot water in addition. Therms/sq.ft. averages 1.5. (150 MBTU/sq.ft.).

Illumination is primarily fluorescent with mercury vapor and incandescent in multipurpose room. Electricity demand is 3.56 KWR/sq.ft.

475 students, K-6 and 30 staff occupy the building 8:45 a.m. to 3:15 p.m. from early September to mid-June.

Total Annual Energy Consumption: 180.6 MBTU/sq.ft. @ 5280 Deg. Days.

Energy Conserving Recommendations:

- Shut down unit ventilators in unoccupied summer months
  Estimated cost: $0.00. Recovery rate: immediate ($844 1st year)
- Improve boiler efficiency
  --replace burners
  --reduce flue size
  --install boiler controls to fire on demand
  Estimated cost: $10,000. Recovery rate: 4 years.
- Night set back
  --install time clock to shut unit ventilators, close dampers, stop exhaust fans
  Estimated cost: $8,500. Recovery rate: 3 years.
- Adjust unit ventilators to reduce outside air intake
  --air balance; upgrade controls
  Estimated cost: $7,200. Recovery rate: under 4 years.

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All recommendations: $25,700 (est.). Recovery rate: under 3 years

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ECOs not recommended warranting future review: double glazing, insulate addition roof, add double doors, or reduce glass.

# # # #

DEMONSTRATION SITE NO. 6: P. F. Brown
Lubbock, Texas

Original 1949 structure and 1950 addition comprise 25,258 sq.ft. single level. Of similar construction - walls are 4" face brick on 8" structural tile with interior plastered with 16.5% glass, N/S facing. Roof is 3" concrete deck, ceiling plastered.

1956 addition brought total footage to 36,802 sq.ft. This addition is essentially the same with the exception of acoustical board on ceiling and the double hung windows have an E/W orientation.

P. F. Brown has one gas-fired, fire tube, low pressure steam boiler. There are no unit ventilators. Outside air by infiltration only. Gas consumption averages 0.91 MCF/sq.ft. (91 MBTU/sq.ft.).

Illumination is primarily fluorescent. Total electrical demand averages 2.185 KWH/sq.ft

388 students, K-6, and 48 staff occupy the building 8:00 a.m. to 3:00 p.m. late August through May.

Total Annual Energy Consumption: 102.5 MBTU/sq.ft. @ 3150 Deg. Days.

Energy Conserving Recommendations:

- Update and improve controls

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Estimated cost: $1,000. Recovery rate: 1.5 years

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ECOs not recommended warranting future reveiw: increase efficiency of heating plant.

Adding roof insulation, replacing glass blocks, and contracting weather stripping all had recovery rates over 50 years.

# # # #

DEMONSTRATION SITE NO. 7: Eastridge Elementary School
Lincoln, Nebraska

Constructed in 1954 and added in 1955, Eastridge has essentially the same structure. Walls are 4" brick on 4" cavity block with 4" face brick veneer. Glass is single pane clear and frosted above, 27% of wall with predominance N/S facing. Roof is built up tar and gravel on 3 1/2" cedar deck, 3/4" acoustical tile ceiling.

Eastridge is heated by 2 gas/oil fired hot water boilers. It has hot water baseboard radiators and hot water central air handling units.

Annual fuel consumption: .71 CCF/sq.ft. (71 MBTU/sq.ft.).

Illumination is fluorescent. Annual electric 3.7 KWH/sq.ft.

300 students, K-6, occupy the building from 8:40 a.m. to 2:40 p.m.; 25 staff members from 8:00 a.m.-4:30 p.m. for 178 days each year.

Total Annual Energy Consumption: 83 MBTU/sq.ft. @ 6040 Deg. Days.

Energy Conserving Recommendations:

- Resetting and rebalancing air handling unit
  Estimated cost: $2,000. Recovery rate: 4 years
- Night set back for baseboard radiation
  Estimated Cost: $8,000. Recovery rate: 8 years

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Estimated cost: $10,000. Recovery rate: 6 years

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ECOs not recommended warranting future review: add roof insulation, reduce glass by 17%, or add exterior wall insulation.

# # # #

DEMONSTRATION SITE NO. 8: Garfield Elementary School
Sioux Falls, South Dakota

Constructed in 1952 and added to in 1956 for a total of 33,700 sq.ft. Garfield has two levels. Walls are 4" face brick on 8" concrete block with about 30% glass. Of this glass area, 70% is glass block and the remainder is plate. The roof is 4 ply pitch and felt, 2" semi-rigid insulation, and 1 1/2" metal deck.

Garfield is heated by 2 gas/oil fired hot water boilers. Hot water baseboards and hot water central air handling units handle the heating and ventilating requirements. Annual fuel consumption: 94 CCF/sq.ft. (94 MBTU/sq.ft.).

Illumination is primarily fluorescent. Annual electric usage 3.08 KWH/sq.ft.

500 students, K-6, occupy the building 8:30 a.m. to 3:15 p.m.; 26 full time and 8 part time staff are there from 8:30 a.m. to 4:00 p.m. for 180 days per year.

Total Annual Energy Consumption: 109.7 MBTU/sq.ft. @ 7860 Deg. Days.

Energy Conserving Recommendations:

- Reduce outside air to minimum code (5 cfm)
  Estimated cost: $3,000. Recovery rate: 3 years
- Night set back system
  Estimated cost: $8,000. Recovery rate: 8 years
- Improve boiler efficiency
  Estimated cost: $9,000. Recovery rate: 12 years

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All recommendations: $20,000 (est.). Recovery rate: 8 years

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ECOs not recommended warranting future review: add roof insulation, add exterior wall insulation, or reduction of glass.

# # # #

DEMONSTRATION SITE NO. 9: Plover Whiting Elementary School
Stevens Point, Wisconsin

Plover Whiting is an open space school of 44,000 sq.ft. constructed in 1973. It has three distinct wall types: (1) 3/8" diagonal wood siding, 1" rigid insulation, 3/4" air space, and 8" concrete block; (2) as "1" with 12" concrete block around gym; and (3) 3/8" wood siding, 3/8" gypsum sheathing, 2" air space, 3 1/2" batt insulation on 6" stud wall with 5/8" GWB on interior. Glass averages 6.9%. Roof is built up, 1 1/2" rigid insulation, 1 1/2" metal deck, and 3/4" acoustical ceiling tile.

Plover Whiting is heated/cooled by 2 forced draft gas-fired boilers and 120 ton reciprocating chiller with air cooled condensing. Classrooms and multi-purpose are heated, ventilated and air conditioned by 3 central air handling units. Uses average .9 therms/sq.ft. (90 MBTU/sq.ft.).

Illumination is primarily fluorescent. Electrical load demand is approximately 10.5 KWH/sq.ft.

472 students, K-6, and 28 staff occupy the building from 9:00 a.m. to 3:30 p.m. for approximately 180 days, late August to mid-June.

Total Annual Energy Consumption: 132 MBTU/sq.ft. @ 7590 Deg. Days.

Energy Conserving Recommendations:

- Improve air conditioning usage schedule
  Estimated cost: $0.00. Recovery rate: immediate ($2,934 1st year)
- Improve indoor lighting usage schedule
  Estimated cost: $0.00. Recovery rate: immediate ($3,214 1st year)
- Air temperature reset mixed and supply
  Estimated cost: $900. Recovery rate: 6 years
- Reduce outside air intake to minimum code (5 cfm/person)
  --rebalance outside, return, and exhaust dampers
  Estimated cost: $3,000. Recovery rate: 3 years

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All recommendations: $3,900 (est.)
Recovery rate (investments only): 2 years
all recommendations: 8 months.

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ECOs not recommended warranting future review: add roof insulation and/or add wall insulation.

# # # #

DEMONSTRATION SITE NO. 10: Washington Elementary School
Kennewick, Washington

Washington is a single level structure built in 1957 with no addition. The three wing double loaded corridors has a total area of 40,124 sq.ft. Walls are precast panels and 3/4" rigid insulation with 50% glass (1/4" plate). The roof is built up roofing with 2" rigid insulation on steel deck with 2% sky-light.

Heating is by a gas-fired induced draft steel boiler. Distribution is on 3 zones with unit ventilators in classrooms, multipurpose, and administrative areas. Consumption averages .87 therms/sq.ft. (86.9 MBTU/sq.ft.).

Illumination is incandescent throughout. Total electrical demand is approximately 6.14 KWH/sq.ft.

503 students, K-6, occupy the building 9:00 a.m. to 3:15 p.m. and the staff from 8:00 a.m. to 3:45 p.m. from early September to mid-June.

Total Annual Energy Consumption: 107.8 MBTU/sq.ft. @ 5300 Deg. Days.

Energy Conserving Recommendations:

- Mechanical adjustments and maintenance
  --bring outside air up to code (5 cfm)
  --bring pump, filters, coils, fan motors, and damper linkages to maximum efficiency
  --calibrate and reduce thermostat settings
  --provide night setback capability
  Estimated cost: $10,000. Recovery rate: 3.08 years
- Add roof insulation in re-roofing process
  --3" rigid insulation
  Estimated cost: $35,407. Recovery rate: 11.8 years
- Reduce glass by 28% - fixed window modules with N, E or W exposure
  Estimated cost: $5,447. Recovery rate: 4.2 years
- Replace incandescent lighting with fluorescent at code (50 classroom, 20 corridors)
  Estimated cost: $29,571. Recovery rate: 9.38 years

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All recommendations: $80,425 Recovery rate: 7.5 years

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ECOs not recommended warranting future review: change from gas-fired to electric boiler.

ORDER FORM

Public School Energy Conserving Measures

Report No.

1. SCOTT: *1965,67 pod; replace boilers, add roof insulation, controls ($37,800/5 yr. return)* _____
2. CENTRAL: *1925,39,50; replace boilers, roof insulation, reduce infiltration, controls ($39,550/5 yr. return)* _____
3. EVERITT: *1954,58,67; replace boiler, reduce outside air ($21,200/9 yr. return)* _____
4. HINDMAN: *1957,66; increase boiler efficiency, reduce outside air, night set back, controls, reduce glass 60% ($13,650/6.3 yr. return)* _____
5. FAIRMOOR: *1949,55; improve boiler efficiency, revise unoccupied settings, reduce outside air, night set back ($25,700/3 yrs. return)* _____
6. P.F. BROWN: *1949,50,56; update and improve controls ($1000/1.5 yr. return)* _____
7. EASTRIDGE: *1954,55; reset and rebalance air handling units; night set back ($10,000/5 yr. return)* _____
8. GARFIELD: *1952,56; reduce outside air, night set back, improve boiler efficiency ($20,000/10 yr. return)* _____
9. PLOVER WHITING: *1973; air condition schedule, indoor lighting schedule, air temperature reset, reduce outside air ($3,900/1 yr. return)* _____
10. WASHINGTON: *mechanical adjustments, night set back, roof insulation, reduce glass, replace incandescent lighting ($80,425/7.5 yr. return)* _____

No. Reports Requested _____

Each report at cost ($2.50) including postage and handling as soon as cleared by Federal Energy Administration.

Enclosed is $_____(# reports X $2.50)

Make check payable to AASA-Energy and mail to:

Dr. Shirley J. Hansen
AASA-OGR
1801 North Moore Street
Arlington, VA. 22209

Mr. DINGELL. Doctor, we thank you.
Our next witness is Mr. Orsburn.

## STATEMENT OF JAMES H. ORSBURN

Mr. ORSBURN. The California State Department of Education appreciates the opportunity extended to us to comment upon the proposed National Energy Act. We are particularly pleased to submit our comments about part C of the act which addresses energy conservation programs for schools and hospitals. The department is extremely gratified that Congress is addressing the special costs associated with energy conservation and that you are recognizing schools and hospitals as a separate category within the act. The comments which follow will reference sections of the proposed act; however, we are presenting general statements and we rely upon your staff to provide the adequate congressional language to properly state each of our concerns in the act.

Section 391(2), (A) through (J), lists the various categories for energy conservation measures. We support the listing and use it as a reference for a funding concept which we recommend for sections 393 and 395. Therefore, we do not recommend deletion of any (A) through (J) items and we recommend consideration of an option for a State to add an "item (K)" if some unique energy saving measure does not fit your defined (A) through (J) categories.

In section 393—grant authorization—and section 394—financial assistance—we recommend that you consider a phase-in of the Federal/State cost sharing of any remodeling, reconstruction or new construction which involves conservation measures detailed in section 391(2).

Our recommendation is that the Federal Government authorize 100 percent reimbursement with no State or local match for fiscal year 1978. Local school districts and most other governmental agencies in California have their preliminary fiscal year 1978 budgets published during the first part of June 1977.

School district budgets and tax rates must be set by the first week in August 1977 for fiscal year 1978. It would be extremely difficult to modify these budgets to accommodate any match requirements during that fiscal year. We recommend a 75 percent Federal/25 percent State and local cost sharing for fiscal year 1979; a 50 percent/50 percent cost sharing with the Federal Government commencing with fiscal year 1980; and, hopefully thereafter if such legislation is reenacted.

California's State bonds for school construction are extremely limited. Also, other local tax dollars are being used for new construction as a high priority, and remodeling or reconstruction is not often funded during these times of limited fiscal resources.

We suggest that you permit the total cost of a project to qualify for the above-mentioned cost sharing if the total project addresses more than 50 percent of the energy conservation measures detailed in section 391(2) (A) through (J). This will ensure the intent of Congress to implement energy conservation measures, particularly as regards the 100 percent Federal reimbursement for fiscal year 1978. The proposed act gives the impression that Federal cost

sharing is only available for the cost of an energy conservation measure.

We have a particular concern about section 394 regarding State plans and the involvement of a single executive within a State. The proposed act designates each State's Governor as the single agent for that State. We do not feel that a single chief executive should be designated, particularly since the proposed act addresses the needs of schools and hospitals. It is our recommendation that the act be amended to authorize at least two jurisdictions within each State. We recommend that all elementary and secondary, public and private, qualified schools be eligible through each State's chief State schools officer. We also recommend that each State's institutions of higher education be given one of three options for application of funds. These institutions of higher education, both public and private, should be permitted to apply through the Governor's office, the chief State schools officer, or directly to the Federal Government. We recommend that the hospitals apply for their funds directly through each State's Governor's office.

In addition to recommending the jurisdictional division among the three eligible types of institutions noted above, we would further recommend that specific percentage allocations within each State be designated in the act.

Therefore, our recommendation is that the elementary and secondary education portion be allocated a maximum of 40 percent of each State's allocation; institutions of higher education be allocated 30 percent; and hospitals allocated 30 percent.

The staff of the Department of Education is well aware of other congressional measures addressing energy conservation and new construction proposals which have energy conservation emphasis. We recommend that Congress seriously consider a general public policy toward aggregation of these various proposals because a review of S. 701—Emergency Educational Assistance Act—and its companion House bill, H.R. 5996, contain many features which should be jointly addressed with the proposal under consideration by your committee.

The California Department of Education has staff available to make recommendations for any specifics regarding school remodeling, reconstruction or new construction to address energy conservation measures. Again we wish to thank you for the opportunity afforded to our State to place our comments on the record for your consideration.

Mr. DINGELL. We thank you for a very, very helpful statement. Our next witness is Dr. Saunders.

## STATEMENT OF DR. CHARLES B. SAUNDERS, JR.

Dr. SAUNDERS. Thank you, Mr. Chairman. My name is Charles Saunders of the American Council on Education and I am speaking this morning on behalf of nine higher education associations identified in my statement.

We would like to say we are pleased with the Administration's proposed energy conservation program for schools and hospitals to the extent that it recognizes the importance of the nonprofit sector

as a significant thing. We are pleased that it recognizes the importance of the energy problems and their impact on American schools and colleges.

We are concerned that the nonprofit sector is excluded from eligibility for the tax rebate and refund provisions of title II. I appreciate this is not a subject before your committee, but I would like to mention it in passing, making the point that although the nonprofit sector would pay along with other sectors of the economy, the special taxes on energy consumption imposed in title II, it would not share in the relief granted to business and industry, State and local governments and private individuals in the form of tax rebates, refunds and credits for fuel efficiency and economies in the use of energy. We think that is a serious defect. We would like to work with the Congress on that.

We have three specific comments on title I, part C. The first has been discussed in full by Mr. Reed, namely, the fact that making grants to the States for allocation to recipients of approved projects presents an obstacle to participation of private schools and colleges in about 25 States which have constitutional prohibition against use of State funds for private or secondary institutions.

We noted there are models for resolving this problem in the language of the existing laws like the Hill-Burton Hospital Construction Act and the Higher Education Facilities Act which provides for Federal grants directly to recipient institutions which means a refinement of State plans. This is an important issue which needs to be corrected, we feel.

Secondly, the definition of allowable energy conservation measures in section 391 needs to be broadened to encourage systems convert and co-generation of energy.

I would agree with the chairman in his comment earlier about the need to broaden these definitions and I take issue with Deputy Administrator Bardin in his feeling they have to be so narrow. Systems convert is the most sophisticated and costly type of conservation measure, but it yields substantial energy savings. Co-generation—the production of other forms of energy in addition to electricity, such as steam or heat—vastly increases the capacity and efficiency of existing power plants.

The definition of furnace modifications in the bill is so restrictive as to exclude major renovations of a central power plant, and such modifications are essential for energy conservation programs at large scale institutions, particularly in the higher education community. I note most colleges are themselves fairly substantial communities of several thousand up to sixty thousand individuals and the number of buildings involved there makes it critical to do something about the central power plant.

My statement also includes further comments on the problems we have with some of the narrow definitions of allowable projects which do not make it possible to emphasize the need for large scale work which would have enormous energy savings.

Thirdly, the authorization for energy conservation projects, as has been mentioned by previous witnesses, would only make a token start on meeting identified needs in the education sector. Our estimate as far as higher education facilities alone is concerned is

that there is about $4 billion worth of need out there in order to address the problem.

A higher authorization would certainly provide a more realistic index of the level of national commitment which is needed.

We also suggest an additional authority for technical assistance. The Deputy Administrator spoke earlier of the need for such assistance. We propose specific language in the bill authorizing technical assistance to encourage utilization studies and other important planning activities.

We would call your attention to the language of section 8 of S. 701 sponsored by Senator Pell, which authorizes $150 million annually for grants to State agencies, local educational agencies and institutions of higher education to pay the Federal share of the cost of technical assistance for energy conservation.

Finally, Mr. Chairman, I would like to insert for the record a recent study which was just published last week of energy cost and energy conservation programs in colleges and universities. This was just published last week. It was done jointly by the Office of Education and the higher education community's, Energy Task Force, which is staffed by the National Association of College and University Business Officers and the Physical Plant Administrators. The executive secretary of the Energy Task Force, Mr. Steve Hychka is here with me this morning. The Task Force has over the last two years amassed a great deal of information on the costs and energy needs of colleges and universities and there is a lot of useful information in the study.

Mr. DINGELL. The study is very useful and without objection will be reviewed by the staff and will probably be inserted in the record.

[The document referred to may be found in the subcommittee files.]

Dr. SAUNDERS. On the question you specifically raised on whether institutions would be able to find the money for these kinds of activities, pages 12 and 13 of the study indicate the findings of that survey and show that most institutions in higher education have done a great deal in the way of corrective measures. They have substantially done the job of meeting immediate needs. They have been less successful in the retrofit measures and the systems convert measures, which are more expensive.

Mr. DINGELL. Are you talking about more expensive, more complex, larger investments?

Dr. SAUNDERS. Both. They are larger investments. We find that institutions, in their response to the survey, said they were hoping to get into these more expensive energies, but typically they could not find money immediately. These are projects which have a payoff over five to eight years and it would be very much to the advantage of the institution to make that investment if they had 40 or 50 percent of the cost available Federal grants. This would encourage them to do these more substantial jobs that the survey shows are needed.

That concludes my formal testimony.

[Dr. Sanders prepared statement follows:]

91-931 O - 77 - 58

STATEMENT OF CHARLES B. SAUNDERS, JR., DIRECTOR OF GOVERNMENTAL RELATIONS, AMERICAN COUNCIL ON EDUCATION.

I appreciate the opportunity to comment on the Administration's proposed Energy Conservation program for Schools and Hospitals, on behalf of nine higher education associations.

The Administration's proposal (Part C of Title I of H.R. 6831, the National Energy Act) recognizes two important points which have received relatively litle attention in the debate on national energy policy in recent years:

1. The nonprofit sector (especially the education community) compromises a significant and energy-intensive sector of the American economy, accounting for about 10 percent of the nation's total energy consumption. Therefore the nonprofit sector is a major potential source for energy savings.

2. The nation's energy problems have an enormous impact on schools and colleges throughout the country. Sharply rising energy costs pose a very real danger to the educational system, by robbing financially hard-pressed institutions of funds vitally needed to sustain and improve the quality of educational services for the American people. For postsecondary education alone, total energy costs rose from $555 million in academic year 1972-73 (FY 73) to $944 million in academic 1974-75 (FY 75)—an increase of 70 percent. This increase fell most heavily on the East (where college energy costs rose 94 percent) and the South (84 percent), but also significantly affected institutions in the Midwest (48 percent) and the West (40 percent). Nationally, institutionally current fund expenditures for energy rose from 2.7 percent to 3.6 percent, even while increased conservation efforts resulted in a 12 percent decrease in energy consumption.

We welcome the recognition of these points in Part C of Title I which would make matching Federal funds for energy conservation projects available to schools, colleges, and hospitals. At the same time, we are seriously concerned that the nonprofit sector is inexplicably excluded from eligibility for the tax rebate and refund provisions in Title II of the bill.

Although the nonprofit sector would pay, with other sectors of the economy, the special taxes on energy consumption imposed in Title II, it would not share in the relief granted to business and industry, state and local governments, and private individuals in the form of tax rebates, refunds, and credits for fuel efficiency and for economies in the use of energy for business and residential purposes.

Thus the burden of the proposed taxes would fall disproportionately on the nonprofit sector. This is particularly unfair because colleges and universities, unlike business and regulated industries, cannot readily pass on increased energy costs directly to their "customers," since these customers are students and their parents who are already suffering heavy financial pressures due to rising educational costs. It should also be noted that, to the extent colleges are forced to pass on their increased energy costs by raising their tuition and fees, this will generate needs for further increases in Federal student assistance programs which already total $8 billion.

With respect to the specifics of Title I Part C, several changes are essential to provide effective and equitable incentives for energy conservation.

1. There is a serious problem with the language of Sections 303, 305 and 306 which provide that grants shall be made to the states for allocation ot recipients of approved projects. This procedure presents an obstacle to the participation of private schools and colleges in about 25 states which have constitutional prohibitions against the use of State funds for private or sectarian institutions.

There are models for resolving this problem in the language of existing Federal laws, such as the Hill-Burton Hospital Construction Act and the Higher Education Facilities Act, which provide Federal grants directly to recipient institutions which meet the requirements of state plans. We urge that similar language be adopted in appropriate amendments to Part C so that public and private institutions will continue to be treated alike, as Congress has consistently determined in all legislation dealing with postsecondary education.

2. The definition of allowable energy conservation measures in Section 391 needs to be broadened to encourage systems convert and co-generation of energy. Systems convert is the most sophisticated and costly type of conservation measure, but it yields substantial energy savings. Co-generation—the production of other forms of energy in addition to electricity, such as steam or heat—vastly increases the capacity and efficiency of existing power plants.

The definition of furnace modifications in 391 (2) (F) is so restrictive as to exclude major renovation to a central power plant. Such modifications are essential for

energy conservation programs at large-scale institutions where campus power plants serve multiple buildings (over 60 universities have enrollments ranging from 20,000 to 58,000 students).

Furthermore, since 45 percent of the energy consumed in colleges and universities is driven by natural gas, the scarcest fuel, conservation programs should not only be permitted but encouraged to convert power plants to other sources of energy. Such conversion would apparently not be allowable under 391 (2) (F). Neither would co-generation of energy, which is encouraged in other parts of the legislation. It makes no sense to incur major costs for plant conversion unless at the same time co-generation is undertaken wherever feasible. Otherwise institutions would be locked into the same burn capacity as before, with less efficient fuels, and without the added benefits of co-generation which typically increases plant efficiency from 35 to 75 percent.

The definitions also seem to exclude heat recovery systems, heat pumps, and other devices for substantially increasing energy efficiency. Nor does the language of Part C recognize that any construction or reconstruction for energy purposes must also meet the standards of existing laws for occupational safety and health, removal of architectural barriers for the handicapped, and environmental protection. Compliance with these social objectives should be allowable costs, when they are necessitated by energy renovations.

3. The authorization for energy conservation projects would only make a token start on meeting identified needs in the education sector. The $900 million authorized over three years would produce $2.25 billion worth of reconversion at 40 percent Federal matching. We estimate that a systematic effort to improve the energy efficiency of higher education facilities alone would cost $4 billion. However, such an effort would have the potential of annual energy savings of between $400 and $500 million—the equivalent of the entire annual energy consumption of the aluminum industry. Therefore we feel that a higher authorization for the grant program would provide a more realistic index of the level of national commitment which is needed.

We also suggest an additional authority for technical assistance as desirable to encourage utilization studies and other important planning activities. We commend to your attention the language of Section 8 of S. 701, sponsored by Senator Pell, which authorizes $150 million annually for grants to State agencies, local educational agencies, and institutions of higher education to pay the Federal share of the cost of technical assistance for energy conservation measures. Such an authority would result in more intelligent energy conservation and greater efficiency.

Thank you for the opportunity to present these views, on behalf of the American Association of Community and Junior Colleges, the American Association of State Colleges and Universities, the American Council on Education, the Association of American Universities, the Association of Jesuit Colleges and Universities, the National Association of Independent Colleges and Universities, the National Association of State Universities and Land-Grant Colleges, and the National Catholic Educational Association's College and University Department.

Mr. DINGELL. The Chair wishes to thank the panel for a very helpful group of statements.

The Chair will now recognize members for questions.

Mr. MOORE. No questions.

Mr. DINGELL. The Chair recognizes the gentleman from California, Mr. Moorhead.

Mr. MOORHEAD. I was interested in the testimony given by several of the witnesses who are concerned that there may not be funds available to take advantage of the program. Supposing we had a fixed amount of money to be spent on this particular program. Would it be more helpful to the schools? Would more of them be interested in the program if we had larger percentages for a few schools that could share what was available, or should it be spread out as it is in the present bill with smaller percentages going to each project available for a much larger number of schools throughout the country? We are assuming there are just so many dollars there.

Mr. ORSBURN. Perhaps the lower-wealth school districts in the State of California might be able to meet the matching funds. The high-wealth districts have general reserve funds they can use to match with and low-wealth districts have all of this money used up for salaries, transportation, books and so forth. I think the higher amount of matching from the Federal Government or a State government would help some of these districts possibly make application for this type of program. They are the districts really who need the energy conservation measures because every dollar they put into a higher gas bill or light bill, the less money they have for the educational program.

Mr. MOORHEAD. As we get involved in the refinancing, that may not be as true as it once was.

Mr. ORSBURN. We don't know.

Dr. HANSEN. At this moment I would say the lower the matching from the Federal share, the more advantageous it will be to the rich districts. The rich will get richer and the poor will be more frustrated. Even though it might do less schools, I think 50-50 would give more incentive to the schools.

Dr. SAUNDERS. You assume there is a fixed amount of money for this purpose. If that fixed amount includes some technical assistance component that would help the money go around to a greater extent.

Mr. MOORHEAD. I was interested in the testimony of Mr. Reed. How many of the parochial schools or what kind of percentage would be able to come up with the additional money which is necessary to take advantage of the program, assuming they were eligible the way the bill is written now, or if the bill was changed to include everyone?

Mr. REED. We haven't had an opportunity to make an evaluation of the number that would participate. Each diocese, for example, would have to concentrate on taking care of its schools, making money available for schools that are in the inner cities and operating on a real tight budget—schools which might go out of existence if they didn't have some additional assistance. Statistically we have no record on this matter. I would assume that approximately 60 to 70 percent would be able to participate. In the school lunch program, when we were confronted with a matching program, a very substantial number of our schools were able to meet the Federal dollar on a 50-50 basis.

Mr. MOORHEAD. Thank you very much.

Mr. DINGELL. The Chair thanks the gentleman and the Chair recognizes now the gentleman from Pennsylvania, Mr. Walgren.

Mr. WALGREN. I notice we seem to be fleeing from the arms of our Governors very rapidly in terms of who should administer the distribution of the funds. The one suggestion from the gentleman from California is that hospitals be left with the Governors and that others have access both to the Federal Government or to their State school officer.

What reservations should we have in this area? How should the funds be distributed? Who should do it?

Mr. ORSBURN. The State Department of Education in California has a facilities program, and we even have a State aid building

program. We know a lot about what is going on in the facilities. We know where the remodeling of buildings is taking place. We know what is happening with our facilities program. At the time a building is remodeled, for instance, that is the time we should take care of many of the energy conservation measures.

We think that the Department of Education in California, particularly for the 'K' through twelfth grade levels would be—knowing more about it, I think we could do a better job and put it where it should be.

Dr. HANSEN. I would concur with what the gentleman from California just said. School administrators traditionally have worked through their State Departments of Education, directly with the Office of Education, or with Regional Offices of Education. As such there is an understanding that works both ways, which facilitates grants being handed down on a basis of a multitude of needs. I think they are better geared up to handle it.

Mr. REED. On that point, Mr. Congressman, we have had considerable experience. The parochial school system of the country has suffered in many States that have very restrictive constitutional provisions, constitutional provisions which are much more restrictive than the First Amendment.

There have been favorable decisions on a given issue by the Supreme Court but States will say "Well, that is the interpretation of the Supreme Court on the First Amendment, but our Constitution is more restrictive."

In the school lunch area, which has been in existence since 1946, even though it is a welfare program, only 25 or 26 States include the church-related and private school systems.

I think consideration should be given to Federal control of the money to obviate some of the difficulties deriving from local and State constitutional considerations. This was done in the Hill-Burton, it was done in the Higher Educational Facilities Act, it is reflected in the Elementary and Secondary Education Act. It has been a consistent policy of Congress to do that wherever possible in order to see that the Federal dollar goes where the Federal Government wishes it to go.

Mr. WALGREN. I come from an area where I think almost 40 percent of the students go to parochial schools. If they were to leave those schools and go back to the public schools, there is just no way that the public schools have the capacity to take them in, let alone just this pure fairness as to the appropriate tax dollars that are paid. It is incredible to me that the administration on a staff basis would simply delete in the drafting of a bill a provision for parochial and other private schools.

Was that done on a staff basis as far as you know?

Mr. REED. Our only knowledge is this, Mr. Congressman: We had been informed by White House spokesmen that there was no limitation on the President's program when he specifically stated that it would include all nonprofit schools. Then, when we saw the bill and analyzed the language, we noticed the inconsistency. So we had a conference with several members at the White House level to determine precisely what was meant.

We talked with them for an hour and a half. They insisted that constitutional considerations precluded the use of Federal moneys

for church schools where religion is taught or sectarian instruction conducted. We discussed this from every angle. When we went to the White House we felt that there would not be any significant difficulty, but we left with the conviction that we had a problem, a problem which I hope can be worked out.

Mr. WALGREN. How would you recommend it be worked out in this sense?

Can the legislation simply leave the question open so if there is an objection that objection must be imposed through the courts? It seems certainly wrong for someone who may not even be a lawyer, who certainly has never been put in a judicial position in our society, to be making judgments about whether or not the Constitution creates a problem for this kind of expenditure, because we know there are many expenditures that involve parochial school that are not problems.

Would it be proper simply to eliminate that kind of exclusion from the language or do we have to mandate that the parochial schools be included on some kind of fair apportionment basis?

Mr. DINGELL. The time of the gentleman has expired, but the Chair will permit the witness to respond.

Mr. REED. Our recommendation would probably be to delete the offending language.

Mr. WALGREN. Thank you very much.

Mr. DINGELL. The Chair recognizes now the gentleman from Ohio, Mr. Brown, for five minutes.

Mr. BROWN. Thank you, Mr. Chairman.

I would like to continue this line of questioning if I may for just a moment.

Mr. Saunders indicated that the language in the Hill-Burton legislation was suitable to take care of this problem for parochially operated hospitals, that is to say Catholic hospitals and other hospitals with religious affiliations like Methodist or Presbyterian, which I happen to be. But would that also be applicable do you think to the parochial school issue?

Dr. SAUNDERS. Yes, it would be.

Mr. BROWN. Are you saying that emphatically? Do you know that to be true? Or do you just assume it to be true?

Dr. SAUNDERS. I am saying the lack of the Hill-Burton and the Higher Education Act was very carefully drawn by Congress to avoid just that problem.

Mr. BROWN. We seem to have gotten around the parochial school question pretty much at the higher education level and in the hospital area, but we still have a lot of problems with the parochial school elementary and secondary level, as I understand it.

Mr. REED. I think that technique would be very helpful.

Mr. BROWN. That is not what I asked you.

Mr. REED. Yes, it would.

Mr. BROWN. Okay. Because I am all for that and I think we ought to try to do it.

Now let me ask about the public school situation. This will not now apply if we are going to correct the separation of parochial schools and bring them back in at the same level as we do our public schools, which I think we should. Then what about the problems with the public schools?

My question is, as a general rule will most school districts have to go back to the taxpayers to get approval of the bond issue or some other kind of fund-raising method to take advantage of this program?

In some States of course, Maryland I guess is a great example, where we pay our taxes, unfortunately you do not have to ask the public if you can raise money, you just raise it. If you had to go back to them you would have a lot more expression about what is wrong with the public schools. But in Ohio we do it exactly the other way. The local taxpayer has a pretty good control over the money expended in public schools, but the State legislature can make allowances for it.

I do not know how you do it in California. You do have public schools there, do you not?

Mr. ORSBURN. I think so, a couple.

Mr. BROWN. I am sorry Mr. Moorhead has left. In any event, are we going to have to raise a great deal of money? Do you have any estimates to take care of the problem in the public schools around the country?

Dr. HANSEN. I was doing a little mental calculation here. If we did fully fund this for three years at $900 million at 40 percent, we would need the $2.25 billion minus that $900 million to come from local effort. I think it would be exceptionally difficult and I would say in most instances they would have to go to the voters for a referendum.

There are the exceptions, as you have already alluded to.

Mr. BROWN. Given the problems of public votes for school funding, do you think this would be better or worse received than, say, raising the teachers' pay or building an additional building or funding the basketball team?

Dr. HANSEN. I guess this is one reason, Congressman, I raised the concern about technical assistance. I think if the superintendents and school administrators had the information available to them to talk to the public about the need to conserve energy and also ways it could be done, they might be able to sell the public, and I think could do so easier than they could go back for more teachers' salaries.

Mr. BROWN. I hope that is true, but I represent in my district a rather sizable Air Force base which is run of course by the United States Government, and I had a hell of a time getting the United States Congress to come up with the money that would convert the base from coal to oil to comply with the Clean Air Act, and not until the local Air Pollution Control Authority came in and suggested they would close down the Air Force Base did we get the Congress to take seriously the admonition which the Congress was under because of the Clean Air Act.

Of course the Congress in both cases was the prosecutor and defendant, or plaintiff and whatever. I am not sure that the public is going to respond any better than Congress in this regard.

Do you have an estimate of how many schools around the country, or what percentage of schools would have to be converted?

Dr. HANSEN. I think we would have——

Mr. BROWN. We are off the parochial issue and on to the energy issue. How many schools would have to be converted from one kind of energy to another in order to comply with the energy bill?

Dr. HANSEN. I am afraid I cannot follow the question when you say in order to comply.

Mr. BROWN. How many schools would have to be modified in their energy source in order to comply with the various Federal limitations placed on them in the energy area and in the environmental area? Can you tell me or do you know?

Dr. HANSEN. No, I do not know.

Mr. BROWN. Is there any way you can find out?

Dr. HANSEN. I doubt it in that at this moment in time the Federal Government does not even know the percentages of the various kinds of fuels used by the various schools. We are going to do this under the Department of Commerce, but as yet have not done so.

Mr. BROWN. Who is going to find that out for us? We are passing legislation here to cure a problem which we do not understand the dimension. Maybe that is not unusual, but to set up certain funding for it and not know how many schools would be involved and what the cost really would be, and then when there is not any chance of raising that money in matching funds, it seems to me to be a little bit more irresponsible than we usually are.

Dr. HANSEN. I think we have only begun to address the problem.

Mr. BROWN. Does a State like California, a progressive State with air pollution concerns and with energy problems of one sort or another, have any assessment of how its schools are heated?

Mr. ORSBURN. In California we have over 7,000 K. through 12 schools in the State, and I believe all of them could have something done to them to conserve energy. Now certain ones are better than others, of course. Certain geographical areas are causing us problems more than others. But I think in all of them you could develop less use of fossil fuel energy.

Mr. BROWN. I am interested in whether there is a contradiction here between the compliance provisions of the Clean Air Act and the necessity to insulate and the question of conversion of gas burners, for instance, for I assume many of the public schools in California, since you create electricity in California that way, to converting them to some other energy method that would presumably be encouraged by State conservation programs.

Do you understand what I am asking?

Mr. ORSBURN. Well, I will try.

We have several school projects under construction and several complete using solar energy for heating, for hot water, for swimming pools, for air-conditioning of schools through a solar energy system. This to me is probably the complete way; it is very expensive. From there you drop back to other things you can do, such as insulation, shading, less windows and many other different ways of increasing the efficiency of the schools.

When I said that all the schools, if you take solar energy we have only four or five involved in that at the present time. Maybe this is not feasible in some areas, but in many areas of California it is.

Mr. BROWN. The part of the program that we are talking about here, as I understand it, relates only to the energy conservation

practices of the insulation and so forth and so on. But there is a solar energy conversion part in the President's program, I do not know whether that refers to schools or not.

Would schools, say in California, be encouraged to use that as you understand that aspect of the program?

Mr. ORSBURN. Yes.

Mr. BROWN. All right.

We have one other question. That is, do you know of schools under any admonition from the results of the Clean Air Act to convert away from coal into oil, natural gas, or other nonpolluting sources with which this represents some conflict and where you would——

Dr. HANSEN. None have come to my attention, sir.

Mr. BROWN. Thank you, Mr. Chairman.

Mr. DINGELL. The time of the gentleman has expired.

The Chair recognizes now the gentleman from Massachusetts, Mr. Markey.

Mr. MARKEY. No questions.

Mr. DINGELL. I am troubled about several points. I would like to inquire first.

Do the State school agencies or the local school districts have the mechanisms internally to provide the necessary technical advice in order to make appraisals of what should be done with regard to particular schools or what should be done with regard to the school system in terms of energy conservation?

Dr. HANSEN. If I might lead off, I think there are some State agencies who have that capability. I do not believe that they are necessarily reaching all of the school districts at this time.

If I might go back and mention, one-third of the school districts in this country have less than 300 children in the schools. You can appreciate that the superintendent may also be the principal and may be the custodian for that matter. They do not have the on-board expertise to help themselves.

Mr. DINGELL. What essentially we are coming to is that it may be necessary to embody in the legislation substantial increase, at least initially in the level of technical assistance, so that the opportunities for saving might be properly identified, is that right?

Dr. HANSEN. This would be my recommendation, yes.

Mr. DINGELL. Is there concurrence among our panel on that?

Mr. ORSBURN. Yes.

Mr. REED. Yes.

Dr. SAUNDERS. Yes.

Mr. DINGELL. Could you perhaps individually or collectively give us some idea of how the legislation might be changed so that we could include this technical assistance? I would assume that technical assistance should come in a relatively large percentage of the total expenditure at the early end of the program, declining somewhat towards the end, with the problem of phasing in the expenditures for actual bricks and mortar or construction or changes or retrofitting or whatever, rising more at the further end of the proposal. Is that right?

Dr. HANSEN. Yes.

Mr. ORSBURN. Yes.

Mr. REED. Yes.

Mr. DINGELL. There is a question with regard to funding. I get the feeling that if we fix our figure too low in terms of Federal contributions we will tend to diminish the participation by the poorer school districts. Is that right?

Dr. HANSEN. Are you addressing the funding level?

Mr. DINGELL. Yes.

Dr. HANSEN. Or the matching provisions?

Mr. DINGELL. The matching provisions.

Dr. HANSEN. Yes. I think if it is a lower level you will be reaching those districts that have the money available.

Mr. DINGELL. All right.

Now we have another problem. That is, the school districts that have the moneys available rush down here to Washington, get their schools insulated, is that right, and the poor school districts will not be able to do that, is that right, at least initially?

Dr. HANSEN. I think that is a very appropriate summation.

Mr. DINGELL. How do we attack that particular problem? Do we put a means test in it, do we allocate these moneys on the basis of need or just how do we sure that we do not take care of the rich and ignore the poor?

Dr. SAUNDERS. Mr. Chairman, I understood that the bill provides for a prioritizing system in the State plan. I would assume that would be one of the things that the State plan would include, a system to assure that priorities were developed so that the funds would go to those districts or institutions most in need in the first instance.

Mr. DINGELL. I tend to be rather less trusting on these matters than you do. I am disposed to have the facts laid out rather clearly in the legislation so that I know.

I am asking your counsel so that he can see to it that this problem is addressed.

Do any of our panel members have a comment that might be of assistance to the committee.

Dr. HANSEN. If I might go back just a brief moment. We gathered together a group of superintendents and representatives of the various architectural and engineering societies and contractors and addressed this problem, as to how could it be best funded and developed, an application form and criteria for ranking which is part of the record of S. 701. I think it is a good document and I would be more than happy to make it available to this committee.

Mr. DINGELL. I think it would be helpful to us. We would be grateful to receive it. Without objection it will be inserted in the record at this particular point.

[The following information was received for the record:]

Proposed Grant Application Form (S701) - Basic Grants

| APPLICATION FOR FEDERAL ASSISTANCE<br>ENERGY CONSERVATION - BASIC GRANTS | Date Prepared 2. CODING<br>3. CODING |
|---|---|
| 1. State Grantor Agency<br>administrative unit<br>street address<br>city state zip code | 4. Applicant<br>school district, department, division<br>street address<br>city county<br>state zip code |

5. Demonstrated energy need. Reason:

a) high energy costs . . . . . a) $ / unit of fuel

b) energy shortage . . . . . b) documentation
reduced allocation
school closing due to energy shortage

c) unusually harsh and persistent adverse weather conditions . . . c) Degree days (July 1, 1976-June 30, 1977)
Other conditions (explain):

Relief is sought due to: (Explanation)

6. Name, address [(grant building(s)]

7. General description of proposed Energy Conserving Investments (in rank order):

| Conservation Measures | Approximate Cost |
|---|---|
| a. | $ |
| b. | |
| c. | |
| d. | |
| e. Planning, engineering, legal fees | |
| f. Total (Sum lines a-e) | |

FEDERAL REQUEST
Federal Share (50% of line f) $

8. Types of fuel(s) saved:

9. BTU saved/year (July 1, 1972-June 30, 1973):

10. Cost/BTU (July 1, 1976-June 30, 1977):

2nd fuel, if applicable

11. Cost avoided/year: $ (1976-77 price)

Authenticated by

Authorized by

12. Energy data

A. FUEL USED July 1, 1972 - June 30, 1973

| Type | KWH, Tons, Gal., CCF | Factor | BTU x $10^3$ | % | Cost | Cost/ BTU |
|---|---|---|---|---|---|---|
| oil | _____gals | 138 #2 oil<br>145 #4 oil<br>148 #5 oil<br>150 #6 oil | | | /gal | |
| gas | _____CCF | 1 | | | /CCF | |
| coal | _____tons | 25,400 anthracite<br>21,000 western<br>21,600 bituminous | | | /ton | |
| elec | _____KWH | 3.41 | | | /KWH | |
| other | | | | | | |
| TOTAL | | | | 100% | | |

B. FUEL USED July 1, 1976 - June 30, 1977

| Type | KWH, Tons, Gal., CCF | Factor | BTU x $10^3$ | % | Cost | Cost/ BTU |
|---|---|---|---|---|---|---|
| oil | _____gals | 138 #2 oil<br>145 #4 oil<br>148 #5 oil<br>150 #6 oil | | | /gal | |
| gas | _____CCF | 1 | | | /CCF | |
| coal | _____tons | 25,400 anthracite<br>21,000 western<br>21,600 bituminous | | | /ton | |
| elec | _____KWH | 3.41 | | | /KWH | |
| other | | | | | | |
| TOTAL | | | | 100% | | |

13. Sq. ft. of total building floor(s) _____

14. Degree days (July 1, 1976 - June 30, 1977) _____

15. BTU/sq. ft. (July 1, 1972 - June 30, 1973) _____ (grant building only)

BTU/sq. ft. (July 1, 1976 - June 30, 1977) _____ (grant building only)

16. Aggregate calculated BTU/sq. ft./year to be saved by modifications (over July 1, 1976 - June 30, 1977 figure):

_____ BTU/sq. ft./year

17. Amortization of investment cost:
    a. Estimated cost of modifications $_____
    b. Calculated avoided cost

1976-77 price: _____ (BTU saved) × _____ (1976-77 cost/BTU) = $_____

$_____ 2nd fuel, if applicable

    c. Cost avoidance table

| 76-77 Base Cost avoided | YEAR | FACTOR 20% Increase Compounded Annually | Cost Avoided | Cumulatitive Total |
|---|---|---|---|---|
| (17b) | 1977-78 | 1.20 | | |
| | 1978-79 | 1.44 | | |
| | 1979-80 | 1.69 | | |
| | 1980-81 | 2.03 | | * |

*If last cumulative total above does not exceed or equal the investment cost of the modifications, show number of years required for amortization of the investment (attach calculations) _____ years.

18. Matching funds

Local Share (50% of estimated energy conserving measures, line 7)

$_____

Proposed method of financing local share

| Source(s) of funding | Amount |
|---|---|
| 1. | $ |
| 2. | $ |
| 3. | $ |
| 4. | $ |
| TOTAL | $ |

Pending matching funds: (explain) _____

_____ $_____

19. General description of the project.
Describe each energy conserving measure to be taken on a form identical to attached "Form B." Also include or attach calculations supporting quantitative information on Form B.

20. Identify authenticating authority and attach qualifications information: _____

_____

21. Describe method of evaluating the effectiveness of the modification: _____

_____

_____

22. Are state approval procedures required for proposed energy conservation measures?

yes no If yes, indicate status of approval: _____

_____

23. The applicant certifies that to the best of his/her knowledge and belief, the data in this application are true and correct, and that he/she will comply with the attached assurances if the grant is awarded.

_____
signature

_____ _____
name (print) title

_____ _____
organization's name phone number

Application form will also require:

Completed assurances, e.g. all legal requirements; sharing information with private schools

Instructions, including a completed sample form

APPLICATION FOR FEDERAL ASSISTANCE

Energy Conservation -- Basic Grants

Form B

Existing building characteristics: give building age; provide only those aspects of building envelop, heating, ventilating & air conditioning, plant & systems, lighting usage, etc. pertinent to the energy conservation measure described below

General description of energy conservation measure :

Estimated cost $

BTU saved/year

Type of fuel saved

Cost/BTU (1976-77 price)

Cost avoided/year (1976-77 price)

Authenticated by

signature

Proposed Grant Application Form (S701) -- Technical Assistance

| APPLICATION FOR FEDERAL ASSISTANCE<br>ENERGY CONSERVATION -- TECHNICAL ASSISTANCE | Date Prepared 2.COOLING<br>3.COOLING |
|---|---|
| 1. Federal Grantor Agency | 4.<br>Applicant |
| administrative unit | school district, department, division |
| street address | street address |
| city state zip code | city county<br>state zip code |

5. Demonstrated energy need. Reason: Relief is sought due to: (Explanation)

a) high energy costs . . . . . a) $ / unit of fuel

b) energy shortage . . . . . b) document
reduced allocation
school closing due to energy shortage

c) unusually harsh and persistent adverse weather conditions . . . . . c) Degree days (July 1, 1976-June 30, 1977)
Other conditions (explain): _____

6. Name and address of building(s) for which application is made: _____

7. Building(s) description: give building age; additions; roof and wall structure; heating, ventilating and air conditioning plants and distribution systems; lighting, usage for each building by name. _____

8. Projection justification: Factors contributing to need for Technical Assistance grant:

9. Approximate cost (attach calculations) $_____

10. FEDERAL REQUEST
Federal Share (50%) $_____

11. Energy data

A. FUEL USED July 1, 1972 - June 30, 1973

| Type | KWH, Tons, Gal., CCF | Factor | BTU x $10^3$ | % | Cost | Cost/ BTU |
|---|---|---|---|---|---|---|
| oil | _____gals | 138 #2 oil<br>145 #4 oil<br>148 #5 oil<br>150 #6 oil | | | /gal | |
| gas | _____CCF | 1 | | | /CCF | |
| coal | _____tons | 25,400 anthracite<br>21,000 western<br>21,600 bituminous | | | /ton | |
| elec | _____KWH | 3.41 | | | /KWH | |
| other | | | | | | |
| TOTAL | | | | 100% | | |

B. FUEL USED July 1, 1976 - June 30, 1977

| Type | KWH, Tons, Gal., CCF | Factor | BTU x $10^3$ | % | Cost | Cost/ BTU |
|---|---|---|---|---|---|---|
| oil | _____gals | 138 #2 oil<br>145 #4 oil<br>148 #5 oil<br>150 #6 oil | | | /gal | |
| gas | _____CCF | 1 | | | /CCF | |
| coal | _____tons | 25,400 anthracite<br>21,000 western<br>21,600 bituminous | | | /ton | |
| elec | _____KWH | 3.41 | | | /KWH | |
| other | | | | | | |
| TOTAL | | | | 100% | | |

12. Sq. ft. of total building floor(s) _____

13. Degree days (July 1, 1976 - June 30, 1977) _____

14. BTU/sq. ft. (July 1, 1972 - June 30, 1973) _____ by grant buildings

15. BTU/sq. ft. (July 1, 1976 - June 30, 1977) _____ by grant buildings

16. BTU/sq. ft./degree day _____ for July 1, 1976 - June 30, 1977

17. Proposed method of financing local share

| Sources(s) of funding | Amount |
|---|---|
| 1. | $ |
| 2. | $ |
| 3. | $ |
| 4. | $ |
| TOTAL | $ |

Pending matching funds: (explain) _____

_____ $ _____

18. Other factors contributing to need for Technical Assistance grant (optional)

_____

_____

_____

_____

19. Identify proposed source(s) of Technical Assistance. Attach qualifications information. _____

_____

_____

20. The applicant certifies that to the best of his/her knowledge and belief, the data in this application are true and correct, and that he/she will comply with the attached assurances if the grant is awarded.

_____
signature

_____ _____
name (print) title

_____ _____
organization's name phone number

Application form will also require:

Completed assurances, e.g. all legal requirements; sharing information with private schools

Instructions, including a completed sample form

PROPOSED CRITERIA FOR RANKING APPLICATIONS FOR FUNDING UNDER EMERGENCY EDUCATIONAL ASSISTANCE ACT (S701)

I. BASIC GRANTS:

A. Eligibility requirements:

1. Type of agency "educational institution":
   a) local educational agency
   b) institution of higher education

2. Energy conservation need:
   a) high cost of energy
   b) energy shortage
   c) unusually harsh and persistent adverse weather conditions

3. Local matching funds

4. State approval as required

5. Assurances are met

B. Application criteria (100 pts.):

1. Potential energy savings . . . . . 30 pts.

2. Recovery rate (number of years cost avoidance will amortize capital invested). . . . . 10

3. Operational measures already taken (comparison of 1976-77 fuel consumption to baseline 1972-73 consumption) 15

4. Type of fuel saved. . . . . 5

5. Supply capabilities for fuel (Limited availability documented) . . . . . 20

6. Energy audit quality . . . . . 5

7. Climatic concerns . . . . . 5

8. Proposed evaluation procedures . . . . . 5

9. Cost of fuel saved . . . . . 5

II. TECHNICAL ASSISTANCE:

A. Eligibility requirements:

1. Type of agency:
   a) local education agencies
   b) institutions of higher education
   c) state educational agencies
   d) state energy offices
   e) other appropriate state agencies
   f) consortium of any of above

2. Energy conservation need:
   a) high cost of energy
   b) energy shortage
   c) unusually harsh and persistent adverse weather conditions

3. Local matching funds

4. Assurances

B. Application criteria (100 pts):

1. Energy conservation need (BTU/sq. ft.) . . . . . 30 pts.

2. Operational conservation measures already undertaken (relate 1972-73 to 1976-77 consumption) . . . . . 15

3. Type of fuel . . . . . 5

4. Fuel supply capabilities . . . . . 20

5. Qualifications of technical assistance . . . . . 5

6. Climatic concerns . . . . . 5

7. Statement of technical assistance need and nature of need . . . . . 15

8. Cost of fuel . . . . . 5

Draft applications and criteria
submitted by:
Ad Hoc Committee on Energy/Education Legislation
March 11, 1977

Revised
March 18, 1977

Mr. BROWN. Would you yield and let me ask if that study had any anticipation of the timeframe it would take to accomplish this purpose or this goal or do you have such a thought now? The ambition I guess is three years.

Mr. DINGELL. I would like to go into that particular point.

Does the document referred to have reference to the timeframe?

Dr. HANSEN. It does not.

Mr. DINGELL. Let's address ourselves to that, because that is the point I wanted to come around to.

I would be glad to yield further to the gentleman from Ohio. There are problems. Obviously there are going to be constraints in terms of your State programs, that sort of thing.

First of all, what is your time constraint in terms of legislatures across the country? Every legislature is different. Some legislatures meet only every other year for the purposes of considering legislation, is that right?

Dr. HANSEN. Yes, that is correct.

Mr. ORSBURN. Yes.

Mr. DINGELL. Can you give us some listing of the States where they have this biennial problem?

Dr. HANSEN. I do not have it before me.

[The following letter was received for the record:]

AMERICAN ASSOCIATION OF SCHOOL ADMINISTRATORS,
ARLINGTON, VA., *May 17, 1977.*

THE HONORABLE JOHN D. DINGELL,
*Chairman, Subcommittee on Energy and Power,*
*House Interstate and Foreign Commerce Committee, Washington, D.C*

DEAR CONGRESSMAN DINGELL: In response to your request at the May 16 hearings on the National Energy Act, I am attaching a copy of the proposed Grant Application Form and criteria for ranking applications for funding under the Emergency Educational Assistance Act (S. 701).

With respect to the information you requested on States whose legislatures meet biennially, the National Conference of State Legislatures advises that there are 14 States in that category, eight of which have no provision for special sessions; the other six have provision for special session.

*States with no provision for special sessions: (8)—*

Kentucky—even years; Montana—odd years; Nevada—odd years; New Hampshire—odd years; North Dakota—odd years; Oregon—odd years; Texas—odd years; Washington—odd years.

*States with provision for special sessions: (6)—*

Arkansas—odd years; California—even years; Minnesota—odd years: North Carolina—odd years; Tennessee—odd years; Vermont—odd years.

Please let us know if we can be helpful to the committee in any other way.

Sincerely,

SHIRLEY J. HANSEN,
*Associate Director.*

Mr. DINGELL. I think it would be very interesting. We will get it from HEW also.

Can you indicate to us the anticipated lead time? We are not going to move into this program like Venus rising from the foam.

It is pretty plain to me that with the constraints of the funding and budgeting problems that it may take rather longer than three years to get this program into being. Am I right?

Dr. HANSEN. Yes, sir.

Mr. DINGELL. Can you indicate to me what you would regard as being the particular problems in terms of getting this program

going? You are going to have some problems in terms of having special funding and bonding complexes in school districts. How long does that take?

Mr. ORSBURN. In California you have only certain times of the year you can hold an election, for elementary and secondary tax overrides or bond issues. It is too late for the one in June now, because you have to file 90 days previous to the election date. In November, if the election passes, you are talking about the first of the year before the school district would have any cash on hand to use as matching funds.

Mr. DINGELL. There are certain ritualistic movements that have to go into these bonding elections that are held in the States and certain preliminaries in terms of time for that, is there not?

Mr. ORSBURN. Yes.

Mr. DINGELL. How long is that, if you please?

Mr. ORSBURN. The school board has to ask the county to hold a bond election 90 days in advance of the election. But maybe—convincing the people in the community to vote for it takes longer than that; that is part of the problem, too.

Mr. DINGELL. School bond elections have not been notoriously successful of late, as I recall my studies.

Mr. ORSBURN. Twenty-six percent of them have passed.

Dr. HANSEN. That is the horror story. Nationally, in 1975, the last full year, the bonding referendums, at the capital level, over half of them were defeated.

Mr. BROWN. I wonder because of the various natures of school funding, predominantly by the State in some States,such as Arizona, and predominantly local in some other States.

Could anyone supply us a chart about the State legislatures which the chairman suggested, indicating the percentage of capital expenditures for public schools supplied in the various States, by State and by local sources, either from referenda or in the Maryland way, with just the authority of the local county government to raise taxes.

Mr. DINGELL. I have no objection. I think this is a very able panel. I am not sure they have this particular ability to produce that kind of information, but HEW is going to be before us and we will ask them that question.

Mr. BROWN. I thought perhaps through the representatives of the States school system some organization like the NEA might be able to supply it.

Of course, the thought here is that in some situations the State government by its participatory contribution could be the equalizing force between the rich schools and the poor schools.

In Ohio we have sort of a State equalization plan effort that tries to do that. But of course the problem of the poor school districts still exists nonetheless.

Mr. DINGELL. My time has expired.

Mr. ORSBURN. I was going to recommend possibly first year technical assistance funds be allocated and concentrate in that area; then start the phase-in of the funds to the local districts after the first year of trying to find out something about the problem.

Mr. DINGELL. That would tend to spread the assistance more widely and it would tend to diminish the rush of the rich to Washington and to afford a fairer opportunity for the less affluent school districts, would it not?

Mr. ORSBURN. I think so.

Mr. REED. That would be helpful to us, too, Mr. Congressman, because that would enable us to develop a plan, get some technical assistance and determine which schools,in a given area, are most in need of assistance.

Mr. DINGELL. I think that is desirable.

Mr. BROWN. Could you just yield for one other question on that point?

Where would you like to get your technical assistance from? Would it be somebody in the local community? In the household area the legislation suggests it be done by the local power and light company. The concern I have about it coming from the Federal Government is that the California schools will be getting the same advice as the schools in Maine or Minnesota about how they ought to insulate and plan their heating or cooling, and you will get a nationalized answer that will not fit everybody.

Now which source do you think would be the best source from which to get your information.

Dr. HANSEN. I have about a 30-minute speech that goes "Beware the snake oil salesman." For school administrators that addresses that problem, Mr Brown.

I think it is one that is hard to generalize nationally. There are many sources where that could come from. I think we have to be very careful, if we put out this kind of dollars for technical assistance, that we do not have people unequipped to handle it come rushing in.

Mr. BROWN. Mrs. Hansen, but that does not really answer my question.

You would rather have it done locally from the utilities or from some other source locally? I gather you are saying you would not like to have it nationally. That is my concern. I will trade speeches with you on the subject and give you credit if I use your speech. But could I have an answer from the other panel members?

Mr. ORSBURN. Naturally, I would like it from the State Department of Education, because we have already a grant from the EDA funds under the Public Works Act to do this very thing. We are hiring people and going to work at local district level on how best to evaluate their schools.

Mr. BROWN. Is that general grant given to all State departments of education or just the State of California that has been lucky enough to win this opportunity?

Mr. ORSBURN. All States could apply for it.

Dr. HANSEN. But they do not all have it.

Mr. BROWN. How many States would you say have it?

Mr. ORSBURN. I do not know of any other.

Mr. BROWN. That is a helpful California answer, that is the usual California position, something separate.

I wonder if we could find out from some of you on the panel or somebody else how many States have the eligiblity to get this? Maybe we are duplicating a program.

Mr. DINGELL. I think we are going to lean on HEW to provide that sort of information.

Mr. BROWN. Could I get a local versus national answer from these other folks?

Mr. DINGELL. Yes.

Mr. REED. Our position would be that we should have a mechanism comparable to that which we have in Hill-Burton, that is the Hospital Survey and Construction Act and Higher Education Facilities Act. In those two pieces of legislation Congress established State survey organizations, State agencies with expertise in the given area. That has proved to be very helpful and has developed an orderly program in both of those areas.

Mr. BROWN. Mr. Saunders?

Dr. SAUNDERS. Congressman, we do have in our Energy Task Force a mechanism that has been providing technical assistance to the higher education community for the last two years. We have been working with the FEA, and I am not sure that we are set up to work on a State-by-State basis, but we do feed this information to our institutions all around the country.

Mr. BROWN. Thank you.

Mr. DINGELL. The time of the Chair has expired. The Chair thanks our panel and any additional comments that our panel members would like to submit to us will be gratefully received.

We thank you all for your very helpful testimony today.

Our next panel is a Health Facilities Panel, composed of Mr. Bertz, manager, and Mr. Michael Hash, director, Division of Legislation, Department of Health Facilities and Standards, American Hospital Association; Mr. William Hughes, director, Housing Department of the American Association of Homes for the Aging; Mr. Conrad Taylor, Chief, Construction Section, Division of Facility Services, State of North Carolina Department of Human Resources, and Dr. Harry Cain, Director, Bureau of Health Planning and Resources Development, HEW, and Mr. Kenneth S. Levine, Deputy Assistant for Legislation-Designate.

Gentlemen, we are delighted you are with us. If you would each identify yourself for purposes of the record, we will proceed with your statement from your left to your right. We will start on your left and my right.

The Chair announces that we will break for lunch at 1 o'clock. We will return at 2 p.m. but we will not convene in this room. We will convene in room 2218 for purposes of pursuing our affairs.

**STATEMENTS OF HARRY P. CAIN II., PH.D., DIRECTOR , BUREAU OF HEALTH PLANNING AND RESOURCE DEVELOPMENT, HEALTH RESOURCES ADMINISTRATION, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE, ACCOMPANIED BY KENNETH S. LEVINE, DEPUTY ASSISTANT SECRETARY FOR LEGISLATION DESIGNATE; WILLIAM D. HUGHES, DIRECTOR OF HOUSING, AMERICAN ASSOCIATION OF HOMES FOR THE AGING, ACCOMPANIED BY THOMAS E. HERRMANN, LEGISLATIVE COUNSEL ON PUBLIC POLICY; CONRAD M. TAYLOR, CHIEF, CONSTRUCTION SECTION, DIVISION OF FACILITY SERVICES, NORTH CAROLINA DEPARTMENT OF HUMAN RESOURCES; AND**

**MICHAEL HASH, DIRECTOR, DIVISION OF LEGISLATION, AMERICAN HOSPITAL ASSOCIATION, ACCOMPANIED BY EDWARD BERTZ, MANAGER, DEPARTMENT OF HEALTH FACILITIES AND STANDARDS, AHA**

Dr. CAIN. I am Harry Cain, Director of the Bureau of Health Planning and Resource Development, HEW. This Bureau is responsible for the administration of the National Health Planning and Resources Development Act of 1974, Public Law 93-641. Among other provisions of that act, it provides Federal support for the establishment and operation of State and community health planning agencies, and for construction and modernization assistance for health facilities of several kinds.

I have a prepared statement, Mr. Chairman.

Mr. DINGELL. Without objection, your full statement will appear in the record. We will recognize you at this time for a summary.

Dr. CAIN. Thank you.

In essence this statement would try to establish about five points which I will review here in a hurry.

One is that the health care institutions of this country consume a very large amount of energy, a substantial percentage of which can be saved without significant new capital investment.

Two, to the extent that significant capital investments are required they should be made, but because we have a surplus of hospital capacity in many communities, there will be a difficult problem of deciding which hospitals should be assisted.

The planning and resources allocation processes being developed under Public Law 93-641 are being designed to assist in that decision process. It seems to us essential that the two programs be tied together and there is a helpful step taken in that direction in the proposed section 393(c), I think it is.

Three, in the administration of this proposed Federal grant program, it seems to us terribly important to provide some rewards, or at least no penalties, for hospitals which have already undertaken energy conservation efforts.

In our view, failure to create such an incentive system will have a very adverse impact. We would recommend a two-tiered administrative approach under which any health facility would have to have taken or have a real plan to take significant energy conservation steps within available means before it would qualify for grants of the kind proposed in H.R. 6831.

Point four, we would also recommend that the capital investments made under this program be aimed at those improvements which do not have an obvious short-run economic payoff. That is, we think that incentives are being developed to accomplish savings with the available tools and that this program should be aimed at supporting higher risk improvements.

Finally, we do have a number of activities under which we are directed aimed at energy conservation in health care institutions. H.R. 6831 would provide a major boost to those efforts.

I have here, Mr. Chairman, some examples of some materials that have been recently turned out and are proving to be rather helpful in this area in the hospital and health care institution field.

Mr. DINGELL. Without objection the documents referred to will be received by the committee, reviewed by the staff for their appropriateness as to inclusion in the record either in whole or in part.

[The documents referred to may be found in the subcommittee files.]

Dr. CAIN. Thank you, sir.

That would conclude this brief summary of this part.

[Dr. Cain's prepared statement follows:]

STATEMENT OF HARRY P. CAIN II, PH.D., DIRECTOR, BUREAU OF HEALTH PLANNING AND RESOURCES DEVELOPMENT, HEALTH RESOURCES ADMINISTRATION, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Mr. Chairman and Members of the Subcommittee:

I am Harry Cain, the Director of the Bureau of Health Planning and Resources Development. The Bureau is responsible for the administration of the National Health Planning and Resources Development Act of 1976, P.L. 93-641. Among other provisions, the Act provides Federal support for the establishment and operation of State and local health planning agencies and construction and modernization assistance for various types of health facilities.

I am delighted by this opportunity to testify on H.R. 6831, especially in regard to the potential relationships between the proposed energy conservation program for hospitals and other health care facilities, and the current and proposed programs for containing the extraordinary costs of health care, particularly hospital care.

It seems to me that these two major societal problems— the energy crisis and the soaring costs of health care—have several characteristics in common. Obviously, they share the problem of high and still rapidly escalating costs. The nature and extent of both problems are at least partially hidden from view, i.e. they are not yet obvious to the general public. Neither problem can be effectively solved without a greatly raised level of public understanding, sophistication and support. They both directly affect aspects of American life on which we all place a very high value. It may not stretch the point too much to note the similar hazards in making such assertions as: too many of our hospitals are too fully equipped with advanced, technologically sophisticated services; too many of our cars are too highly powered, too wasteful of gasoline; too many of our hospitals, like too many of our homes, are too warm in the winter and too cool in the summer. Any of those statements can evoke a sharp retort from a great many of our fellow citizens—especially when the statements are applied to an individual's personal situation. And yet the evidence suggests that they are all true, at least when measured against our growing needs to better conserve our resources.

In spite of those shared characteristics between the energy crisis and the health care cost crisis, it is easy to distinguish between them in terms of which is the most pressing national priority. Where the two problems confront each other most clearly—for example, in proposing to raise still further the capital investment in hospitals in order to ultimately reduce the consumption of energy derived from the fossil fuels—the concern for energy conservation must prevail.

I would note that the amount of energy consumed by the hospitals and nursing homes of this country is not trivial. In 1976, it is estimated that about three percent of those institution's operating costs (three percent of $66 billion = $1.98 billion) went into energy, and those costs are conservatively expected to rise by 50 percent by 1980. The American Hospital Association has recently determined that about 65 percent of our 7,000 hospitals use natural gas as their primary fuel; and as you know, though the domestic supplies of natural gas may be running out, the cost of that fuel is still relatively low, and is expected to rise.

Unfortunately, given the nature of the health industry, the issue of investing in energy conservation for hospitals is not very often as clear, clean and simple as in the case cited above. Two problems in particular come to mind. First, in many communities there is an excess of hospital capacity, and often that will mean that difficult choices will have to be made in deciding *which* hospitals, under what circumstances, should be assisted in an energy conservation program. The National Health Planning and Resources Development Act, P.L. 93-461, was enacted to create a health planning and resource allocation structure that can deal with that kind of problem.

Second, the way most hospitals are now reimbursed for their services—that is, on a retrospectively determined cost basis—does not provide an incentive for hospitals to reduce energy consumption. We believe that about 20 percent of the energy costs currently engendered by hospitals and nursing homes (i.e., 20 percent of $2 billion) could be saved of conservation steps *involving little or no capital investment* were implemented. Even further important savings can be achieved with significant capital investments—the total may be as high as 40 percent in existing buildings.

Considering these two problems, then, I would strongly support that provision of H.R. 6831—Section 304(c)—which would coordinate State energy conservation planning with the health planning done under P.L. 93-641. Most of the kinds of energy conservation investments in hospitals that this program would stimulate would require "certificates of need" from the State health planning authority; and the certificate of need programs are closely tied to the new health planning efforts, including the State Medical Facilities Plans required under Title XVI of the PHS Act.

Second (and I believe this point is critical), I would recommend that in the administration of this program, the FEA and the States follow an approach that will reward those hospitals that have already taken, or show they plan to take, all possible conservation steps that do not require significant capital investment. For example, taking or planning to take, such steps, and saving at least 15 percent in energy costs, could be made a condition of eligibility for these grants. In the event this approach is not taken, there could be two adverse reactions within the health institution sector. First, it could remove the incentive to implement voluntary programs that are now being developed following the guidelines set forth in the Total Energy Management for Hospitals and Nursing Homes Manual because the facilities would wait for Federal assistance before initiating a strong energy management program. Secondly, it would severly antagonize those facilities that have already initiated voluntary conservation efforts, resulting in 10-30 percent energy savings. Those facilities incurred a five percent economic penalty on each energy dollar saved, but they did so on the assumption that Federal assistance would not be provided indiscriminately and would take their "good faith" efforts into account. In the event those hospital administrators are treated like their colleagues who waited to save energy and health dollars, one can expect anger and disillusionment to result among the health facility leaders who have shown the way in terms of saving energy and health dollars. Of course, those who did take such steps have benefitted by reduced energy bills.

In extension of that recommendation, I would note that energy management applications such as insulation, reduced or modified lighting, modified thermostat settings, etc. all provide demonstrably good returns on investment, with clear economic data that encourage these type of changes. The proposed caps on hospital revenues would add some incentive to make such changes. The greatest return on this Federal investment proposed in Part C of this bill may come from directing these grants toward the use of somewhat new energy saving modalities that involve some capital risk, e.g., waste heat recovery systems, solar energy production, co-generation of steam and the application of low grade heat to other systems that can use the waste heat. These initiatives will have to be examined carefully and justified for individual applications.

In conclusion, I would like to quickly appraise you of a few relevant activities being undertaken in the agency I represent. First, we have an Energy Action Staff, headed by Mr. Burt Kline, which has been very active in working on the energy problem in health facilities. I have some of the products of their work here for your inspection. Second, we have just concluded a series of conferences, co-sponsored by HRA, AHA, American Health Care Association, Blue Cross Association, Veterans' Administration, and the Federation of American Hospitals, trying to direct the attention of hospital administrators to this problem. Third, the certificate of need regulations promulgated by HEW, which set forth the minimum requirements for State certificate of need programs in the future, specify energy considerations and costs as one criterion that must be taken into account in need determinations. Finally, the State Medical Facility Plan guidelines now in the final stages of development, will place considerable emphasis on energy conservation, and so will the Department's revised *Minimum Requirements of Construction and Equipment of Hospitals and Medical Facilities.*

If you would like to pursue any of these matters more fully, I would be pleased to try to respond to any questions. Thank you.

Mr. DINGELL. Thank you very much.

Our next panel member.

STATEMENT OF WILLIAM D. HUGHES

Mr. HUGHES. Thank you, Mr. Chairman.

I am William D. Hughes, Director of Housing for the American Association of Homes for the Aging. I brought along with me this morning Mr. Thomas Herrmann, who is our legislative counsel on public policy.

The American Association of Homes for the Aging represents nonprofit, community-sponsored housing, homes for the aging and health-related facilities serving the elderly throughout the United States. About 250,000 older Americans live in over 1,500 AAHA-member homes, which are sponsored by various religious, fraternal, labor, civic and county organizations. In providing a wide variety of living arrangements for elderly persons, these facilities serve a vital role in communities throughout the country.

Because of our commitment toward meeting the needs of older Americans, and providing them with quality care, we are very much concerned with President Carter's proposed Energy Conservation Program for Schools and Hospitals.

While the administration's proposal represents a good faith attempt to encourage energy conservation measures, we have serious concerns about the scope and impact of the legislation.

Specifically, the administration's proposal excludes "a hospital furnishing primarily domiciliary care" from receiving grants for energy conservation projects, section 391(4)(a). This provision appears to also exclude nonprofit long-term care and residential facilities for the elderly from coverage under the program. This is a serious oversight which impacts most severely on these providers of services. These nonprofit facilities have been heavily burdened in recent years by rising fuel prices, as well as inadequate supplies of fuel in some parts of the country.

The future is bleak for many of these facilities and their residents. Because they are nonprofit, they do not have tax credits or profits to pay for the astronomical rise in fuel costs. In most cases, the residents are too poor to pay increased charges.

For example, 69 percent of the residents in nursing homes have incomes under $3,000. [Long-term care for the elderly and disabled: Congressional Budget Office, page xi.] Thus it is clear that the recent increases in fuel costs cannot be passed on to these residents.

Nonprofit homes for the aged are in an extreme predicament, and need Federal financial assistance to cope with the costly problems resulting from the energy crisis. Otherwise, some will be forced to close, and their residents will be displaced.

Homes for the aging were established to provide for the health and social needs of our elderly population. The average age of our member homes is 33 years, with several of our facilities being over 100 years old. When these facilities were constructed, there was little knowledge available about energy conservation techniques and materials. Since the majority of these facilities were financed with charitable donations and public funds, every effort has been made to minimize costs.

Furthermore, many were built at a time when there was minimal concern about our energy supply and conservation and, as a result, some facilities were constructed with limited insulation, inefficient heating systems, and inadequate weatherproofing.

These facilities should be included in the proposed energy conservation program. They want to upgrade and improve their physical plants in order to be more energy-efficient. Yet they lack the financial base to do so.

It is a gross oversight for a program aimed at assisting facilities which serve the Nation's vulnerable population—our children and our sick—to not also include nonprofit homes for the elderly. The precedent has been clearly established in the past for recognizing that homes for the aged should receive priority in any energy conservation program.

In 1973, regulations were promulgated by the Federal Energy Office under the Emergency Petroleum Allocation Act. They included in the priority category for health, ". . . clinics, hospitals, and nursing homes and other facilities (including those for the elderly)." [6 CFR 300.18, 300.19]

We respectfully request that this subcommittee seriously consider amending the proposed Energy Conservation Program for Schools and Hospitals to include nonprofit homes for the aging in its coverage. If nonprofit homes for the aging are going to continue to provide quality care to our Nation's elderly population, they must be given governmental assistance in undertaking energy conservation improvements in their physical plants. These facilities cannot continue their present operations burdened by ever-escalating fuel prices and increasingly scarce resources.

As we move from a consumption-oriented to a resource-oriented society, with a major emphasis on conservation, it is imperative that nonprofit facilities providing vital services to our elderly population be assisted through government programs. Facilities and services for the elderly cannot be ignored as we reorder our Nation's priorities.

We urge that the subcommittee, in its efforts to be responsive to the problem of scarce energy resources, include nonprofit homes for the elderly in the class of institutions which may receive financial assistance under the provisions of this proposed act.

We appreciate having this opportunity to appear before the subcommittee.

## STATEMENT OF CONRAD M. TAYLOR

Mr. TAYLOR. Mr. Chairman, Conrad Taylor, Chief of Construction Section, Division of Facilities, State Department of Human Resources, State of North Carolina.

I have a statement to file.

Mr. DINGELL. Without objection, your full statement will appear in the record and we recognize you for your comments.

Mr. TAYLOR. Thank you for the opportunity of participating in this panel discussion.

My comments will be confined specifically to those pertaining to hospitals.

First, we fully support what the administration is trying to do in conserving energy. There is need for improvement, we think, in three basic areas:

1. The intent of the bill does not go far enough. When you consider the eligible projects as outlined by part C, we feel like it only addresses itself to about 3 to 5 percent of the total energy consumed in a hospital. This is tragic when by adding energy recovery systems you could reduce hospital total energy use by an additional 15 to 20 percent. This would increase total reduction to about 25 percent.

In my written remarks I have given a brief example of what can be done in this area.

1. Regarding the 40 percent Federal participation in project cost, our agency has been a Hill-Burton agency through the years and it has been our experience that the 40 percent participation is maximum and it goes downhill from there. There is no capital to be had in hospitals for capital expenditures.

To give you a good example of what has happened: In our State until 2 or 3 years ago we were reviewing 15 to 20 major modernization or replacement hospital projects a year. We are now down to two or three. Capital is simply not available. This is also one of the reasons we feel most hospitals are now leasing equipment. Capital expenditures are reduced and they pay as the money becomes available. I am sure the American Hospital Asociation will expand on this.

To be perfectly honest, looking at North Carolina, and 40 percent participation, we doubt if the hospitals would be interested in participating in the program as the bill is now written with only 3 to 5 percent energy savings. The capital is simply not there.

Further, our State is a biennium State where budget is concerned and our particular State cannot spend more than it receives. Matching State funds for hospitals, I doubt seriously, would be available for at least 2 years under no circumstances. And, when you consider that States have trouble now meeting their obligations and for the first time you are going to have both educational and health forces in a State competing for the same Federal dollar. I would think you would want to go up at least 65 to 75 percent. While maximum participation for Hill-Burton was 90%, our average project participation was down to around 20 to 28 percent.

3. The question has been raised regarding where and what type controls should be used with particular thoughts to integrating the State and Federal and regional health planning agencies. With all due respect to HEW, if we are going to expedite an energy program like we are expediting P.L. 641, we will never get off the ground, to be perfectly honest with you. What we would suggest is going with what section C says—that the Governor has to form a plan and he has to touch base with the regional planning agencies, which is as it should be. However, we assume the intent here is to expedite the conservation of energy and any type of priority system would be on a technical basis rather than health need. This should be done and since you have an energy office in the majority of States now, that is as good a place as it can be, particularly when you have both health and education vying for the same dollar.

There has been quite a bit of testimony today comparing parts of this bill with the language of the Hill-Burton Act. I have been in State government and the Hill-Burton program for 12-15 years now and I think our State is the epitome of what can be done when the State and Federal governments work together. If you will go back to the language of the Hill-Burton bills for the first 10 years, I think that you would have an excellent start. Do not use P.L. 93-641 as an example—we will never get through planning, let alone get off the ground. If you have any questions I would be glad to answer.

Thank you again for the opportunity to participate in the discussion.

[Mr. Taylor's prepared statement follows:]

STATEMENT OF CONRAD M. TAYLOR, CHIEF, CONSTRUCTION SECTION, DIVISION OF FACILITY SERVICES, DEPARTMENT OF HUMAN RESOURCES, STATE OF NORTH CAROLINA

Mr. Chairman and members of the Subcommittee on Energy and Power. Thank you for the opportunity to participate in the discussion of the administration's proposed Energy Conservation Program for schools and hospitals. My comments will be confined to the proposed part F of that act as it pertains to hospitals.

First, let me say we fully support the intent of this proposed legislation and heartily concur in its need. It does, however, in our opinion, need to be expanded to include "energy recovery systems" as eligible projects. As presently defined, the eligible "energy conservation measures," in our opinion, would only save 3-5% of the total energy needs of the normal existing hospital. This is tragic when we could easily save 15-20% if "energy rcovery systems" are used. Let me briefly explain: the majority of existing hospitals are required to use a minimum amount of outside air and these minimums often are as high 30-40% of the total air required. To maintain proper balance, therefore, a certain amount of conditioned air must be exhausted. We have on the market today and have had for a number of years, energy recovery systems that can recover 50-80% of energy in this wasted exhaust air from the heating and cooling systems of hospitals. This heating and cooling energy requirement comprises approximately 50-55% of the total energy needs of the average hospital with the remaining 45-50% being in process energy (energy used for sterilizing, treatment equipment, monitoring equipment, etc.). Using the energy recovered from these waste systems, we estimate conservatively that the total energy needs in an existing hospital can be reduced by 15-20%. In some cases, there could be as much as a 30-35% savings. With the 3-5% savings from those eligible conservation measures already listed in the Bill, we would anticipate an 18-25% reduction in the total energy needed in a large majority of the 6,000 hospitals acros the country. Based on this, we reiterate our request that energy recovery systems be considered as eligible projects under this Bill.

In regard to the 40% Federal participation in project cost, we strongly suggest that this be increased to 75%. Funding for capital improvements in hospitals, to say the least, is difficult to come by. To give you some idea of what has happened in this area, North Carolina has 160 licensed hospitals across the State of which 74 are non-profit associates and 69 are county or city owned. Until two to three years ago, our agency reviewed 15-20 major replacement or modernization construction projects per year. Funding for capital expenditure is simply not available and it is our belief that if Federal participation is limited to 40%, hospitals cannot afford to take advantage of the funds to be made available under this Act. Where funding is available, the magnitude will, in our opinion, make it impossible to keep cost containment within the President's recent proposals.

In addition to the foregoing, the question has been raised regarding our thoughts on the integration of this program with the State and regional health planning agencies. Assuming that the intent of this act is to expedite the conservation of energy and that priorities will be established on technical data submitted rather than on health needs, we would suggest the normal planning process now required through health systems agencies be omitted. This would prevent unnecessary delay in implementation. Further, we doubt if the normal HSA has the technical capability to make proper judgments in the areas involved. Section 304(c) seems to us to be adequate. While it requires coordination with health planning agencies, it allows the cities to develop their own checks and balances depending on their own conditions and needs.

Again, thank you for the opportunity of allowing us to participate in this discussion.

Mr. DINGELL. Mr. Taylor, we appreciate you. I want to come back and hear your thoughts again on how you would be affected, being a State whose legislature meets biennially. Also some of the consequences of other matters you have discussed with us.

## STATEMENT OF MICHAEL HASH

Mr. HASH. Mr. Chairman, I am Michael Hash, the Director of the Division of Legislation of the American Hospital Association.

With me is Mr. Edward Bertz, manager of the Association's Department of Health Facilities and Standards.

In the interest of time, Mr. Chairman, we, of course, intend to summarize our statement.

Mr. DINGELL. Without objection, the full statement will appear in the record and you are recognized for the purpose of summary.

Mr. HASH. Thank you.

Our association represents more than 6,500 health care institutions in the country and over 24,000 personal members. We appreciate the opportunity to appear before this subcommittee and to share with you our views on H.R. 6831, specifically on part C of title I. We also want to express on behalf of hospitals our willingness to participate in the President's energy conservation program. In fact since 1973, the American Hospital Association as a part of its program to assist health care institutions in energy conservation has developed conservation guidelines for our membership and distributed them. This effort in fact was cited in 1973 by the White House Office of Energy Policy and the U.S. Department of Interior as the first initiative by private industry association to encourage energy conservation among its members. The association in addition has developed an energy conservation manual entitled "Energy Management in Health Care Institutions" which was published jointly by the Departments of HEW and Commerce. A copy of this we would like to submit for the record.

Mr. DINGELL. That would be helpful.

Without objection, it will be reviewed by the staff for the appropriateness of its being inserted in whole or in part in the record.

[The document referred to may be found in the subcommittee files.]

Mr. HASH. Thank you.

We have distributed that manual to all of our hospitals in the country. Further the AHA has participated with the cooperation and help of the Energy Action Staff, Health Resources Administration of the Department of HEW, in the production of a series of publications and films which have been used in our educational programs across the country to develop a greater awareness of energy conservation among health care managers and employees.

As I mentioned, we do want to summarize our testimony for purposes of our presentation.

In view of the earlier points that have been made in other testimony, Mr. Bertz will discuss five major concerns that we have identified with the legislation and specifically recommendations

which we believe offer constructive approaches to correcting those areas that we cite.

[Mr. Hash's prepared statement follows:]

STATEMENT OF THE AMERICAN HOSPITAL ASSOCIATION

Mr. Chairman , I am Michael Hash, Director of the Division of Legislation, American Hospital Association. With me is Edward Bertz, Manager of the Association's Department of Health Facilities and Standards. Our Association represents more than 6,500 member institutions, including most of the hospitals in the country, extended and long-term care institutions, mental health facilities, hospital schools of nursing and over 24,000 personal members. We appreciate the opportunity to appear before this subcommittee and share with you our views on H.R. 6831, specifically part C of title I, which would authorize a new program of Federal assistance in support of energy conservation measures in hospitals and schools.

In 1973, the AHA as a part of its program to assist health care institutions in energy conservation, developed conservation guidelines for our members. This effort was cited by the White House Office of Energy Policy and the U.S. Department of the Interior as the first initiative by a private industry association to encourage energy conservation among its members.

The association has also developed an energy conservation manual entitled, "Energy Management in Health Care Institutions," which was published jointly by the Departments of Health, Education, and Welfare, and Commerce. The manual, a copy of which is attached, has been distributed to all hospitals in the nation.

Further, the AHA has participated in the production of a series of publications and films used in our educational programs to develop greater awareness of energy conservation among health care employees.

Our presentation today will discuss five major concerns with the administration's proposal for a new Federal matching grant program, and will make suggestions for improvements in part C of title I. Our concerns pertain to: (1) the matching grant formula, (2) the relationship of this program to existing health planning and capital expenditure controls, (3) the role of State governments in the program, (4) the definition of energy conservation measures, and (5) specific earmarking of funds for hospitals and schools.

MATCHING GRANT FORMULA

Section 306 (b)(2) of the bill requires states to allocate grant funds "on the basis of relative need, taking into account appropriate financial, climatic and energy conservation factors." The bill further provides for a maximum 40 percent Federal share of the cost of each approved project with the remaining 60 percent of funds provided from non-Federal sources. This limitation on the Federal share of the project cost, in our judgment, may prevent some facilities with the greatest need for energy conservation projects from participating in the program because they are unable to generate the 60 percent matching funds. This possibility exists because in many areas of the country there are almost impossible constraints on access to capital. The deteriorating financial condition of many hospitals precludes internal generation of capital making it difficult and costly to secure financing in the commercial market. Therefore, such institutions will likely be unable to raise the required matching funds for participation in this program. For example, an urban hospital providing substantial charity care services and maintaining a high percentage of Medicare and Medicaid patients will not have the necessary resources to meet the matching requirements of this bill.

In order to provide for participation of financially needy health facilities, we believe the program should include a more flexible cost-sharing provision which takes into account the financial condition of such institutions.

Recommendation: The AHA recommends that the 40-60 matching grant formula should be replaced by a sliding scale system of cost-sharing that would increase the Federal share to a range of 50 percent to 100 percent of the cost of an approved conservation project, depending on the financial condition of the applicant.

HEALTH PLANNING AND HOSPITAL CAPITAL CONTROLS

In reviewing H.R. 6831, we conclude that the proposed energy conservation grant program must be integrated with existing Federal statutes that provide for the review and approval of hospital capital expenditures under Federally-mandated

State certificate-of-need (CON) programs under Sec. 1523 of the Public Health Service Act, as well as under capital expenditure limitations under Sec. 1122 of the Social Security Act.

Under present procedures, energy conservation projects funded under authority of H.R. 6831 would be subject to CON and Sec. 1122 limitations, as are all other major hospital capital expenditures. It is conceivable that an otherwise acceptable application for energy conservation assistance would be delayed or rejected by the existing review mechanism because energy conservation is not established as a priority under those review programs.

In order that energy conservation projects be established as a priority for hospitals, Congress must ensure that such a priority is reflected in the CON and Sec. 1122 procedures. At a minimum, energy conservation projects should be given expeditious review and priority status by State and Federal review bodies. National priorities for health planning and energy conservation would, in this manner, complement each other.

A second consideration must be the relationship between energy conservation projects and the administration's recently proposed Hospital Cost Containment Act, H.R. 6575. Title II of the administration's hospital cost containment proposal would put a $2.5 billion annual cap on capital expenditures that would severely limit capital investment in health care facilities. As a result, energy conservation would compete with other capital programs for limited dollars. In order to avoid the conflicts in priorities that may arise between the two competing goals, we recommend that expenditures for energy conservation not be included in the administration's program to limit hospital capital expenditures.

Recommendation: The AHA recommends that the energy conservation grant program must be coordinated with existing Federal requirements for review of hospital capital expenditures.

ROLE OF STATE GOVERNMENTS

Sections 303, 304 and 306 of H.R. 6831 outline the role of State governments in carrying out the proposed program. We are concerned that these provisions would prevent some hospitals and schools from participating in the program if their State government does not develop a plan acceptable to the Federal government, or simply does not file a plan at all. A second problem that would be encountered in a State-administered grant program, as outlined in H.R. 6831, is that some state constitutions prohibit grants to nonprofit educational and health care institutions.

We suggest that these problems can be resolved by adopting as a model the State government role established in the Hill-Burton program, authorized by titles VI and XVI of the Public Health Service Act. Under that act, Federal and State governments have worked effectively together with HEW awarding funds directly to applicants, based on State-developed plans incorporating each State's criteria and priorities for hospital capital programs.

Recommendation: The AHA recommends that the role of State governments under the energy conservation grant program should be modeled after the administrative system described in titles VI and XVI of the Public Health Service Act. Further, we recommend direct Federal administration of this program in States that do not submit an acceptable plan or do not file any plan.

DEFINITION OF ENERGY CONSERVATION MEASURES

Section 391 (2) of the proposed new part F provides definitions of energy conservation measures for the purpose of the grant program. We propose that these identified measures be divided into two categories in order to streamline the approval procedure and to assure rapid implementation of high priority measures. These categories would be:

1. Proven energy conservation measures;
2. Measures requiring cost/benefit analysis.

This section further includes an exclusive list of "energy conservation measures" which are eligible for Federal grants. We believe that this listing is too limited in view of the potential savings from additional actions which are not recognized in this section of the bill. Some hospitals are now seeking funding for more advanced approaches in energy conservation and the program, in our judgment should be available to support such initiatives.

Recommendation: The AHA recommmends that the list of acceptable projects be expanded to include:

1. Heat wheels and heat exchangers;

2. Heat recovery from boiler stacks and laundry exhaust systems; and
3. Heat recovery from waste incineration.

Further, we recommend that the Administrator be given authority to approve additional conservation measures for funding which he deems appropriate.

FUND ALLOCATION FOR HOSPITALS AND SCHOOLS

We recognize and support the targeting of Federal assistance to hospitals and schools for the development of energy conservation programs. In order to ensure that the national goal of energy conservation is addressed in both the educational and health care fields, we recommend that the total authorization for the program be equally divided between schools and hospitals.

Mr. Chairman, we thank you for this opportunity to present our views on this legislation and we will be pleased to respond to any question you or other members of the subcommittee may have.

## STATEMENT OF EDWARD BERTZ

Mr. BERTZ. Thank you.

Mr. Chairman, I have here some additions to what Mr. Hash has mentioned and they are in the packets.

It is interesting that many of the same brochures and booklets are identical with those of the HEW. We have been working very closely over the last 3 years. It has been a very fruitful relationship. I think we have reached the hospitals throughout the country in a series of conferences. We had four conferences in 1975, we had another seven in the early part of 1977. So it has been I think a great advantage to the hospitals to have an unusual link between the private and government areas where there has been a very satisfactory relationship.

As Mr. Hash mentioned, we have five concerns with recommendations. The first one has been reiterated many times. It has to do with the matching grant. I don't want to go over the same ground that has been covered before about the hospital's lack of capital and other pending legislation and would even limit capital expenditures further.

I also want to mention that one anomaly with hospitals is the fact of the 3- or 4-year payback. When you have third party reimbursement, it doesn't mean a whole lot. But we would recommend maybe a matching or sliding scale developed according to need. Maybe from 50 to 100 percent. This might be an additional idea that has not been presented yet. We think this would be very helpful and would work. It would be particularly helpful for the needy hospital, the hospital that doesn't have the capital expenditures. So we would encourage the development of a sliding scale that was built on need.

The second concern we have is the lack of coordination in the bill between the existing laws, legislation and pending legislation.

Let me mention a couple briefly: The certificate of need program in section 1523 of the Public Health Service Act limits capital expenditures in some of the States. It varies from State to State. Some 60 percent of the States now have the certificate of need legislation. So we believe this should be coordinated. Also there are capital expenditure limitations under section 1122 of the Social Security Act. Further coordination effort is needed between the proposed bill and the Hospital Cost Containment Act, H.R. 6575. That places annual caps on capital expenditures. So in this area all

we can do is recommend that some coordinating effort take place between existing legislation and that which is pending now.

The third concern deals with the role of the States. I heartily concur with the gentleman from North Carolina on the experience of the Hill-Burton program. We have found that here is a model that has seemed to work, it gives a close relationship between the Federal Government and the State governments and we heartily endorse that any type of administrative procedure that is developed should be such as that described in titles VI and XVI of the Public Health Services Act.

Fourthly, we have some difficulty with the energy conservation measures, as they are outlined. We feel that they are too limiting; that there is not room for innovation; that there are other types of energy conservation measures that could be incorporated that would not necessarily fit into the categories that they have described.

We would see the possibility of developing two lists, one list to streamline the administrative procedures, would be that type of energy conservation measures that is readily acceptable as cost effective.

Why go through a whole ritual of administrative procedures to prove the cost effectiveness of insulation, for instance, or some of the other types of window light controls and timeclocks and this type of energy conservation measure? We would propose that there would be one type, one list that would be provable types of energy conservation measures and a list that would demand more cost-benefit analysis subject to approval.

In that regard we believe there should be some type of catch-all category that would allow for the innovativeness of other types of energy conservation measures. Just as a side we have one hospital out in Oregon that is tapping geothermal energy, sitting on the top of an extinct volcano.

It is extinct; they are going down very, very deep. This is just given by way of example.

Finally, we recommend—again this was alluded to by the gentleman from North Carolina—that there is going to be a competing force and an unnecessary tension between the education sector and the health sector for a limited amount of resource funding. So we feel that at the very start it should be stated the amount of funds in each category and how they should be allotted. We suggest it should be shared down the middle.

That is the end of my comments.

I thank you for the opportunity to present them.

Mr. DINGELL. Mr. Bertz, the committee thanks you for your testimony.

The Chair recognizes counsel for questions.

Mr. BARRETT. Mr. Cain, reading your statement, would I understand that you agree with Mr. Bertz's observation about the need for coordination between the various other programs?

Mr. LEVINE. I am. Secretary Califano testified last Wednesday at joint hearings before Congressman Rogers' Subcommittee on Health and the Environment and Congressman Rostenkowski's Subcommittee on Health of the Ways and Means Committee. He indicated at

that time that we very much want to coordinate our hospital cost containment program with the President's energy program. We are looking at some of the apparent conflicts in the two pieces of legislation right now and we are working with people in Dr. Schlesinger's office to try to work those things out.

Mr. DINGELL. This, I should observe, is a matter of rather special concern to me. As I read the cost containment legislation, H.R. 6575, if it passes in its present form, States will be required to limit capital expenditures to approximately one half of their current spending level which would cause energy conservation projects to compete with urgently needed services, life sustainment projects, for capital funds.

Now the answer to how these programs are going to clash is, I think, of considerable importance to us.

Are you able to give us any answer at this time, Mr. Levine?

Mr. LEVINE. None other than that we are aware of the problem and we are very concerned with it too and are working on it and hope to have our response as soon as possible.

Mr. DINGELL. In all fairness I have to have an answer to these questions if we are going to craft this legislation. The subcommittee has to have the answers and the Congress has to have the answers. I assume Mr. Rogers has to have the answers too.

I would remind you that not infrequently we find major conflict between administration policies, say, Clean Air, for example. I am never quite clear on how the administration finally arrives at its decision. I am only satisfied it seems to be in a rather obfuscatory fashion, done in the dark of night without all the facts. I hope we are able to get more information on this point than has been our unfortunate experience at other times. I am going to ask you to submit specifically for the record an answer to the question about how you propose to measure cost containment bill, H.R. 6575, and this proposal without destituting or bankrupting the hospital industry. I think that is a question you have to address but it is a question we want the answer to. In all fairness and respect, and I have a high regard for you from your days here on the Hill, but I don't propose to let the transcript lie empty on this particular question.

Mr. LEVINE. I don't believe you should. We will try to present an answer.

[At the time the record was closed, the material requested had not been received.]

Mr. DINGELL. I hope you would do likewise with regard to Mr. Rogers and his committee, because I don't particularly look forward to war with my colleagues, because we have different signals from the Administration.

Mr. BROWN. It wouldn't be new.

Mr. DINGELL. It wouldn't be new, but it is a situation which much afflicts us during this administration, much to my outrage.

The Chair recognizes counsel again.

Mr. BARRETT. Mr. Taylor, did I understand you to say that heating and lighting—in essence what this bill is addressing—only covers 3 to 5 percent of the energy uses of a hospital?

Mr. TAYLOR. Engineers on our staff and engineers I have talked to in the State that have had experience designing hospitals have only gone over those items that affect hospitals and the best estimate we can come up with is 3 to 5 percent of the total energy needs is addressed in the eligible projects. This is why we are proposing energy recovery systems. You have a unique situation—if I may—a unique situation here where through the years, HEW through the Hill-Burton program and with the States concurring have tried to give the best possible medical care, and create the best possible environment. In doing so we have quite often used systems that use 100 percent outside fresh air, with all conditional air being discarded. A high percentage of hospitals across the country, or practically all of them will require certain minimum amounts of fresh air on the intake side. This automatically requires throw away air that is conditioned.

We have on the market, and have had for years, heat recovery wheels, whereby we are recovering 50 to 80 percent of the Btu's lost on the heating and cooling cycle. In one hospital the heating system doesn't even come on until the outside temperature gets down to 42 degrees. This is a tremendous savings and we do not understand why this was not included in this legislation when effectively you can save 20 to 25 percent of the total energy lost.

Mr. DINGELL. Mr. Taylor, I think you make an excellent point.

Will you submit to us amendatory language on that particular point?

Mr. TAYLOR. This information is included in my remarks, if that will help.

Mr. DINGELL. I think that is most helpful.

Would you also advise us of other examples of unique energy conservation opportunities which lie in the grasp of the hospital industry?

Mr. TAYLOR. Yes, sir, we would be delighted to.

Mr. DINGELL. You might also indicate to us any areas which have been omitted from the shopping list given us by the administration in connection with the legislation wherein they have named specifically a few items and have excluded all others. So if you would submit to us additional information as to who might be therein included I think it would be of great benefit to us all.

Mr. TAYLOR. All right, sir.

Mr. BARRETT. Mr. Hughes, if I may, can I summarize your testimony as saying there is something on the order of a quarter of million people living in nursing homes today.

Mr. HUGHES. Yes.

Mr. BARRETT. And they would all be excluded from this legislation?

Mr. HUGHES. As the legislation is drawn and as we interpret it, none of our homes would be eligible for the benefits of this legislation.

Mr. BARRETT. The 1,500 homes you are speaking about are all private institutions, nonprofit?

Mr. HUGHES. They are all private, nonprofit.

Mr. BARRETT. So we would also have then an additional number of nonprofit State institutions as well.

Mr. HUGHES. There would be a rather considerable number of State institutions that would be added to that total, yes.

Mr. BROWN, Would you let me pursue the question of nonprofit institutions? When you say "private, nonprofit," does this include organizations like the Masons or a church group that has a home?

Mr. HUGHES. Basically, it is that type of facility that we are talking about, mostly church-sponsored homes of one sort or another.

Mr. DINGELL. You have the type with the Elks and Moose too, do you not?

Mr. HUGHES. There are some, yes, but the bulk of them are church sponsored.

Mr. DINGELL. The chairman mentions the Moose. The Moose have a national orphanage out in Illinois someplace.

Are we only talking about homes for the aged or also about homes for the possibility that there are some institutions which have orphanages? I have a national orphanage for one of the church groups in my district, for instance.

Mr. HUGHES. In the statement we are making for the American Association of Homes for the Aging we are dealing only with homes for the aging, not the other types of facilities. We are speaking now of a quarter of a million elderly persons in some 1,500 AAHA member facilities; this is the group we are most concerned with.

Mr. BROWN. What about the definition? For instance in Ohio we have a lot of county homes for the aged. In our own county we have a very lovely facility that I guess has to qualify as a nonprofit institution.

Do you represent them or are they associated in a separate organization?

Mr. HUGHES. We are a membership organization, any nonprofit organization representing the needs for the elderly, providing services for the elderly, is eligible to join our association. Our 1,500 members are made up of a wide assortment of nonprofit facilities and types of sponsors.

Mr. BROWN. Let me ask you: If I am a guy who builds homes for the aged, I may have a nonprofit home but I make a whale of a lot of money building that home for the aged. Now I worry a little bit about some of those folks, about how wholesome they are because the method by which the Federal Government has financed some of these things does give them the opportunity to make a killing on the construction of the home.

I direct that to, I guess, the gentleman from HEW.

Is there a way that we can refine this so that we are not helping the people who are sort of on the fringe of this business that make money out of the building of the home and then in some way qualify as being nonprofit but take it all out in the way of some salary for management or some sort of thing?

Mr. HUGHES. I am not aware that any of our facilities—

Mr. BROWN. Any of your members?

Mr. HUGHES. —of our member facilities, I am not aware that any of them have such an arrangement as you outline, although I must admit that I have heard variations of it. But we are nonprofit, we encourage membership by these organizations that are providing

major service programs for the aged. Some of them are very large facilities. In fact one of them in Indianapolis operates some 1,200 units, in several different locations. They are nonprofit, church sponsored, and church supervised. Somebody has to build them and that somebody, I hope, is not taking more than he should out of them.

Mr. BROWN. Could I ask the gentleman from HEW, if there is a definition that you could submit to us that includes this kind of legitimate institution sponsored by a recognized nonprofit agency that would keep out of the Federal subsidy area those homes which are operated by these private individuals who qualify as nonprofit but manage to make pretty good livings out of the operation of homes for the elderly?

Dr. CAIN. If I understand what you are asking for——

Mr. BROWN. Just keep the shysters out of the Federal money, that is what I want.

Dr. CAIN. Well, in the hospital facilities program there has to be competition in trying to win construction work and it is prohibited that the outfit that owns a home or would own it, could win or could compete in that competition. So I am having some problem understanding how—exactly what the problem is that you are referring to.

Mr. BROWN. Well, I am trying to get at the supposedly nonprofit homes that are run by corporate or individual entrepreneurs who manage to make in one way or another profit out of the operation of such homes.

Mr. DINGELL. If the gentleman will yield, you have the same situation in the hospital business too.

Mr. BROWN. I guess that is probably right. But it seems different to me when a hospital or a home is run by a municipality, by a church group, by a brotherhood group like the Elks and the Moose—and I have a number of these in my district, and that is why I am concerned about it. I want the legitimate homes to get the benefit. But I also have some of those other homes run by private individuals ostensibly as nonprofit operations who have qualified for Federal assistance in construction or Federal assistance in operation who seem to be doing rather well as individuals in the nonprofit area.

Mr. Hughes, I don't mean to cast any aspersions on your organization because it may legitimately represent the kinds of homes that I am trying to see that we are benefiting but I do want to be careful that we don't set up a program here that allows other people who are doing very well in their nonprofit to benefit at the expense of the Federal Government and the taxpayers who support it.

Mr. HUGHES. At the present time the Department of Housing and Urban Development is administering the section 202 Elderly Housing Loan Program which provides loans for nonprofit sponsors for housing for the elderly. I bring it up only because of an approach they are using in evaluating the sponsorship. I think it is extremely important whenever we are working with nonprofit groups to carefully evaluate the sponsor.

Now following that through, it is quite possible that a private entrepreneur of one sort or another might build a nursing home say

in your community and somehow or another he manages to demonstrate that this is nonprofit.

This however is being done through private funding, through private sources and doesn't have this kind of administrative review. But I do think that a piece of legislation that takes into consideration the evaluation of sponsorship might be very helpful.

Mr. BROWN. What I have asked for, and I don't want to take any more time with it, is some kind of identification either from you or from HEW and perhaps also the hospital groups, so we can identify and distinguish between those which are nonprofit because of the virtue of the sponsoring agency and those which are nonprofit but in reality tend to be profit centers for some individual or corporation which finds a way to take advantage of the system which we have set up and try to meet when there is a real need.

Mr. LEVINE. The definition that we use in HEW for nonprofit is as follows: The term "nonprofit" as applied to any facility means a facility owned or operated by one or more nonprofit corporations or associations, no part of the net earnings of which enures or may lawfully enure to the benefit of any private shareholder or individual. So that the current definition tries to get at that problem. I am not sure that it does a good enough job, but at least it attempts to get to it.

Mr. BROWN. Is there a study—I understand from Mr. Hughes there is a 202 study.

Mr. HUGHES. It is section 202 funding of a program. It is a $750 million program of loans of housing for the elderly but the loans are made only to nonprofit organizations. In defining nonprofit they have been very careful. Most particularly they are reviewing the applicants to measure the sponsorship.

Mr. BROWN. Well, if you all could help us with definitions in this regard and perhaps give us a reference to the 202 and how that determination is made, I think that would be helpful. But you understand what I am trying to get at. You understand who we are trying to benefit here.

Thank you very much, Mr. Chairman.

[The following material was received for the record:]

The HUD application for funding under the section 202 Elderly Housing Loan program involves a preliminary application for the purpose of approving the nonprofit sponsor.

This application includes a number of exhibits. These exhibits provide for a description of the applicant; the date of its establishment; the size and scope of its membership; its purpose and principal activity. It also provides for listing the full names, addresses and backgrounds of each of the officers, directors, and members of the governing boards of the applicant group. Also included is a description of past experience.

A task force of HUD staff reviews these submissions to rate and select the best of the sponsors. This process has resulted in the selection of excellent, bona fide, nonprofit sponsors.

It is recommended that the committee consider a somewhat similar evaluation of sponsorship in connection with the proposed Energy Conservation Grant Program.

Mr DINGELL. The Chair recognizes counsel.

Mr. KITZMILLER. Dr. Cain, we have had a lot of indications from various States that they have constitutional problems getting State aid to nonprofit hospitals. Several people have told us that there may be 25 States in which this is a problem to some degree or another but we can't get specific information.

Could HEW furnish the committee with a 50-States survey of the extent to which it is possible for State governments to give money to nonprofit hospitals?

Mr. DINGELL. The Chair would appreciate having that not only with regard to hospitals but with regard to schools, with regard to nursing homes, because I think the constitutional prohibitions are about the same in each case.

Dr. CAIN. We have explored that issue upon hearing it was of some concern here and reviewed the history of the Hill-Burton hospital construction program and discovered that that hasn't been a problem.

Mr. DINGELL. But it has been a problem in schools.

Dr. CAIN. It has in schools because the States, those States that would ordinarily help in defraying the costs of whatever it is, in the hospital facility area the Federal grant in those States goes right to the hospital, rather than through the State. And because the hospital doesn't depend in those States on State funds at all, it hasn't been a problem. But I am sure that isn't true for schools.

Mr. KITZMILLER. Dr. Cain, that is exactly the point. The way this is now envisaged it does't work like the Hill-Burton but in fact the money is given to the State and the State determines eligibility and distributes it. That is exactly the point. The problem that was avoided under Hill-Burton is created in this act.

Dr. CAIN. We will supply what we can. I don't know that there is an answer. If in fact these funds would go to the State prior to being sent on to individual institutions.

Mr. KITZMILLER. The grant is made to the State.

Mr. DINGELL. We are much troubled about that.

Can you also give us an appraisal, out of the expertise that you have at HEW, with regard to the question of the biennial meeting of legislatures and the timing date for the phase-in of the legislation before us? Can you also give us some counsel as to how the money should be apportioned as between schools, nursing homes, if we include them and hospitals? The reason I raise that question is that it is not beyond the realm of possibility that we might find not only the refighting of the religious wars here by reason of the sections relating to no prohibition against grants for religious institutions, but also the question about bitter internecine warfare between the folks on hospitals and nursing homes and schools.

Can you also indicate what you feel would be the level of expenditures necessary from the Federal Government and from the hospital industry under a workable and worthwhile program? In other words, what is the need as opposed to simply the level which is fixed in the legislation? And, Doctor, I want to make it very clear to you, I don't want this cleared through the Office of Management and Budget. We tend to get what the Office of Management and Budget want to give us. What we want is what you think and what HEW tells us, as opposed to what some good folks down there at OMB would like to have us know.

Could you also give us some indication about how much money could be absorbed, how fast—and I think this question is best addressed to all of our panel members, Mr. Taylor included—into the business of retrofitting and insulating and so forth the hospi-

tals? I have a feeling that because of capital limitations, funding limitations, constitutional limitations, engineeering limitations, and a whole assortment of other things, we may not be able to see too much of this going on line fast. It may be we would be well served to move to technical assistance and advice in the early stages of the legislation.

Could you give us some counsel as to the level of technical assistance that might be desirable?

While we are at that, Mr. Taylor, you might give us some suggestions on that. You have been a very forward witness here this morning.

Do you have any quick comment you would like to give us?

Mr. TAYLOR. I would say, Mr. Chairman, that technical assistance should or can revolve around engineers and getting hospitals to employ these engineers. My particular agency and I think most State agencies provide technical assistance to the hospitals in a review form. We can make judgments but we do not go into the nitty gritty.

Mr. DINGELL. Not into the precise figures.

Mr. TAYLOR. No, sir. But you could hire engineers today to get things moving. Hospitals could be getting information regarding costs estimates, savings, systems to use and so on and somebodycould be beginning to establish priorities.

Mr. DINGELL. But those engineers do not work for peanuts.

Mr. TAYLOR. No, sir. They like to get paid like everybody else.

Mr. DINGELL. Give us some counsel on that particular point if you please, gentlemen. That would help us all.

We have asked you for a lot. We thank you all. You have been most helpful to the committee.

The Chair advises we will go into recess until 2 p.m. when we will meet in room 2218, and the committee will stand in recess until that time.

[The following letter was received for the record:]

AMERICAN ASSOCIATION OF HOMES FOR THE AGING,
*Washington, D.C., May 19, 1977*

HONORABLE JOHN D. DINGELL,
*Chairman , Subcommittee on Energy and Power, Committee on Interstate and Foreign Commerce, House Office Building Annex 2, Room 3204, Washington, D.C.*

DEAR CONGRESSMAN DINGELL: The American Association of Homes for the Aging, represented by William D. Hughes, appreciated having the opportunity to testify before your Subcommittee on the Administration's proposed *Energy Conservation Program for Schools and Hospitals.* As we pointed out in our testimony, the legislation is clearly inadequate in that it fails to include nonprofit homes for the elderly in its coverage. These facilities have been burdened in recent years by ever-escalating fuel costs. Because of their nonprofit status, they have been unable to obtain the necessary revenues for meeting these added expenses. Contrary to Mr. David Bardin's comments, many homes are *not* "investor-owned" and cannot utilize the "investment tax credit" contained in President Carter's proposed National Energy Act.

There are over 5,000 nonprofit homes for the aged in America, serving over half a million elderly individuals. In order to qualify as tax exempt, these facilities must meet the strict requirements of the Internal Revenue Service as articulated in Revenue Ruling 72-124. Under this ruling a home for the aged must provide for three basic needs of elderly persons in order to obtain 501(c)(3) tax exempt status:

1. the need for housing;
2. the need for health care; and

3. the need for financial security.

Thus, in order to be exempt from Federal taxation, a facility must provide for these basic needs of elderly persons. Clearly, we are all concerned with insuring that only legitimate nonprofit organizations benefit from the program under your subcommittee's consideration. However, in view of the strict IRS requirements for nonprofit homes for the aging, we feel that fraudulent providers will not be able to benefit from its provisions.

Operating costs have risen astronomically for homes for the aged in recent years. The total operating costs for nursing homes rose from $7.45 billion in 1974 to $10.6 billion in 1976 (Social Security Administration, Office of Research and Statistics, *Research and Statistics Note #27*). Much of this increase was due to the rise in fuel prices. The cost of fuel must be reduced. However, nonprofit providers of services to the elderly cannot reduce these costs without governmental assistance to finance energy conservation measures.

We urgently request that your subcommittee amend the present legislation so as to meet the goal of the Energy Conservation Program—to "treat all energy users equitably," (Testimony of David Bardin). Only by including nonprofit homes for the aging in the bill's coverage will the subcommittee insure that our elderly population will not be shortchanged. We thank you for giving us the opportunity to present our views and will be glad to provide the subcommittee with any additional information that it might desire.

Very truly yours,

DAVID C. CROWLEY,
*Executive Vice President.*

[Whereupon, at 1:23 p.m., the subcommittee recessed, to reconvene at 2 p.m., the same day.]

AFTER RECESS

[The subcommittee reconvened at 2 p.m., Hon. John D. Dingell presiding.]

Mr. DINGELL. The subcommittee will come to order.

Our panel this afternoon consists of Mr. Ross F. Meriwether, Mr. Robert Fuller, and Mr. William C. Abernathy. We are glad to have you, gentlemen. We will recognize Mr. Meriwether.

In the interest of time I guess the best thing would be to enter your whole statements in the record and let you summarize as you deem appropriate.

**STATEMENTS OF ROSS F. MERIWETHER, ROSS F. MERIWETHER & ASSOCIATES, SAN ANTONIO, TEXAS; WILLIAM C. ABERNATHY, DIRECTOR, INDUSTRY AFFAIRS, MECHANICAL CONTRACTORS ASSOCIATION OF AMERICA, INC.; AND ROBERT FULLER, RESEARCH COORDINATOR, OHIO STATE UNIVERSITY, COLUMBUS, OHIO**

Mr. MERIWETHER. Thank you, Mr. Chairman.

I will skim over these. Many of the items have been discussed at some length.

I would point out for the record that one of your earlier statements is quite correct. Those of us in the private sector, the consulting engineers, it is true we do not work for peanuts but it is only slightly above that. It is very economical.

The items that I wanted to cover have to do primarily with some of the characteristics of the proposed measure and those areas that need to be examined before the wording as now proposed actually does get converted into law. The first item that I mention in the

discussion I have submitted for the record is a repeat item of the shopping list from the definitions. It is indeed the case that shopping list is so restrictive as to exclude most of the things that would be cost effective in commercial and institutional buildings.

I think perhaps it might be well to take just a second to discuss why that might have come up that way. I think it is primarily because the information that they used as the basis for drawing up that shopping list is principally residential construction oriented.

When you look at weatherstripping and double glazing and those types of things, those things when done to a residence are often quite effective, but you cannot take those same things and extrapolate them into a commercial building and hope to come out. So it is a case where they have overlooked the things that have the greatest potential benefits.

There was an item, though, that was covered in previous discussion. I believe it was by this gentleman from the American Hospital Association that I think might warrant additional discussion. He had suggested perhaps what you really need to do is split the shopping list into two lists, one of which covers the obvious benefits, those things that are well known to be energy conservation measures, and then the other list to cover those things not so well known.

Perhaps the gentleman from the American Hospital Association has some knowledge about these energy conservation measures that I do not from 20 years of studying them, because I am not sure which are obvious and which are not. Perhaps it would be worthwhile for me to cover that point since I do not think it has been discussed so far.

It appears to me one of the major weaknesses in the bill is that it assumes that those listed energy conservation measures will indeed conserve energy when in actual practice they may be counterproductive and may actually wind up increasing the energy consumption of a building. The one I used as an illustration is the one for reflective coatings on glass. The bill says you put in reflecting coating and it will pay you to put that in without regard to whether it is actually going to reduce energy consumption. The problem is, very few laymen, and many engineers, do not realize that when you put on a reflective glass coating in order to reduce the cooling load of a building it always increases the heating load of a building.

That says, then, depending on the relative magnitudes of the heating and cooling load, by putting that film on the glass you may wind up increasing the total consumption of the building.

Let's go a step further with this illustration. Let's say for the moment that it is the case that the reduction in cooling consumption is greater than the increase in heating consumption, therefore there is a net benefit. Even though that may not be the case, let's assume that for the moment. What you may wind up doing is decreasing the pressure on a coal-fired generating station producing the electricity used for cooling while increasing the pressure on your gas distribution system for the winter heating load. So even though the total number of Btu are indeed decreased, you have decreased cooling Btu's while increasing heating Btu. Since they

come from different sources, each of which has its own merit as far as the interests of the country are concerned, it may be that it is not a desirable thing to do at all.

I use that as an illustration that the shopping list approach, even if you split it into those that are supposedly obvious and those that are not, often it will be a very difficult thing to identify.

I should provide some background of the type of work that we do, since the question came up earlier about technical assistance associated with the administration of this type of bill. It does say in the bill that the bill will provide payment for the "design, acquisition, construction and installation of energy conservation measures." The point is that it does not indeed allow for an energy analysis that would determine whether or not that energy measure should have been used in the first place, and, if it should have been used, what the potential magnitude of the savings might be.

So it seems to be one of the major weaknesses that you will permit someone to install it simply because it is on the list without regard to its potential benefit.

Our type of activity is indeed in the energy analysis field. That is all our company does. We are a consulting engineering firm that does nothing but energy analysis of commercial and institutional buildings. Lest we create the impression of a Johnnie-come-lately, we have been doing this for almost nine years. When we started in December 1968 it wasn't fashionable to talk about energy conservation in commercial buildings.

There are a number of items that I will be happy to discuss as time permits, but the other thing that caught my attention that has been discussed by Mr. Bardin is that this bill as it is now stated only addresses physical characteristics of buildings; that is, it says you can put in weatherstripping and insulation, and so forth, without in any way addressing the whole idea of the manner in which an institutional building is controlled and operated. Yet that has 20 or 30 times as much influence on energy consumption as do the physical characteristics of the building.

I believe Mr. Bardin stated in his testimony that it was the intention of the administration to require that before they gave out the money for the physical changes, to be funded as capital improvements in the building, they would be sure that the parties had first implemented various operational and maintenance procedures that were acceptable. Yet I see nothing that indicates what those acceptable operational and maintenance items are that are going to have to be implemented before you start applying for capital improvement funding.

It requires perhaps some additional investigation.

The other thing I might caution you about in discussing or listening to the testimony presented today is that you will hear a lot of percentages quoted. For instance, the thermostatic control valve on the radiator is now saving 15 percent of the energy consumed. That is the fashionable thing to do, quote percentages, but 15 percent of what? It says if that radiator was left to run wild without any type of control and you stick an automatic control valve on it, perhaps it does reduce it 15 percent but that assumes no one would have the intelligence to shut it off if the room temperature went up to 80 degrees.

There are areas that certainly do require additional discussion. Some of those items are covered in the written testimony, and I will be happy to answer questions later.

[Mr. Meriwether's prepared statement follows:]

STATEMENT OF ROSS F. MERIWETHER

There are a number of points in the proposed legislation that need to be examined before the wording becomes fixed and converted into law. Some of the these points are:

1. While the probable purpose of the "definitions" given in sec. 391 is to clarify the various terms used in subsequent sections, the effect in practice will be to restrict the application of the law to the items or conditions given in the definitions. The most notable example of this potential problem is in the definition of "energy conservation measure" in which the bill lists ten items or classes of items. Since the administrator of the act is not likely to be highly knowledgeable in the intricacies of building energy conservation techniques, he will be forced to reject any proposed energy conservation measure which is not contained in the list given under "definitions." For instance, the bill provides payment for a solar heating/cooling system (whose economic viability is marginal at best), but it will not pay for an exhaust air/fresh air heat recovery wheel in a hospital (which, in some parts of the country, is an outstanding energy conservation measure). The bill provides payment for an "automatic energy control system" (which is an extremely expensive computer control device to do what, in some instances, could be done at far less cost with simple time clocks and manual controls), but it will not pay for a fresh air free-cooling cycle. There are many other such illustrations.

2. One of the major weaknesses in the proposed approach is that it is assumed that just because an item is listed as an "energy conservation measure," it will, indeed, save energy in each application when, in fact, the measure may be counter-productive. For instance, the bill will pay for reflective glass coatings without regard to whether the use of the coating in a specific application results in a net energy savings or not. Few laymen realize that installing a reflective glass coating to reduce the cooling load also *increases* the heating load. Depending on the relative magnitudes of the heating and cooling loads in the given application, the net effect may be to increase annual energy consumption. The problem is that the bill provides payment for the "design, acquisition, construction, and installation of energy conservation measures," but it does not allow payment of an engineering analysis to determine whether or not the measure should have been used in the first place, and if so, to determine whether the potential energy reduction is significant.

3. In sec. 394(a), the bill calls for the Administrator to provide "guidelines indicating the types of measures appropriate for each region of the nation." If the Administrator is to carry out this charge in any meaningful way, it will require a very extensive, comprehensive study of the design and operating characteristics of all types fo schools and hospitals in every region of the country, and then an even bigger study to see which energy conservation measure fits where. Such an activity would be most helpful in being sure that the right measures are used in the right places, but the manner in which this charge is glossed over in the bill leads me to believe that the authors are not aware of the enormous scope and potential cost of that charge, if it is to be effective.

4. In sec. 394(a) (1) (C), the States are required to submit a plan which includes "an estimate of the energy savings anticipated for *each type* of proposed project." If the States really did submit detailed analyses of the potential savings of each type of measure and application, the danger I mentioned in paragraph 2 above of installing ineffective measures would be circumvented. In practice, however, I am afraid the States will submit nothing more than gross guesstimates of the potential savings without meaningful substantiation, since to do otherwise would require a great deal of engineering analysis and corresponding cost, which is not reimbursable under the terms of the Act.

5. In some parts of the proposed legislation the Administrator is given quite specific instructions to follow (such as the definitions and the preparation of guidelines for the States) while in the distribution of financial assistance (Sec. 395), he is given only the vaguest of guidelines to follow. For instance, 90% of the money is to be distributed "taking into account population, climate, and *such other factors* as the Administrator may deem appropriate." Since there is no indication as to how population and climate are to be weighed in the formula or what weight might be

assigned the unnamed "other factors," the bill, in effect, permits the Administrator and his staff to distribute the money as they see fit. Similarly, the States are to internally allocate their funds "on the basis of relative need, taking into account appropriate financial, climatic and energy conservation factors." That would appear to be so loosely defined as to permit any method of distribution that a State may so desire. I realize that Congress cannot write into every bill all of the administrative detail necessary to completely administer a law, but unless the intent or desire of Congress in distributing this money is more clearly explained, even the best intentioned of Administrators (or States) may find himself accused of thwarting the will of Congress when he starts distributing the money.

6. In trying to achieve energy conservation in schools and hospitals, the bill primarily addresses physical modifications to the buildings (insulation, glazing, weather-stripping, etc.). Yet, the manner in which the energy system in an institutional building is controlled and operated is a far bigger determinant in the amount of energy used than is the design of the structure itself. Yet, the bill offers no incentive to improve the operating characteristics of the buildings covered by the bill. To do so in an easily controlled, easily evaluated, and equitable fashion is, I admit, quite difficult, but to cover weatherstripping and ignore operating procedures is penny-wise and dollar-foolish.

Mr. DINGELL. Thank you, Mr. Meriwether.

Mr. Abernathy.

## STATEMENT OF WILLIAM C. ABERNATHY

Mr. ABERNATHY. Mr. Chairman, you have our full statement. I am just summarizing some of the highlights.

Mr. DINGELL. Your full statement will appear in the record.

Mr. ABERNATHY. Mr. Chairman and members of the subcommittee: The Mechanical Contractors Association of America, known by its initials MCAA, appreciates this opportunity to present our statement in support of H.R. 6831.

MCAA is a construction trade association of about 1,500 firms, employing approximately 125,000 persons. Almost all of the firms employ union labor. I am William C. Abernathy, Director of Industry Affairs of MCAA.

A mechanical contractor builds systems that move fluids, both liquid and gas. This includes the fabrication and installation of heating, ventilating, air conditioning and process piping systems, and further encompasses service, maintenance and the testing, adjusting and balancing of these systems. Our work affects multiresidential, commercial, public and industrial facilities. The equipment our members install is the principal user of energy in buildings, and energy is the key to our industry. Consequently, conservation and effective use of our Nation's fuel resources are and have been concerns of MCAA. We have extensive experience and know-how in this field. Even before the OPEC oil embargo in 1973, MCAA had formed an Energy Conservation Committee to inform and assist our members in the areas of energy conservation.

MCAA has considered part C of H.R. 6831. Based on our study of the bill, we believe that the legislation can make a significant contribution toward the Nation's energy conservation effort. For that reason, the bill and its objectives have MCAA's backing, although we do have two particular areas of concern.

We have about eight points in support of the bill that I will touch on briefly.

1. It provides incentives and assistance to encourage energy conservation in buildings used by significant segments of the public across the country.

2. The bill is timely. There is an immediate and urgent need for an extensive energy conservation program nationally. The severe 1976-1977 winter has made much of the population aware of that fact.

3. The bill will bring into operation some of the extensive talent, know-how and technology for energy conservation presently available in the business, industrial and public sectors.

4. By demonstration and positive results, the program can have effects reaching into the private sector.

5. The money invested in energy conservation now can pay significant dividends in the future by helping assure future supplies of energy.

6. Productive, worthwhile work and jobs will be created now, with potential for increasing such work in the future, as energy conservation moves to additional buildings and construction in the private sector.

7. The program can help verify the most promising energy conservation alternatives for buildings in various regions of the Nation.

8. A demonstration of what one type of incentive can accomplish may encourage the Congress to provide other types, such as tax incentives, to encourage intensive energy conservation by homeowners, business and industry.

One of MCAA's concerns is that the specific listing of energy conservation measures permitted is too restrictive and would limit opportunities for the best results for energy conservation.

Under the present wording of the bill, the use of such energy conservation measures as heat recovery devices, replacement of obsolete or inefficient heating systems, installation of partitioning and reduction of glazed area, would not be permitted.

We recommend that the wording of the bill be changed slightly to allow wider latitude in choice of alternatives for energy conservation measures in each building. There is a distinct advantage for doing that. The measures for conservation in existing structures generally fall into four major categories:

1. Changes to make building operating procedures more efficient.
2. Improvements in temperature control systems.
3. Increasing the efficiency of the mechanical equipment.
4. Making the building structure more energy efficient.

For most buildings, applying any one of the above, using properly selected options under that category will make a significant contribution to reducing fuel consumption. A combination of two or more, again carefully selected, can promote additional savings. Cost of the work and its effectiveness will vary so widely that alternatives can be determined only on a case-by-case basis. Such variables as the age of the building, occupancy patterns, climatic region and architectural style will have an effect. As a general rule, the costs and economic feasibility of the alternatives will follow the pattern of the schematic graph shown on enclosure 1. It is important, however, that the bill not preclude energy conserving measures, including new developments and technology, that may provide the greatest

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return on investment in terms of fuel economies for a particular building.

Earlier you had testimony on the educational facilities panel concerning studies made in school buildings. I assume they have made their studies available to your committee. Based on our analysis of a summary, some of the measures that are recommended in that school building program could not be performed in some of those buildings under the restrictive wording in this particular bill.

Mr. DINGELL. What do you refer to specifically, sir?

Mr. ABERNATHY. In the demonstration project they have a total of 10 schools, as you have indicated, and the cost effective measures for energy conservation they recommend on some, including reduce the outside air, night setback, replace boiler, and roof insulation. Under the wording of this bill, the boiler could not be replaced.

In another school they say reduce the glass 60 percent. This bill would allow double glazing but would not allow reduction of the glass area.

In another one they want to improve the boiler efficiency. That is questionable as to whether that would be included.

Those are 10 schools where a study was done under the auspices of AASA, and these are supposed to be demonstration schools. Yet, under the wording of these bills, not all of these items would be included. That is why we agree with those who have testified that the wording of the bill, the laundry list, should not be so restrictive.

We would recommend to correct that, that the definition of energy conservation measure in H.R. 6391 be broadened by adding the words "but is not limited to" after the word "means" in subparagraph 2. This wording would permit concentration on obtaining the best results, that is, the method for approving the greatest cost effective energy savings rather than restricting or designating the means by which energy is conserved.

We also have some reservations about the method of administration. We recommend that the matter be carefully examined and that the procedures adopted for administration assure that the greatest amount of funds feasible go into the actual work.

Another area of significant interest in this industry is the matter of incentives. Part C certainly is incentive for schools and hospitals. What still is lacking is sufficient motivation and capital for others to implement energy conservation nationally.

We realize this committee does not address tax matters directly, but MCAA has developed a unique tax incentive method that would apply to homeowners, builders and industries based on the amount of energy saved rather than capital outlay alone. This is going to be presented to the Ways and Means Committee in testimony this week, and a summary of this tax incentive plan is attached as Enclosure 2 to our testimony today.

Mr. Chairman, this concludes MCAA's statement. I will be pleased to reply to any questions you may have.

Mr. DINGELL. Thank you, Mr. Abernathy. You have given us a most helpful statement.

[Mr. Abernathy's prepared statement follows:]

MECHANICAL CONTRACTORS ASSOCIATION
OF AMERICA, INC.

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STATEMENT ON
PART C, H.R. 6831
BY THE
MECHANICAL CONTRACTORS ASSOCIATION OF AMERICA, INC.
TO THE
SUBCOMMITTEE ON ENERGY AND POWER
OF THE
HOUSE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE
May 16, 1977

Mr. Chairman and Members of the Subcommittee:

The Mechanical Contractors Association of America, known by its initials MCAA, appreciates this opportunity to present our statement in support of H.R. 6831.

MCAA is a construction trade association of about 1500 firms, employing approximately 125,000 persons. Almost all of the firms employ union labor. I am William C. Abernathy, Director of Industry Affairs of MCAA.

A mechanical contractor builds systems that move fluids, both liquid and gas. This includes the fabrication and installation of heating, ventilating, air conditioning and process piping systems, and further encompasses service, maintenance and the testing, adjusting and balancing of these systems. Our work affects multi-residential, commercial, public and industrial facilities. The equipment our members install is the principal user of energy in buildings, and energy is the key to our industry. Consequently, conservation and effective use of our nation's fuel resources are and have been concerns of MCAA. We have extensive experience and know-how in this field. Even before the OPEC oil embargo in 1973, MCAA had formed an Energy Conservation Committee to inform and assist our members in the areas of energy conservation.

MCAA has considered Part C of H.R. 6831. Based on our study of the bill, we believe that the legislation can make a significant contribution toward the nation's energy conservation effort. For that reason, the bill and its objectives have MCAA's backing, although we do have two particular areas of concern.

In support of the bill, we offer these comments:

First, it provides incentives to encourage energy conservation in institutions in every community in the nation. We fully recognize that the inevitable and continuous rise in fuel bills eventually will force schools and hospitals as well as others to undertake energy conservation. However, the assistance provided through grants can permit administrators to move into more extensive conservation programs now.

The grants for building retrofit can produce immediate benefits in selected buildings. Results and lessons learned from these relatively few buildings can provide incentives and practical experience that similar institutions can apply to other buildings, perhaps using their own funds.

We also believe the bill is timely. The severe winter of 1976-1977 has presented the most dramatic demonstration of our national vulnerability in energy since the OPEC embargo. The inordinate demand for fuel, the shortages and rising prices are felt by practically everyone. The President has emphasized correctly the overall magnitude of the nation's energy problem. Part C offers a helping hand to schools and hospitals hard hit by energy costs and other problems. Further, that assistance is accompanied by funds that will enable these institutions to avoid diverting money from some other programs into meeting the increased operating costs.

The technical competence to accomplish energy conservation in buildings is available immediately. Mechanical contractors and others in the construction and engineering fields are well aware of the technology and procedures to make buildings more energy efficient. Many of our own MCAA members are confident that they can readily achieve reductions in energy consumption in most industrial, commercial and public buildings by 20-25% or more.

This legislation can help teach an important lesson. Even with increasing fuel prices building owners in the public and private sectors believe that funds are better expended to purchase relatively low-cost fuels and for other purposes rather than for basic renovation of equipment and facilities.

Further, we believe that the energy conservation programs promoted by this program will be successful and that the adage of "success succeeding" will again be proved. The work accomplished will have long lasting results on the buildings selected for energy improvement measures. Where a money-saving procedure works, the word spreads rapidly. When schools and hospitals, a very visible part of the public domain, can demonstrate the effectiveness of energy saving measures, the lesson will not be lost on families of the students and the private sector. The proven techniques certainly can be applied elsewhere and undoubtedly will be.

This legislation will provide a stimulus to construction, which overall is still a depressed industry. The mandatory distribution of the grant monies will create jobs throughout the country. In addition, if projects stimulate similar actions by local business and industry as we expect, additional work and jobs will be created by private funding. The bill, therefore, can have a positive near term and long-range economic effect. For the near term, jobs will be created; in the long-range, conservation now can help assure energy for jobs in the future.

Federal funding will permit latitude in applying different approaches to find the most feasible ones. One of the benefits of the proposed program is that conservation work can be performed on one or two buildings in a region to help prove what alternates produce best results. In other words, early projects can show where the economic paybacks are for each area of the country where climate and architectural styles may differ. Perhaps more important is the continuing nature of energy improvements ------ the efficiencies will remain with each building even after the Federal funds have been expended.

We recognize that some persons may consider that the monetary cost of this program may be too high for expected results. But the consequences to our country of not moving immediately and aggressively into an effective energy conservation program can have far more serious implications than money can cure. What is the value to the nation today of a barrel of oil not imported? Or what will be the 1995 value to the nation of a barrel of oil or cubic foot of gas not burned in the 1970's? MCAA does not know the precise answers to those questions, but does suggest that an investment today that will save and provide energy sources for tomorrow is prudent.

And now to turn to our two concerns with this bill.

One of MCAA's concerns is that the specific listing of energy conservation measures permitted is too restrictive and would limit opportunities for the best results for energy conservation.

Under the present wording of the bill, the use of such energy conservation measures as heat recovery devices, replacement of obsolete or inefficient heating systems, installation of partitioning and reduction of glazed area, would not be permitted.

We recommend that the wording of the bill be changed slightly to allow wider latitude in choice of alternatives for energy conservation measures in each building. There is a distinct advantage for doing that. The measures for conservation in existing structures generally fall into four major categories:

1. Changes to make building operating procedures more efficient.
2. Improvements in temperature control systems.
3. Increasing the efficiency of the mechanical equipment.
4. Making the building structure more energy efficient.

For most buildings, applying any one of the above, using properly selected options under that category will make a significant contribution to reducing fuel consumption. A combination of two or more, again carefully selected, can promote additional savings. Costs of the work and its effectiveness will vary so widely that alternatives can be determined only on a case-by-case basis. Such variables as the age of the building, occupancy patterns, climatic region and architectural style will have an effect. As a general rule, the costs and economic feasibility of the alternatives will follow the pattern of the schematic graph shown on Enclosure 1. It is important however, that the bill not preclude energy conserving measures, including new developments and technology, that may provide the greatest return on investment in terms of fuel economies for a particular building.

For example, case studies reflecting costs and potential savings in school buildings have been developed by the American Association of School Administrators (AASA) in conjunction with a demonstration project with 10 schools. I assume this data will be made available to your Committee by AASA. From material available, it would appear that some energy conserving measures proposed for certain of these schools would be prohibited by this bill. Yet, they would be effective energy savers.

MCAA recommends that the definition of "energy conservation measure" in Section 391 be broadened by adding the words "but is not limited to" after the word "means"in sub paragraph (2). This will permit concentration on obtaining best results --- that is, the method for achieving the greatest cost-effective energy savings.....rather than restricting the means by which energy is conserved.

We also have some reservations regarding the method of administration through the various States. It is certainly recognized that the States are closer to the problems of the institutions involved, as well as the needs, general style of regional architecture and climatic conditions. However, there is a question as to whether the administration of these funds in such a manner would dilute or diminish the amount of dollars that would

finally be translated into specific energy conservation projects. We are aware that H.R. 5996, which proposes energy conservation funds for public schools only, provides for centralized administration. We suggest that the method of administration for Part C be carefully considered to assure that greatest amount of cost effective energy conservation work is performed in the various institutions.

Another area of significant interest to this industry is the matter of incentives. MCAA contends that with proper incentives, U.S. business and industry can solve our entire energy conservation problem, since adequate knowledge and technology for energy conservation is already on hand. Part C is an incentive for schools and hospitals. What has been and still is lacking is sufficient motivation and capital for others to implement energy conservation extensively. As one way of providing more significant motivation, MCAA has developed a unique plan for tax incentives to homeowners, business and industry for energy conservation. It has a tremendous advantage of providing tax credits to homeowners and commercial and industrial owners based on the amounts of fuel saved, rather than capital outlays alone.

Since your Subcommittee does not deal directly with business tax matters, details on this will not be covered at this time. Suffice to say that MCAA's tax incentive plan is relatively simple and as we believe, workable. We have attached a one-page explanation of this plan as part of this statement, at Enclosure 2. It will be presented to the Ways and Means Committee in testimony this week.

SUMMARY

To summarize, the Mechanical Contractors Association of America supports H.R. 6831 for the following reasons:

1. It provides incentives and assistance to encourage energy conservation in buildings used by significant segments of the public across the country.
2. The bill is timely. There is an immediate and urgent need for an extensive energy conservation program nationally. The severe 1976-1977

winter has made much of the population aware of that fact.

3. The bill will bring into operation some of the extensive talent, know-how and technology for energy conservation presently available in the business, industrial and public sectors.

4. By demonstration and positive results, the program can have effects reaching into the private sector.

5. The money invested in energy conservation now can pay significant dividends in the future by helping assure future supplies of energy.

6. Productive, worthwhile work and jobs will be created now, with potential for increasing such work in the future, as energy conservation moves to additional buildings and construction in the private sector.

7. The program can help verify the most promising energy conservation alternatives for buildings in various regions of the nation.

8. A demonstration of what one type of incentive can accomplish may encourage the Congress to provide other types, such as tax incentives, to encourage intensive energy conservation by homeowners, business and industry.

MCAA recommends that:

a. The definition of "energy conservation measures" in the Part C be changed to permit a wide choice of options for energy savings.

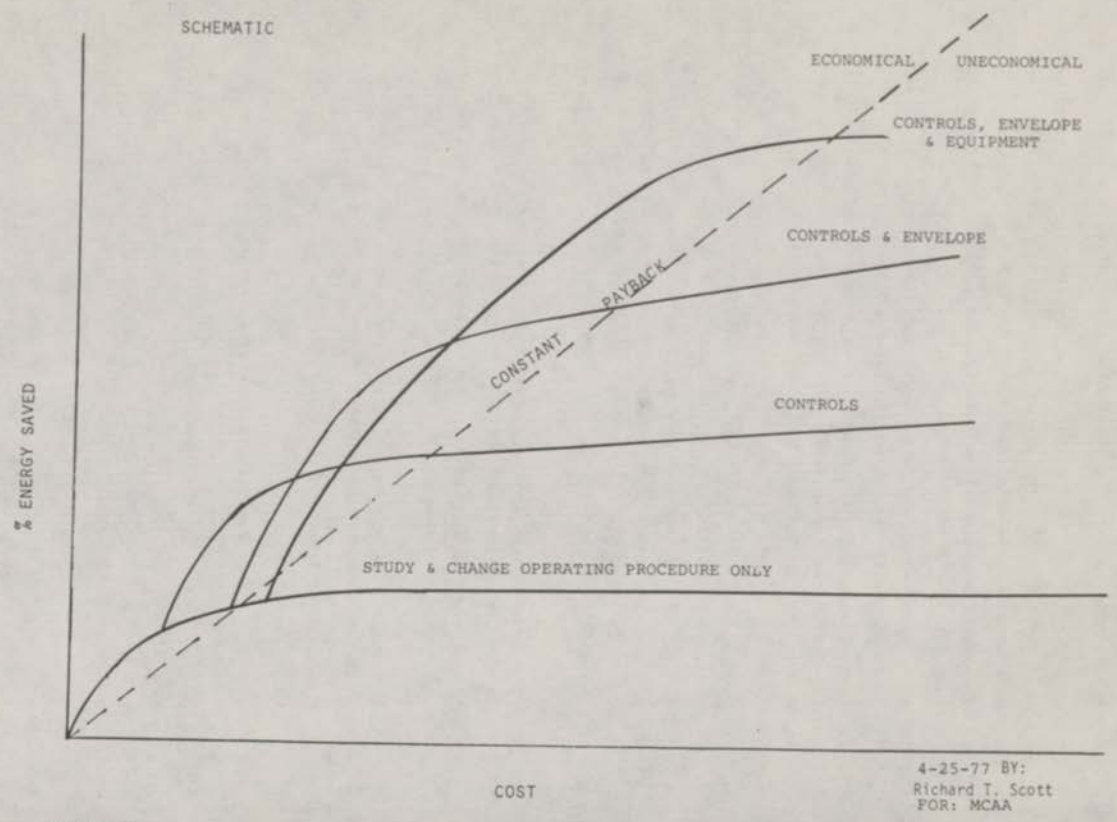
b. The procedures adopted for administration assure that the greatest amount of funds go into actual work.

We appreciate this opportunity for comment, and will be pleased to provide additional comments and details as may be needed.

I will be pleased to reply to any questions.

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Enclosures


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UNECONOMICAL
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4-25-77 BY:
Richard T. Scott
FOR: MCAA

ENCLOSURE 1.

MECHANICAL CONTRACTORS ASSOCIATION OF AMERICA, INC.

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MECHANICAL CONTRACTORS ASSOCIATION OF AMERICA
PROPOSED
TAX CREDIT FOR ENERGY SAVING IMPROVEMENTS
IN EXISTING
COMMERCIAL/INDUSTRIAL BUILDINGS

ASSUMPTIONS:

1. There is no shortage of know-how in the U.S. private sector to achieve substantial actual energy savings, given proper incentives.

2. The incentives should be based on the principle of predictable results in energy savings.

3. The principles should be sufficiently broad and flexible to encourge full use of the inherent ingenuity of the U.S. private sector.

4. Energy savings can be accurately forecast by a qualified Registered Professional Engineer.

5. A certification by a Registered Professional Engineer will be as valid for the returns as a certification by a Certified Public Accountant.

6. The concept of tax incentives should be based on the principle that for each barrel of oil saved, an equivalent tax credit is given. (The equivalent can be applied to other fuels.)

7. The per barrel value of oil would be determined annually by the Secretary of Commerce based on world wide prices and value of saving to the national economy.

METHOD

Objective: To encourage energy saving investments through tax incentives based on the total amount of fuel saved and/or the capital expenditure involved.

1. Provide 12 percent investment credit for the installation of energy saving equipment. Further, provide additional tax credit for amount of electrical-generated energy or petroleum-generated energy (including natural gas) saved. Suggested method:

   a. Total annual energy savings based on energy saving property be calculated and certified by a Registered Professional Engineer.
   b. Convert savings to oil equivalent barrels of energy.
   c. Determine actual dollar value of a barrel of oil (Secretary of Commerce).
   d. Allow tax credit to be equal to number of oil-equivalent barrels saved, multiplied by dollar value of barrel of oil.
   e. Allow the calculated credits to be applied annually for a specified number of years.

2. As an alternative, eliminate investment credit for energy saving equipment and apply principles of paragraphs 1a, b, c, d, e as tax incentives.

## STATEMENT OF ROGER H. FULLER

Mr. FULLER. I, too, have a written statement that I would like to read for the record.

Mr. DINGELL. Your full statement will appear in the record.

Mr. Chairman, part C of the administration's National Energy Act contains the essential ingredients to initiate an effective program for building energy conservation retrofit. That is, the act contains provision for:

1. Establishing energy conserving operational and maintenance procedures.
2. Cost/benefit analysis of building energy conservation opportunities (ECO's).
3. Adequate funding.
4. Proper administration of funds.

Within this framework, however, there are ways to strengthen the act:

1. Provide funding for an extensive educational effort directed at operational and maintenance procedures. This is an important area that offers significant opportunity for savings that can be accomplished quickly. Many buildings are operated inefficiently, simply because operators are not aware of methods which can be utilized to reduce energy consumption. This lack of operating knowledge is most prevalent in primary and secondary schools, but occurs on the university and hospital levels too frequently.

It will not be effective to install energy conservation modifications in buildings where maintenance personnel do not understand the proper operation. Therefore, this educational effort is of primary importance.

A point in case here, it does not really do any good to put double-pane windows in if the school teachers are still going to have to open those windows when the rooms get up to 80 degrees, so I think operational procedures are very important in this program.

Dr. Shirley Hansen, Director, American Association for School Administrators, has recognized this problem and is attempting to initiate a program for educating operating personnel in primary and secondary schools.

Dr. Hansen has been actively involved in a program sponsored by FEA and ERDA to retrofit grade schools and measure actual energy savings due to modifications.

Dr. Dwayne Gardner, executive director, Council of Educational Facility Planners, International, has been conducting energy workshops in various parts of the country to inform educators of the potential benefits of energy conservation.

And the Ohio Energy Resource and Development Agency is supporting local school systems in energy conservation demonstrations projects. This type of educational and demonstrative effort needs to be expanded.

2. Emphasize cost/benefit analysis of building energy conservation opportunities (ECO's). This is the most effective method to achieve satisfactory results. For example, the Ohio State University achieved a 22 percent reduction in natural gas and oil consumption and a 15.6 percent reduction in electrical consumption in fiscal year

1975-1976 without using any of the "energy conservation measures" listed in the act.

I should qualify that statement by saying that some of the modifications have involved systems controls and that the intent of item C, automatic energy control systems, could be interpreted to include these modifications.

It is tempting to provide a "shopping list" of energy conservation measures which are eligible for funding; however, the wide range of building types, systems, geographical locations and occupancies makes this approach ineffective. The Ohio State University program has emphasized analysis of each building with primary interest directed toward increasing building heating and cooling system efficiency. Ths approach has resulted in applying ECO's to buildings which yield a payback on investment of less than 3 years. The written information that I have to present today describes the Ohio State University program in detail.

The high energy-use buildings found on a university campus are designed with heating and cooling systems that waste large amounts of energy and often contain large interior areas. Therefore, those buildings are not as sensitive to building envelope modifications, such as insulation, storm windows, weatherstripping, and reflective coatings as residential structures would be.

I am tempted to say here that this building is probably a big energy hog in the District. In Ohio, energy hog means a building that wastes a lot of energy. This would be a typical example of a system that is probably designed very inefficiently and the necessary measures to make this building operate more efficiently are really not included in the list of energy conservation measures in the act.

I would recommend that the "shopping list" approach be deleted from the act and that, instead, the act set forth a requirement that funds will be made available based on a cost/benefit analysis resulting from an energy audit performed by a qualified, licensed, professional engineer. To ensure the most effective use of funds, support should not be provided for long payback ECO's (solar, storm windows, et cetera) until shorter payback modifications have been completed.

Beyond the present scope of the act, there is a need for additional funding in several areas:

1. Research which has been initiated by Dr. Maxine Savitz, U.S. ERDA Conservation, on methods to improve building efficiency, such as research on building code requirements, ventilation lighting, and windows. This program needs to be continued and expanded into other areas, including solar energy recovery systems.

2. Research to identify where buildings use and waste energy and how much energy is actually saved by changes in building operation and design has been started by Dr. Savitz through Dr. Arthur Rosenfeld, at Lawrence Berkeley Laboratory. The results of this kind of effort are needed to assist in the evaluation of cost effective ECO's.

3. Standard methods of cost/benefit analysis of ECO's should be developed which can be applied accurately and inexpensively.

Mr. DINGELL. Your testimony has been very helpful.

There is a vote on the tax bill. I apologize to you gentlemen. We will come back as quickly as we can.

The committee will stand in recess.

[Brief recess.]

Mr. DINGELL. The subcommittee will come to order.

The Chair recognizes the gentleman from Ohio, Mr. Brown, for five minutes.

Mr. BROWN. Mr. Chairman, could I defer for just a minute?

Mr. DINGELL. The Chair recognizes counsel.

Mr. BARRETT. Mr. Fuller, you outlined in your statement a number of things that have been done which have resulted in great savings. But none of the measures would qualify under the energy conservation measures listed in the proposed act.

Do you have any suggestions as to how we might correct that problem, either by putting in other specifics or changing the wording?

Mr. FULLER. Yes, I think you could take two approaches: One, you could add more modifications to the list, but the approach that I would like to see put forth here is that you leave the selection of the actual modifications up to an analysis on a cost-benefit basis. A professional engineer who is trained in this area can study a building, determine what modifications are potential savers for the building and then give the owner an idea of how much investment it will take to make those changes and how much energy savings can actually be accomplished with each change.

Mr. DINGELL. If counsel would yield, you have suggested essentially that there are two approaches: One is the approach which relates to the structure of the building itself and the appliances and appurtenances and so forth and this breaks down into a number of different parts and approaches.

Then there is the mechanical function of operating the building system or systems to achieve efficiency.

Mr. FULLER. That is correct.

Mr. DINGELL. And you are suggesting that to go the first route may not cover all of the opportunities and to ignore the second route will pass up large oportunities for saving as you have demonstrated at the university; is that correct?

Mr. FULLER. That is correct.

Mr. MERIWETHER. May I chime in on the question about the shopping list? I really think that no matter how thorough your shopping list is, it will never be effective because you will never be able to really tell in specific instances which of those items on the shopping list are applicable and which are not, even if you go to the extent that Mr. Bardin suggested, where you want proof that you did indeed reduce the energy consumption of your building.

Citing an example, suppose we pick from that shopping list 10 things and we now implement the 10 things. We measure the consumption of our building before and after and sure enough, after we implemented those 10 we end up with a 20 percent reduction in energy consumption.

However, it may be that four of those things resulted in a 30 percent reduction and the other six resulted in an increase in consumption so that the net effect was 20 percent, but you don't

know which contributed what. Consequently, drawing from a shopping list which can only be generalized and cannot be quantified in specific instances, you run great risk of being counterproductive with specific measures.

I think Mr. Fuller's suggestion that you not have a list that a person draws from arbitrarily, but rather you depend on some individual determination to identify those things that in their specific instance should result in energy savings, and then demonstrate that those energy savings have indeed occurred, and make that a means of qualification for funding instead of just arbitrarily drawing from a list.

Mr. BARRETT. You are suggesting that there be some objective test after the device has been installed and has been operable for a while?

Mr. MERIWETHER. Either before or after. Before by means of analysis and after by means of measurement. You don't necessarily have to wait until after the fact. There are adequate means for evaluating before the installation through systems simulation that will indeed demonstrate the savings potential and can be verified through tests later.

The point I am making is that if you make 150 items on the shopping list, you still are putting a layman, some school administrator who is not knowledgeable, in a position of having to go through and say let's apply for these 10 things and go ahead and put them in our school.

Now he has met the intent of the law and installed those 10 things without regard to which ones contributed what.

Mr. BARRETT. What we really need is some way of funding the technical expertise to make the initial assessment of the building, of the school or hospital.

Mr. MERIWETHER. At least it ought to be integrated with the other aspects. As I mentioned in my earlier comments, you cover design, selection, installation, all of the aspects other than deciding whether it should have been done in the first place.

Mr. DINGELL. And evaluation.

Mr. MERIWETHER. That is what should occur.

Mr. DINGELL. And the proper structural changes?

Mr. MERIWETHER. If a structural change is indeed called for.

Mr. DINGELL. Then the proper operations of the system once they are in.

Mr. MERIWETHER. Of course, that is the key to the whole thing. In spite of Mr. Bardin's comment that they certainly intend to require a demonstration of good operating and maintenance procedures before they put out the money for capital improvements, I sure don't see anything that says how you are going to do that. Without that the other measures might well prove to be quite ineffective.

In institutional buildings, it all rests with operation.

Mr. BARRETT. Based on your experience, gentlemen, how reasonable does $300 million in fiscal year 1978 look as a figure for starting up, implementing this program and achieving any meaningful effects? Is it too much money too soon or is it not enough?

Mr. FULLER. I can comment on that.

I think that it may be difficult to really spend that much money effectively in the first year. I think that there may be some State agencies that are prepared right now to accept a program like this and get started on it, but that there are certainly many others that are not prepared and that there is going to have to be a lot of planning done on the State level to insure the most effective use of dollars in years two and three.

I might add that it is my understanding that this sector is about 8 billion square feet and it is my opinion that it will take more than $900 million and 3 years to complete.

Mr. DINGELL. Aren't you suggesting then that we ought to structure the proposal in two parts, the first part being essentially a program of evaluation, design, analysis, cataloging and that sort of thing of problems and correctional measures and then a program for, let's say, making the necessary applications with regard to energy efficiency.

Am I right?

Mr. FULLER. Yes.

Mr. DINGELL. Both in terms of systems and functioning systems and in terms of structural and equipment changes in the buildings, is that right?

Mr. FULLER. Right.

Mr. DINGELL. So that essentially you would start with a relatively high level of funds for evaluation and analysis and recommendations and design studies and that sort of thing and phase that rather gradually down while at the same time you were starting relatively low in terms of your level of funding for construction and building alteration and machinery and equipment alteration, building up gradually to a higher figure. Is that what you say?

Mr. FULLER. Yes. I would suggest one other thing. In this planning phase, that you also provide some funds for education of building maintenance people and operational people so that they are prepared, when the modifications are actually made in their building, to operate the systems properly and effectively.

Mr. DINGELL. That would be a third part of your proposal?

Mr. FULLER. Yes.

Mr. BARRETT. Mr. Abernathy, would you have anything to add on that?

Mr. ABERNATHY. I think our comments would be generally in line with what has already been said. We feel that the level of funding cannot be precisely determined at this time. We think there has to be an analysis of what is needed and then to proceed with the work and then study and see what the results are and try to translate the results of the first buildings into what goes into subsequent ones in the same area, to use the lessons learned profitably.

Mr. BARRETT. Who are the people who can do the technical analysis? I know both of you gentlemen are qualified, well, all three of you gentlemen are qualified. But what trade skills do we look to?

Mr. MERIWETHER. Professional engineer. The design professionals are knowledgeable in system behavior. Integrated with that is the relationship between the system and structure itself. So that is the discipline that would have the combination of those skills required.

One of the things that you still have to watch out for in recommending this plan of analysis and education and implementation

where you apply the lessons from one building to the other is that in institutional and commercial buildings those lessons don't always extrapolate.

We did a study on the Fairfax County school district right near here where we first just looked at their energy consumption figures for the past several years. They have two high schools that were built in the same year and they have almost identical construction. They have obviously the same operating hours since they are in the same school district just a few miles apart, and yet their energy consumption will be different by 35 percent. But it is the same building, same operation, same kind of system. Everything is the same supposedly.

Mr. DINGELL. Why?

Mr. MERIWETHER. Operation. It is the fact that the operational characteristics of those two buildings are not identically the same. One particular school may actually turn off the exhaust fan at 5 when they are supposed to and the other school may not turn off the exhaust fan, yet they don't know the implication of not turning off that fan.

So even though they are equipped with the same conditions, as Mr. Fuller just said, unless they understand the operating capability of those things they may not achieve the operational potentials that are there.

Mr. DINGELL. I read Mr. Fuller's statement. That is one of the things he commented upon with regard to the savings of energy, the fact that there was an intelligent educational program that is directed at the proper functioning of the equipment and fans were shut down over certain hours and the organization of the overall school system was oriented toward using space and heat efficiently.

Instead of cooling three or four buildings, they would cool one and locate their facilities that had to function year-round would have heating and cooling and that sort of thing.

I think you are adding an additional element and that is that some kind of arrangement whereby once the building is properly retrofitted, that there be some kind of agreement between the school system or the operator of the school that there will be some kind of an educational system for the operators and that there will be some kind of a program for the efficient operation of the system in the building or buildings that might be involved, probably I suspect through the signing of an agreement that they would do this over time and they would get accustomed to doing it and would like to save money.

Mr. MERIWETHER. Yes, you would need to have that follow-on step. We find you can go into a specific building, put all these ideas into effect, come back a year later and you will find half of them are disconnected or not being used any longer. Without continuous follow-up, without education and supervision, you may miss opportunities to save energy.

Mr. DINGELL. So you would recommend that line?

Mr. MERIWETHER. Yes, sir.

Mr. DINGELL. Mr. Barrett.

Mr. BARRETT. That concludes my questions.

Mr. DINGELL. Mr. Brown.

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Mr. BROWN. In your testimony you indicated many energy conservation measures are relatively inexpensive. Do you think we should require schools and hospitals to undertake those inexpensive measures before we provide any Federal funding for or Federal tax credits for those which are somewhat more expensive?

Mr. FULLER. I don't know what the proper approach is there, but I do feel that the inexpensive modifications should be done first, whether there is Federal funding involved or not. Those items are the ones that should be completed before we start investing in more glamorous things like solar energy.

I think that there is a lot of money or energy to be saved with relatively small investments and paybacks resulting in one, two or three years. If we want to get the most out of the dollar that we invest, I think those are the ones that we should do first.

Mr. BROWN. To misquote an old Biblical passage, sufficient to the savings is the cost thereof in certain energy conservation devices. In other words, if the Federal Government requires inexpensive investments and the savings return is sufficiently high, in a way it seems to me to be an adequate favor to require institutions to do that in order to give them a benefit rather than to give them an additional tax credit benefit or grant to do that kind of saving.

Do you understand the logic behind what I have said?

Mr. FULLER. Yes.

Mr. BROWN. I wonder if we wouldn't save the government a whale of a lot of money, meaning the taxpayer, if we simply required some of these very inexpensive things to be done.

Let me ask all three of you, could we identify sufficient numbers of those basic savings to justify mandating some savings in the interest both of the government, the public interest, and the individual heating or energy user?

Mr. MERIWETHER. I will be happy to respond.

The intent is desirable. Most of the things that result in the energy reduction are relatively low cost items. The problem you will have with that is wording it in such a way that you can identify whether you have done enough. That says perhaps the guy can just do one thing, change one control, and he reduces his energy consumption by 10 percent.

Does that qualify him now to get the capital money he needs for the other changes or must he do two things and get a reduction of 12 percent? So certainly it is desirable to try to require a demonstration on the part of the applicant that he has undertaken those measures that would be self-serving, that is, he is getting the benefit without having to expend the money.

But it would be difficult to identify when you have done enough. Let me cite another problem that would come up with that.

Mr. BROWN. If you will let me interrupt for a minute, I would respond by saying that if we are considering mandating utilities to go to a system of peak-load pricing, we are in effect having a cost impact in a negative way on the users of that utility's power which is designed to encourage them to use power at the off-peak times. So we are mandating a pricing system which increases costs.

The question is: Could we mandate energy decisions that are perhaps much less burdensome to accomplish which would save

costs in both dollars and energy, and thereby benefit the person we have mandated sufficiently to justify that removal of free choice?

Mr. MERIWETHER. Let me pursue that point further and indicate what I see as a problem area there. Let's suppose that some particular installation, school or hospital, was forward looking and they did indeed last year go through their plant and implement all those things that they could do without undue capital expenditure, and they have now gotten their consumption down to this first plateau.

Now they would like to qualify for the capital funding in order to move down to the next level. In order for them to qualify, if the wording says that you must first demonstrate to us that you have reduced from last year's consumption a certain amount before you can qualify, last year's consumption was already lower than it was three years ago.

Mr. BROWN. You are going to a general test and I am going to a specific test because the suggestion was made that there are cheap things that can be done that will save a good deal on energy and that will return a great return for the amount of money laid out to accomplish them.

I have in mind trying to identify—and I guess this is the thrust of my question—whether or not those inexpensive investments can be sufficiently described so that they would apply to the universe of people in the schools and hospitals category that we could require them to do it.

A possibility might be double doors on every entry, which I assume would provide for a considerable savings in energy wasted and that is not a terribly expensive kind of investment.

Mr. MERIWETHER. The use of double doors may not reduce the energy consumption at all.

Mr. BROWN. Then it is your response that these things are not sufficiently universal to be appropriate?

Mr. MERIWETHER. That would be my response.

Mr. ABERNATHY. That would be my response, too.

Mr. MERIWETHER. Mr. Fuller's statement is completely accurate that there are a large number of things that could be done with virtually no first cost, but you can't identify those and say they are universally applied to all buildings. They are unique.

Mr. BROWN. I think we have an answer on both ends. This is not what I set out to accomplish, but you have an answer that says a list of things that qualify for the tax credit or the Federal largesse in terms of direct assistance doesn't work and neither does a minimum of things that must be done identified by specific requirement work.

So we are almost down, aren't we, to saying that if you can identify in your operation how to make savings and can quantify those savings to a certain extent, then we will give you a benefit of a certain amount on that investment.

Mr. MERIWETHER. Precisely. That is what you are trying to achieve anyhow. You don't care how you get there, but you are trying to achieve the energy consumption of the facility. Whether it is done by virtue of following a shopping list or doing the simple things, the fact remains that you would like to see the energy consumption of that place reduced.

Mr. BROWN. Let's go to the individual status of energy saving related to buildings of various types and then the specific individual building of any particular type.

Mr. Meriwether, you indicate in your testimony that in order to achieve the optimum results from the installation of energy conservation measures, professional evaluation will be necessary. We are told that will be necessary also for the individual homes qualifying for tax credits under another part of this legislation. We had testimony in that regard that there is a great need for trained individuals to undertake a project of that magnitude.

I think we can do a little horseback arithmetic, and the Pittsburgh Power and Light Company, which told us that they represented 1 percent of all the residences in the United States which would require insulation examination would have to add 3,200 people to accomplish the inspection program mandated in the legislation within the next two years which was over half of their present employment in producing the energy.

Are there enough people to inspect all the hospitals and schools and school-related buildings and hospital-related buildings and energy consumption processes in all the hospitals and schools in the country to get this job done between now and then?

Let me say, parenthetically, that I spent Friday, absent this committee, dealing with a personal business problem that related to a rather small building that does commercial printing and newspaper production and we are not sure where we can get an answer to the problem of how to best insulate that building and save energy consumption. We got into a whale of an argument between two or three of us who are familiar with the building and I think to some extent familiar with heat loss, as to whether we ought to brick up the windows or put in double storm windows or leave the windows as they are because it doesn't have that much heat loss.

We are not sure where to turn for that kind of advice and information.

Mr. MERIWETHER. There are really two aspects to the question that you are addressing. One is the source of information to tell you which things are worthwhile and which are not. The other is the staff of personnel necessary to inspect to see that those things were accomplished that were supposed to be accomplished. They are really two different ball games altogether.

The professional engineering community has the expertise to do the analysis of these buildings, commercial and institutional I am speaking of, without having to add thousands of new people into the professional engineering ranks to achieve this.

When you talk about inspecting all these different buildings, that is something altogether different that I could not even address.

So in looking at those two different aspects that is quite a different thing.

Now if I understood you correctly, were you saying that in earlier testimony with respect to residences that a similar claim was made that each residence would have to be analyzed individually.

Mr. BROWN. Four inspections a day, two hours per inspection of each residence to determine what insulation, storm windows, caulk-

ing, needed to be done to make significant energy savings for that particular residence.

Mr. DINGELL. Would the gentleman yield?

Mr. BROWN. Yes.

Mr. DINGELL. We are not speaking here in this section, I am sure we are all aware, of residences. We are speaking of schools and hospitals.

Mr. BROWN. Yes, indeed, but I am trying to relate the testimony to the fact that in order to get the inspection that another section of the bill requires for the residences, that section covering residences would require the addition of that personnel.

Now my question is: If you are going to do the individual job on the buildings and processes that belong to each school and hospital in the country, who is going to do it? You say the professional engineering community has that competence. Not all professional engineers I assume would have it, but many would.

Mr. MERIWETHER. That is correct.

Mr. BROWN. But the question is how many? How much time is it going to take to get this kind of work done?

Mr. MERIWETHER. I think Mr. Fuller mentioned the point when you asked earlier or someone asked, perhaps it was Mr. Barrett, about the level of funding in the first year when he emphasized that you just can't start off and have every building analyzed in one year. You are not talking about all of a sudden having 30,000 buildings that have to be analyzed at one time and therefore you must have 30,000 licensed professional engineers available at that one point in time to do it. It would need to be a gradual thing if it is properly organized in order to avoid going into it in an ill-advised way.

I think there are an adequate number of design professionals available to provide the technical assistance that would be required if you are talking about the analysis of commercial and public buildings.

Mr. BROWN. But we are trying to find out time frames. That is a general statement. The guy from Pittsburgh Power and Light had it down to two hours per inspection and four inspections a day and said it would take two years. Can you give me some time frame of how long it would take to accomplish this in schools and institutions with the professional competence now available to do this kind of work?

Mr. MERIWETHER. Of those schools and hospitals that would be able to qualify under this bill, and from earlier testimony I gather that is something like perhaps 25 to 35 percent of all those that actually exist, not all of the schools would fall under the terms of the bill.

Mr. DINGELL. If the gentleman would yield, I think the universe we are dealing with is larger than 25 to 30 percent. We are figuring that the program would insulate and retrofit that pecentage of the total plant, something between 22 and 42 percent. I don't think the fact that we would acccomplish that end would necessarily indicate that that was the limit of eligibility. The two are different as I am sure you understand.

Mr. MERIWETHER. But I think we were talking about the number that would actually apply under the terms of the bill. In order to answer Mr. Brown's question, you would have to get some feel for how many might likely apply on what kind of schedule. If you gather information now that indicates how many schools and hospitals there are in the United States and then sit down and calculate how many engineers would be required to analyze those in great detail in a six month time period, you would come up with an astronomical number that would indicate it is not possible.

But that is not a viable approach because all schools and hospitals will not have to be analyzed in six months because there are not that many that would be capable of applying in that time period.

I can't answer your question as to how close the professionals that would be competent in this field could come to being able to keep up with the rate of demand for technical services.

Mr. BROWN. How many competent professionals are there in this area and how long would the average inspection of a school or hospital building take?

Mr. MERIWETHER. I would rather defer the first one and go to the second part of your question.

Mr. BROWN. Could you supply both of the answers at your leisure within the next week?

Mr. MERIWETHER. I could not answer the question as to how many competent professionals there are. I can get you information as to how many registered engineers there are.

Mr. BROWN. But not every professional engineer is competent.

Mr. MERIWETHER. You are right, they are not.

Mr. BROWN. Can you give me some estimate of those two questions, any of you? You don't have to do it now. We have a time frame right here but could you supply it for the record?

Mr. ABERNATHY. We will make an effort on our part. I think it would be very difficult to do. I might just add one item, that the FEA has a regulation that is out for comment now on how to do an energy audit. They are defining people that they feel would be competent to do it. It includes registered professional engineers. It includes people who have an engineering degree and a certain amount of experience in energy conservation work or related type work.

Our own investigation, I don't have any statistics to give you, but our association has looked into this and we feel generally there are an adequate number of competent engineers, knowledgeable, experienced people to do the job that would be required.

As Mr. Meriwether says, not everybody is going to do it all in the same six month period.

Mr. BROWN. If you will read that back later, on what you have said is an adequate number of people to do the job. We have not decided what that number or what that job is, so it makes it impossible for me to divide that out over a period of time and know whether we are talking about doing it over the next two years which was the tightest ambition of the residential program, just the inspection, or whether we are talking about nine years.

We have had people come in and testify, and I think this is a little ridiculous, that by George, if this job doesn't get done within

the next five to seven years we ought to make it a requirement that people do it. If we are laying on them something that is not applicable at all because we don't have the competent people to do it, how can we then say that, well, if they don't get it done, we will require it to be done and even if we required it to get done, it would not get done.

It is sort of like prohibition. So if you could give us some specific details, we would appreciate it.

Mr. DINGELL. The Chair recognizes Mr. Kitzmiller.

Mr. KITZMILLER. I would like to follow up on one other side of the same thing you are talking about. One thing that concerns me is, having been a homeowner and having remodeling done is that, as has been said before, is a great invitation for snake oil salesmen. I wonder, does there exist now in the private industry a certification process that would enable you to identify people who were qualified to do this and do you now in your industry have this kind of a certification process?

Mr. MERIWETHER. No.

Mr. ABERNATHY. This is what FEA is trying to define in the regulation to which I just referred.

Mr. KITZMILLER. What will the shape of that be? Will it be a standard that somebody can be certified for?

Mr. ABERNATHY. Not a standard. It would be people who had met certain qualifications. I don't remember the details, but I do know one of the qualifications was a person who was a registered professional engineer, or had an engineering degree and four years' experience in heating, ventilating and air-conditioning work. Then there were a couple of other requirements.

Mr. KITZMILLER. If we were to put out a requirement, it would be a certification procedure in each State; if we were to put this in the bill, would it be in your opinion difficult to certify people, to make the determination as to whether someone was certified by the State process?

Mr. MERIWETHER. Perhaps difficult, but certainly not impossible. It is not undoable at all. You will have a great deal of argument perhaps as to what the criteria should be, but the fact that you can at least eliminate the obvious snake oil salesman, that can be accomplished.

Mr. KITZMILLER. It seems to me it is obvious you are going to have to do an awful lot of audits. You know, changing the conservation capability of 35 percent of the schools or institutions rather. We are not even going to know what 35 percent we want to start with until after we have done the audit.

If we go in and do the wrong school, then somebody comes by and the money is gone. It seems we have to have an audit first and to have an audit we have to have somebody to do the audit you can trust. I am sure we can find somebody—I could go out here in Washington, I could go to any one of the numbers establishments and have somebody tell me I had to put in $5,000 worth of equipment in my house and sign a paper saying I would reduce my costs by 25 percent, and be next seen in Wilmington. It seems to me it is a very serious problem and one the bill doesn't address.

Mr. MERIWETHER. It doesn't address it at all, that is quite right. It is not addressed in the bill.

Mr. KITZMILLER. We have been discussing the problem of how you know that it is done. How do you know they will run it right and this kind of thing? Would you favor a certification by a State agency of a project once it was finished? Have them come in and see that people knew how to run it. Using a department of building inspectors to set up standards you could use to see if this is being run right.

One of the problems we ran into in Westchester County with elevators is, they put in very expensive units, something like $1 million per elevator. They got someone to service the elevators very cheaply. They found the way they did it so cheaply was to go up and disconnect the elaborate equipment and give the same service they would have had with an old Otis.

Mr. FULLER. I think most States already have a licensing procedure set up for professional engineers. I don't think there would be a great deal of effort that would have to be expended to qualify professional engineers in a particular area such as energy conservation.

Secondly, I feel that if an engineer goes in to an owner and suggests that he do an energy audit on his building and suggests ways to save energy in a building, that he has really not completed his task by just handing the owner a report; that he needs to follow those particular suggestions to the end.

In other words, he has to watch the construction to make sure that his recommendations are properly interpreted and implemented in the building and then he needs also to watch the energy consumption in the building for some time period afterward to make sure that the maintenance people understand what they were supposed to do, and that in fact they are accomplishing savings.

Mr. MERIWETHER. That is so easy to say when you don't do that out in the real world. As a research engineer at Ohio State, you have a captive owner and in the captive owner case it is true you do follow up because you are paid to do so, but you have to recognize that in the private professional engineering field you are retained for a specific task and if that task is to do an analysis on a specific building and turn in a report, that is the end of your charge.

Now, no matter how well intentioned you might be, to follow that up, talk with the maintenance people and work with them on a continuing basis to be sure they are doing it right and evaluate the consumption of the building over a period of time, all for free, is really not very practical. Unless the contract calls for that type of follow-on by the consulting engineer, he simply cannot afford to do it. As the chairman has indicated, they don't work for peanuts.

Mr. KITZMILLER. Can he transfer that function to a State building inspector?

Mr. MERIWETHER. Well, you can, but again, this assumes the state building inspector is qualified and he will indeed know how to recognize whether or not the system is being operated properly. He would have to be highly conversant with the energy conservation features that are installed on that particular system and the proper operation, and that is asking an awful lot of the State building inspector.

Mr. BROWN. I wonder if you have a view as to whether State building inspectors are so qualified?

Mr. FULLER. They are not.

Mr. MERIWETHER. I would second that.

Mr. FULLER. Let me qualify what I said previously. I was not suggesting that engineers do all that work for free, but I think in making a proposal to an owner, those types of services should at least be made available to the owner and you should try to encourage the owner to retain you for something more than just a recommendation on a report.

Mr. MERIWETHER. We obviously do that. We try to get them to retain us for everything we possibly can.

I think one of the problems you have any time you deal with something like this, the implementation of a bill, it must by its very nature be general, and you are really dealing with a wide range of sophistication of owners. When you talk about institutional and educational facility owners——

Mr. DINGELL. Here you are dealing with everybody from a one-room schoolhouse to the State university that has 30,000 students.

Mr. MERIWETHER. That has a highly professional staff on board. That is the problem. On the one hand it would be presumptuous of the analytical engineer, a firm like ours that might do the study for Ohio State and say, "Here is what you ought to do," for us to suggest we need to come around and follow it up when Ohio State has a highly qualified staff of their own to do that.

Mr. DINGELL. On the residential level you have a person who has a grade school education and lives in an old house either on welfare or just barely so, as opposed to a millionnaire who lives in a mansion and has a maintenance staff. You have the fellow who owns a duplex where he lives upstairs and he has a tenant downstairs. On the other hand, you have an apartment house owner who owns a Watergate complex who has a different set of resources and abilities to handle property.

Mr. MERIWETHER. That is where the problem comes in. It is because of those varying levels of sophistication of the owners themselves. That means the implementation and effective follow-up of the implementation will have to be just a varied as is the level of sophistication. There is no general rule you can apply. You need to address the subject and be sure that that follow-up is provided for in some way. I can't give you a nice set of words to put in the bill to cover all those cases but it certainly needs to be addressed.

Mr. KITZMILLER. That is all I have.

Mr. DINGELL. Are there other questions?

Gentlemen, you have been most helpful to the committee, a most intelligent, helpful and informal panel. We would appreciate other thoughts as they occur to you and would like to consult with you further.

The committee will stand adjourned.

[The following statement and letters were received for the record:]

STATEMENT OF HON. HERBERT E. HARRIS II, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF VIRGINIA

New Schools Should Be Eligible For Section 301 Grants

I support the Energy Conservation Program for Schools and Hospitals proposed by section 301 of H.R. 6831, the President's energy bill.

A study conducted by the State Technical Assistance Office of the Federal Energy Administration in coordination with the U.S. Office of Education of the Department of Health, Education, and Welfare demonstrates the need for this program. Two statistics developed by the study are particularly enlightening:

The Nation's public schools spent an estimated $514 million more on fuel in 1974-75 than they did in 1972-73. At current salary rates, that represents about 43,000 teaching positions.

School districts in general (60.8%) reported that they lack money to undertake changes and modifications in buildings in their heating and ventilating systems, needed to conserve fuel. Age of buildings (54.%), lack of proper temperature controls (50.6%), and leaky windows (48.4%) were most often cited as principal obstacles that had to be overcome in order to conserve fuel.

If retrofitting is beyond the financial capability of public school districts certainly the installation of solar hot water heating or solar heating and cooling is beyond their reach.

However, our school districts need to make their buildings energy efficient. School districts face increasingly tight budgets and simply cannot afford to continue to absorb increases in energy prices. The table below indicates the price increases our schools have already faced.

ENERGY COST INCREASES PER PUPIL MEDIAN SCHOOL DISTRICT

| Energy | 1972-73 | 1974-75 | Percent Change |
|---|---|---|---|
| Fuel Oil | $5.52 | $10.65 | +92.9 |
| Natural Gas | 4.79 | 6.75 | +40.9 |
| Coal | 1.43 | 2.50 | +74.8 |
| Electricity | 11.95 | 16.65 | +39.3 |
| Propane | .36 | .61 | +69.4 |
| ---Total energy | 20.70 | 29.77 | +48.3 |

(NOTE: FEA estimates that in the 1975-76 school year, the cost of fuel oil and electricity increased an additional 20 to 25 percent.)

With the assistance provided by the Energy Conservation Program for Schools and Hospitals, it is more likely that our school districts will be able to finance needed conservation measures and thus protect themselves from further increases in the cost of energy. Moreover, retrofitting and the utilization of solar technologies will reduce the consumption of scarce resources and promote our national effort of reducing energy demand.

I am concerned, however, that the bill, as proposed by the President, precludes assistance to schools when their construction is completed after April 20, 1977. While I appreciate the fact that there are many more existing school buildings than those currently under construction or those that will be constructed in the near future, I believe that it is a mistake to limit this program to only those buildings constructed prior to April 20,1977.

New schools should be energy efficient, and where possible, they should utilize solar hot water heating and solar heating and cooling. Unfortunately, just as our school districts find it difficult to finance modifications of current buildings, they find it difficult to finance the incremental cost of construction of new buildings that would be truly energy efficient or would utilize solar technologies. Without financial assistance and without the incentive this bill provides for modifying existing buildings, many new school buildings will be no more energy efficient than those already constructed.

Contrary to popular belief, many new schools are being built. In my district, a number of new schools are planned. Prince William County is scheduling the construction of a new high school (to open in 1980), as well as two elementary schools (to open in 1978). The construction of two additional elementary schools (to open in 1980) in Prince William is being planned. Stafford County is preparing to build a new high school (to open in 1980), and is considering a new middle school to be built sometime after 1980. Fairfax County is currently building a new high school, and two elementary schools and two special education centers are being planned.

Certainly, it makes sense to make these buildings energy efficient, and if possible, to utilize solar technologies. Similarly, it makes sense for new residential buildings to be energy efficient: the long term cost savings in energy prices exceeds the initial cost increase. However, just as the average homeowner, without the tax credit incentive, may opt for lower initial costs, the average school district, without assistance and an incentive, may decide to minimize initial costs by constructing less than energy efficient buildings.

I urge the Subcommittee to amend the President's proposal to allow schools now under construction and those to be constructed in the future to be eligible for the grants for energy conservation measures.

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UNITED STATES LEAGUE OF SAVINGS ASSOCIATIONS, WASHINGTON OFFICE,
*Washington, D.C., May 25, 1977.*

THE HONORABLE JOHN D. DINGELL,
*Chairman, Energy and Power Subcommittee, House Interstate and Foreign Commerce Committee, Rm. 2221 RHOB, Washington, D.C.*

DEAR CHAIRMAN DINGELL: The United States League of Savings Associations realizes the vital need for achieving a comprehensive national energy program at the earliest possible date. We recognize the obvious benefits to the public at large as well as to the savings and loan business from a national program to promote energy conservation—particularly conservation in residential usage. With energy costs stabilized borrowers will be better able to meet loan obligations; the value of residential property will be enhanced; more families will have the potential for attaining homeownership; and savers will have more disposable income available to them. And most significantly, sources of energy will be conserved.

We responded earlier this spring to President Carter's request for recommendations from the public prior to announcing his energy proposals, U.S. League President John Hardin, on behalf of our membership, enumerated specific suggestions in a letter to the President's Chief Energy Advisor, the Honorable James Schlesinger, on April 7 of this year. A copy is attached for your review.

While advocating the establishment of a comprehensive national energy policy, we do have serious reservations regarding certain provisions contained in Title I, Part A of the National Energy Act, H.R. 6831, within the jurisdiction of your Subcommittee.

Section 103(a)(2)(C), if enacted, would require public utilities which have residential sales in excess of stated threshhold figures to "...make, or arrange for another lender to make, a loan..." to residential customers desirous of purchasing and installing specified energy conservation devices in their homes. Such customers must be permitted to repay this loan "...over a period of not less than 3 years as a part of his periodic bill..." Section 110 then adds "public utility" to the list of financing and lending institutions eligible to receive Federal Housing Administration insurance for the familiar "Title I" FHA home improvement loans.

Adding the financing function to the other important assignments of public utilities in H.R. 6831 duplicates well established services already available to the public. It 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 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 Commissions'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 approve the portion of Section 103 which would require public utility companies to inform their customers of suppliers and contractors who sell and install energy conservation measures (§103(a)(3)). However, the language of the bill might be improved by deleting the conjunctive element to make it clear that utilities could provide their customers with separate listings of "suppliers who sell" and "contractors who install" such materials. Such a delineated listing would assist skilled homeowners desirous of installing energy conservation measures on a "do-it-yourself" basis.

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 counseling 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 prove most beneficial to their customers/consumers.

As a result, we recommend that Section 110 be deleted from H.R. 6831 entirely and those portions of Section 103 compelling utilities to finance residential customers and accept repayment over not 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 H.R. 6831, we also suggest minor changes in two definitions found in Section 101 of the bill:

The definition of "residential building" found in §101(9) should be amended to include residential buildings which contain no more than four dwelling units, rather then 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.

The limited definition of "residential energy conservation measure" found in §101(11) should be expanded to provide flexibility for future technological advancements in this area.

Mr. Chairman, if you have any question regarding these observations and recommendations, we will be glad to discuss them further with you or your staff. The U.S. League praises President Carter for his bold program to alert our 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.

Sincerely,

ARTHUR EDGEWORTH,
*Director, Washington Operations.*

UNITED STATES LEAGUE OF SAVINGS ASSOCIATIONS,
*Washington, D.C., April 7, 1977.*

THE HONORABLE JAMES R. SCHLESINGER,
*Assistant to the President,*
*The White House, Washington, D.C.*

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 institutions in the nation, with assets at year-end 1976 of $348.7 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

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.

Efforts of various Federal agencies in the area of housing production and energy conservation should be coordinated to eliminate conflicts.*

The appraiser should take the energy efficiency of a house into consideration on the loan appraisal form.

The Federal Power Commission and the public utilities should cooperate to devise rate structures which reward conservation of energy.

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.

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.

The enabling legislation or administrative regulations governing savings association activities should be amended to permit the following:

Selling of solar and energy-conserving home improvement loans through existing secondary market entities.

Extending additional credit to existing borrowers on the original mortgage instrument.

Investing by associations in local energy producing utilities.

Devising alternative mortgage plans which reflect escalation of energy costs.

Making loans for solar systems and other renewable energy improvements in excess of $10,000, 15-year statutory limit for home improvement loans.

Making loans for solar and other energy-conserving improvement in excess of the $55,000 current statutory limit for permanent loan-term loans.

Reflecting expected energy savings through higher loan/value ratios and terms.

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,

JOHN HARDIN,
*President.*

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NATIONAL CATHOLIC EDUCATION ASSOCIATION,
*Washington, D.C., May 19, 1977.*

CONGRESSMAN JOHN D. DINGELL,
*Chairman, Energy and Power Subcommittee,*
*Room 2322, Rayburn House Office Building, Washington, D.C.*

DEAR CONGRESSMAN DINGELL: On behalf of the Superintendents of Catholic elementary and secondary schools, I would like to voice my support for the testimony presented to the Subcommittee on Energy and Power by Mr. George F. Reed.

As Mr. Reed points out, there are 1,616 Catholic secondary schools and 8,484 Catholic elementary schools, each with at least one building. Many of these buildings are probably not new and not sparing in their energy needs. To eliminate them from consideration in Part C of H.R. 6831, the "National Energy Act," would not only be unfair, it would also be defeating the purpose of the bill.

I urge you to accept the recommendations made by Mr. Reed.

Sincerely,

MSGR. FRANCIS X. BARRETT,
*Executive Director, Department of Chief Administrators.*

[Whereupon, at 4:30 p.m., the hearing was adjourned, to reconvene at 10 a.m., the following day.]

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*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.

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