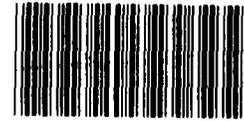




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UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548



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ENERGY AND MINERALS
DIVISION

July 20, 1981

B-204064

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The Honorable Richard L. Ottinger, Chairman
Subcommittee on Energy Conservation and Power
Committee on Energy and Commerce
House of Representatives

RELEASED

Dear Mr. Chairman:

Subject: [Preliminary Information on Appliance Energy Labeling and Appliance Efficiency Standards] (EMD-81-122)

In response to your letter of July 13, 1981, we are providing some preliminary information from the first phase of our review of the Department of Energy's (DOE) appliance efficiency standards program. You specifically asked us to address two areas

- the effectiveness of the related appliance energy labeling program operated by the Federal Trade Commission (FTC) and its implications for the appliance standards program, and
- DOE's use of the Oak Ridge National Laboratory's Residential Energy Model to project energy savings expected to result from appliance efficiency standards.

As you recognized in your letter, we are still in the early stages of our work and do not want to prematurely draw conclusions while our work is still underway. However, in view of the speed with which events surrounding the appliance standards program are proceeding and your view that our work has already produced significant material which can be useful to the Subcommittee for its July 23, 1981, hearing, we are providing the following information. We would also point out, however, that additional issues beyond those indicated in your letter should at some point be considered in the Subcommittee's deliberations. These include the underlying basis for establishing the standard level for the various products and the type of compliance and enforcement procedures contemplated.

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BACKGROUND

The Energy Policy and Conservation Act (P.L. 94-613, Dec. 22, 1975) requires that selected consumer products bear labels which contain information on the product's energy efficiency and/or operating cost. The purpose of the labeling program, administered by FTC, is to provide consumers with information that allows them to compare energy efficiency and/or operating costs of similar products when making purchase decisions.

The act identified the following 13 product types to be covered under the labeling program:

Refrigerators	Home heating equipment (excluding furnaces)
Freezers	Television sets
Dishwashers	Kitchen ranges and ovens
Clothes dryers	Clothes washers
Water heaters	Humidifiers and dehumidifiers
Room air conditioners	Central air conditioners
Furnaces	

FTC determined that labels for television sets, humidifiers and dehumidifiers, clothes dryers, kitchen ranges and ovens, and home heating equipment would not be effective in furthering the purposes of the program and, therefore, labels for these products are not currently required.

The National Energy Conservation Policy Act (P.L. 95-619, Nov. 9, 1978) directs the Secretary of Energy to prescribe minimum energy efficiency standards for 13 product types. ^{1/} Establishing such standards would assure that covered products made available to consumers meet a specific level of energy efficiency, thus eliminating from the marketplace the less efficient products. If the Secretary determines, for any product type or class, that a standard is not technologically feasible, economically justified, or would not result in significant conservation of energy, he is required to issue a determination of "no standard".

DOE issued proposed rules to establish standards for eight types of consumer products on June 30, 1980. Considerable controversy was generated by that proposal. Based on public comments received, DOE began revising its proposed rule and the supporting analyses. However, on February 17, 1981, the administration suspended the rulemaking process, and DOE announced it would reassess the process used to develop the proposed standards.

^{1/}The 13 products include the products covered in the labeling program except for television sets. Humidifiers and dehumidifiers are classified as separate product types; heat pumps are included under central air conditioners.

THE EFFECTIVENESS OF THE APPLIANCE ENERGY LABELING PROGRAM AND ITS IMPLICATIONS FOR APPLIANCE EFFICIENCY STANDARDS

Our preliminary impression of FTC's labeling program is that it may be having some positive effects on the sale of energy efficient appliances sold directly to the public in showroom settings but may be ineffective for furnaces and central air conditioners which are normally purchased through contractors.

The showroom products (refrigerators, clothes washers, dishwashers, room air conditioners, and freezers) carry labels with operating cost information and permit the customer to compare a model with others of the same type and capacity. Our contacts with retail salesmen produced mixed views on the usefulness of the labels. We found that some salesmen were not very knowledgeable about the program, while in other cases, some retailers were promoting the labels and using them as selling points for their products.

With respect to the impact of the program on the energy efficiency of products made available for purchase, manufacturers may be responding to the labeling program by improving or eliminating the least efficient products. This is suggested by test results reported recently to FTC for the annual revision of the labels.

In the furnace area, the energy labels contain reminders to save energy and suggest that the customer request comparative information from the dealer. Each dealer is required to have a set of comparative "fact sheets" available to show customers. Our initial information is that dealers do not consider the fact sheets useful and do not show them to customers. We found the fact sheets cumbersome and difficult to use.

It is unclear whether customers are assessing comparative efficiency information before buying furnaces. About half of the furnace purchases are made for new houses by builders and the rest are generally made through contractors who call on customers at their homes. Builders are required to keep labels on the equipment they install in new houses, and to have fact sheets available for prospective buyers to consult. We have not yet examined the extent that builders are providing comparative information to customers or customers are requesting such information from builders.

Overall, we are concerned about the effectiveness of the labeling program for furnaces. Our concern is heightened by the fact that the same approach will be used for central air conditioners for which a labeling rule is pending but not yet in effect.

Since builders purchase about half of the heating and central air conditioning equipment, the success of the labeling program in reaching home buyers and, in turn, influencing the choice of products purchased could be significantly minimized.

Given the early stages of our current effort, it is difficult to assess the effectiveness of the labeling program and, consequently, the implications the labeling program has for the appliance standards program. We have stated, in past reports, ^{1/} that establishing Federal standards would help to assure a level of uniformity in the appliance standards area (some States have already established their own standards) as well as to assure that only energy efficient appliances are manufactured. We also stated that the appliance labeling effort should continue in order to assure that consumers have available to them appropriate information when making purchase decisions. However, our work to date would suggest that a labeling program may only have potential in the "showroom" appliance area.

DOE'S USE OF MODELS TO ANALYZE
THE ENERGY IMPACT OF STANDARDS

DOE's attempts to project the energy conservation impact of appliance efficiency standards have led to some confusion. DOE has used complicated computer simulation models to separate the effect of market forces from that of standards. Moreover, the initial analysis was redone with different assumptions after the proposed rules met with criticism. The second analysis produced some unexpected results, which DOE officials cannot fully explain.

In establishing appliance standards, the Secretary of Energy is required, among other things, to determine for each product type and class whether an efficiency standard would result in significant conservation of energy. To project energy savings, DOE used the Oak Ridge National Laboratory Residential Energy Model and augmented the model's data base with information obtained in a 1979 survey of manufacturers. This survey obtained information on the energy efficiency of appliances shipped by manufacturers during 1978.

^{1/}"U.S. General Accounting Office: Comments on the President's February 18, 1981, Budget Proposals and Additional Cost Saving Measures," OPP-81-2, March 3, 1981; and "Views on Energy Conservation and the Federal Government's Role," EMD-81-82, June 17, 1981.

The Oak Ridge model was first developed in 1976, and has been modified extensively from the initial version. It includes three submodels

- a demographic submodel which calculates stocks of housing by type for each year of the simulation;
- a technology submodel which evaluates changes in energy requirements and purchase price as functions of alternative product and housing design;
- an economic submodel which determines the responsiveness of households (consumers) to changes in income, fuel prices, and product prices.

Each of these submodels is a set of equations which, when combined, provide an overall simulation of residential energy use. Each submodel contains a series of assumptions based on historical or technical data.

In developing data on the impact of the standards, DOE used the Oak Ridge model to project a base case and a standards case. The base case estimated the level of conservation that would occur by allowing market forces to determine which products manufacturers would produce and consumers would purchase. The standards case estimated the level of conservation that would result if standards were established. In all of DOE's analyses, the conservation impact of standards is expressed as a net savings over and above what market forces would achieve.

In the first analysis done for the June 1980 proposed standards, the model credited standards with a projected energy savings of between 13.7 and 25.1 quads over the period 1982-2005. This would be an average of .57 to 1.05 quads a year over the 24 years, or roughly 0.7 to 1.4 percent of national energy consumption.

In response to comments on the June 1980 first proposal, DOE revised its analysis of impact and now projects standards will save 10.9 quads over the 24 years. ^{1/} This is an average of .45 quads a year, or about 0.6 percent of national energy consumption. Of these projected savings, about 92 percent is electricity, some of which is generated with oil and natural gas. More importantly,

^{1/}In the first analysis, DOE projected energy savings using a low price and high price assumption for future energy costs. The second analysis used a single assumption of future cost.

however, the relative savings attributed to the different products changed substantially, as shown in the following table:

<u>Product</u>	<u>Percent of national energy use-1980</u>	<u>Projected energy savings in Quads, 1982-2005</u>	
		<u>First analysis</u>	<u>Second analysis</u>
Furnaces	7.3	2.00-4.27	0.47
Water heaters	3.2	3.87-5.91	2.75
Central air conditioners	2.0	2.62-3.73	5.20
Refrigerators	1.6	3.64-7.56	0.63
Ranges/Ovens	1.2	0.26-0.82	none
Clothes dryers	.7	0.32-0.59	0.04
Freezers	.6	0.82-1.69	1.14
Room air conditioners	.6	0.22-0.56	0.71

Source: DOE economic analyses--initial and revised

The projected savings from a furnace standard fell from a high of 4.27 quads to .47 quads. This represents a decrease from 1.1 percent of residential energy saved to 0.1 percent for the product which consumes 35 percent of all residential energy. A similarly dramatic decrease occurred in the refrigerator category; while the savings from a central air conditioner standard were raised from 1.0 percent to 1.3 percent of residential energy.

The reasons for the changes between the first and second analyses cannot be easily pinpointed, because a number of assumptions were changed in the second analysis. While we have not analyzed the impact of changing assumptions, some of the more important changes were

- the estimated lifetime of most products was increased,
- projected increases in fuel prices were raised,

- a different source was used to estimate energy consumption by the various products,
- recent improvements in appliance efficiency were included,
- the improved construction of new homes was considered in projecting energy consumption,
- the proposed standard levels were lowered for most products, and
- a different method was used to estimate the replacement rate of appliances.

We recognize the desirability of projecting the expected impact of appliance standards. However, we believe the methodology and assumptions used in the projection process need to be fully explained and the sensitivity of the model results to key assumption alterations should be carefully analyzed. All this should be done as part of the process of providing decisionmakers the information needed to make judgments on possible standards. We understand that DOE is planning to publish, for public comment, the results of its analyses for the proposed standards. This action should help alleviate some of the uncertainty and confusion currently surrounding the standards development process.

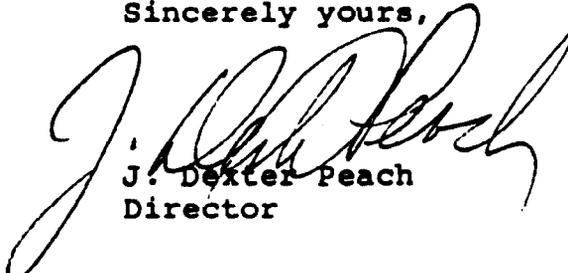
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Because of the short time available to respond to your letter, we have not obtained the comments of the Federal agencies involved in the matters discussed in this letter.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days from the date of the report. At that time we will send copies to interested parties and make copies available to others upon request.

We are ready to assist the Subcommittee in its consideration of these matters and we trust that the information we have furnished will meet the Subcommittee's needs.

Sincerely yours,



J. Dexter Peach
Director