# Reality Check: Comparing Policymaker Perceptions with Consumer Energy Behavior

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In this paper, we explore how policymakers gather and analyze information to design, implement, and evaluate appliance efficiency programs. We compare their perceptions and assumptions with the reality of how consumers view (or don't view) energy in their purchase and use decisions. We interviewed a sample of energy policy experts involved in the design and implementation of U.S. appliance energy-efficiency policy. We also interviewed consumers who had recently purchased an appliance.

While energy use was a low priority in the consumer purchase decision, the consumers indicated that they examined the EnergyGuide labels and would—given the right marketing materials and tools for comparing performance across products—be willing to consider models with lower operating costs and environmental benefits, such as non-CFC refrigerants. At the same time, we found a substantial amount of confusion and misconception about the meaning and reliability of the federal EnergyGuide labels. Given the ubiquity of these labels, there is an urgent need to explicitly evaluate the extent to which consumers are aware of the labels when shopping for appliances; the extent to which they correctly understand the information presented on the labels; and the extent to which the label influences their purchase decision.

Finally, we found a disturbing tendency among the policymakers whom we interviewed to rely on vague perceptions, anecdotal data, and personal experience to support their claims about consumer behavior, and to rarely cite empirical research. We conclude that both policymakers and consumers would benefit from a more consumer-friendly approach to the development of appliance energy policy.

# INTRODUCTION

Broadly speaking, there are two models of how energy policymakers view consumer energy behavior. Although these models are not necessarily conscious on the part of policymakers, they are reflected in the types of policies which they advocate in order to improve appliance efficiency. These models actually represent two ends of a spectrum, and many policymakers fall somewhere in the middle. Yet each represents a fundamentally different view of how and whether consumers incorporate energy into their appliance purchase decisions.

**Consumers as active seekers of energy information.** This model is based on the assumption that consumers actively seek information about the operating cost of their appliances. It assumes that, provided with information and educational materials, consumers will choose to purchase a more energy-efficient unit that has a reasonably short payback time or a lower life-cycle cost. This model supports a policy of *labeling and information* to stimulate a consumer shift toward purchase of more energy-efficient appliances.

The passive, disinterested energy consumer. This model is based on the assumption that consumers neither

care about nor pay much attention to energy and operating costs in their appliance purchase decision. Policymakers who adopt this model believe that significant efficiency improvements will occur primarily through mandated *minimum efficiency levels*, which are essentially invisible to the consumer.

There is still much debate among policymakers, especially in the current Congress, over which model more accurately reflects consumer behavior. This debate has significant policy implications. Until recently, minimum efficiency standards have been a cornerstone of U.S. energy-efficiency policy. However, both the appropriateness and effectiveness of efficiency standards are now under attack. Those who question efficiency standards contend that the appropriate role for government is to provide information and to educate consumers.

We believe that it is important to inform current discussions surrounding the direction of appliance energy policy. Specifically, we feel that the current policy debate in Congress over minimum efficiency standards and funding for energyefficiency programs is not grounded in an understanding of actual consumer behavior. We address this issue by reviewing previous studies of consumer energy behavior and then discussing the results of interviews that we conducted with policymakers and appliance purchasers in early 1996. We do not generalize about the views of policymakers at all levels of government, or about all U.S. consumers of appliances. However, by interviewing a small and fairly representative sample of both groups, we hope to provide some insight into the effectiveness of energy-efficiency policy from the perspectives of those who design and implement policy as well as those who are affected by it.

# METHODOLOGY

We began our study by reviewing previous research on consumer behavior in the purchase of appliances and consumer durables. We concluded that this research does not go far enough in exploring the complex behavior that affects consumer purchases of energy-consuming appliances. In order to understand the relevance of consumer behavior in the formulation of energy policy, we interviewed a sample of federal policymakers, and compared these results with the results of interviews with a sample of appliance purchasers.

## **Policymaker interviews**

In order to gain a better understanding of policymaker perceptions of consumer energy behavior, we conducted semistructured interviews (Bernard 1994: 208–236) with 16 officials responsible for developing and implementing energy-efficiency policy. To ensure that all views and roles in the policy cycle were well-represented, we defined policymaker broadly, to include those involved in both the design and implementation of policy: congresspeople and their staff, federal agency staff working on the implementation of energy policy, and advocates in non-profit organizations. We chose our sample by contacting energy-efficiency advocates and asking them to recommend key contacts at each point in the policy cycle. The interviews were conducted in Washington, D.C. and by phone from Newark, Delaware during January, 1996.

**Congressional staff.** In order to avoid bias in our selection of congressional staff, we interviewed staff working for congresspeople who had both supported and opposed cuts for energy-efficiency funding in the Department of Energy and the U.S. Environmental Protection Agency during 1995. Our sample included five congressional staff—two of whom favored and three of whom opposed energy-efficiency policy development.

**Implementers at federal agencies.** We interviewed six federal government employees involved in policy implementation at the U.S. Department of Energy (DOE), the U.S. Environmental Protection Agency (EPA), and the Federal Trade Commission. Since the role of these professionals is

Advocates for non-profit groups. We also interviewed three members of organizations advocating energy efficiency, one member of a non-profit group that works on market-based efficiency programs, and one member of an advocacy group that opposes federal funding for energyefficiency programs.

## **Consumer interviews**

We conducted interviews with a sample of 11 consumers, so that we could contrast the views of policymakers with those of appliance purchasers. We interviewed consumers at one appliance specialty store (superstore) and one department store outside of Wilmington, Delaware. Our semistructured interviews with consumers were short (5 to 10 minutes) and were conducted as they were leaving the store. We only completed interviews with customers who had purchased a large, energy-using appliance (refrigerator, water heater, furnace, air conditioner, or washer-dryer) on that day or within the past six months.

# PREVIOUS RESEARCH ON CONSUMER ENERGY BEHAVIOR

Over the past decade, there have been few studies in the field of marketing and consumer behavior that have focused on the role of energy in consumer purchases. Much of the ground-breaking research in consumer energy behavior was completed in the late 1970s and early 1980s.<sup>1</sup>

## Barriers to energy efficiency

Anderson and Claxton (1982) summarized early research into consumer energy behavior and identified four primary barriers to choosing energy-efficient products: (1) limited cognitive capacity, (2) salience of energy information, (3) dominance of retail sales staff, and (4) product selection and promotion. Significantly, none of these barriers were related to cost. In a field study of 720 refrigerator sales in 18 stores in Western Canada, they found that the lack of in-store support (sales staff rarely initiated a discussion of energy use) hampered sales of energy-efficient models. They called for "in-store" shopping aids in order to assist consumers in comparison of energy performance between models.

Stern and Aronson (1984: 32–54) employed a social science approach to explain why consumers so often fail to take actions (i.e. purchase energy-efficient products) that would be in their economic self interest. The main barriers that they identified included the invisibility of energy to consumers; the difficulty consumers have in accessing reliable and trusted information on energy use and efficiency; the symbolic meanings of energy use (energy conservation is often associated with government control and coercion); and limits to consumer choice, which are due to the role of intermediaries, manufacturers, the longevity of the capital stock, and limited access to capital.

Several other studies have emphasized the fact that consumer actions are not predicted by the "rational economic" models used by economists (e.g., Sanstad and Howarth 1994; Hassett and Metcalf 1993). Kempton and Montgomery (1982) found that consumers use their own simplified measurements to make residential energy decisions, and that these often lead to systematic errors which may underestimate the benefits from so-called "cost effective" investment options. Ruderman et al. (1987) calculated implied discount rates for household appliances and found that they ranged from several times to several orders of magnitude greater than the market discount rate. This helps to explain the substantial barrier to consumer purchases of energy-efficient equipment with a higher first cost, but lower operating and life-cycle costs.

Stern et al. (1986) summarized evaluations of U.S. residential energy-efficiency programs and found that non-financial factors often had the greatest impact on program participation rates. They found a weak correlation between the size of the program financial incentive and the participation rate. They concluded that marketing and implementation were responsible for widely varying participation rates (a factor or 10 or more) for programs that offered identical financial incentives.

## Are labels effective?

Although the EnergyGuide labeling program has been a centerpiece of U.S. appliance efficiency policy, there has not been a definitive study to demonstrate the labels' effectiveness. In fact, several studies have raised questions about the labels and consumers' ability to accurately comprehend their content.<sup>2</sup> A California utility conducted group interviews and found out that about half of the participants "severely misunderstood" the information presented on the federal EnergyGuide appliance labels (Carswell et al. 1989: 37). A study by the Bonneville Power Administration concluded that the EnergyGuide labels are not a very convenient way for consumers to identify energy-efficient models and that the labels are therefore "not particularly effective in specific purchase decisions." (BPA 1988)

Redinger and Staelin (1981) found that the EnergyGuide labels had little impact without additional information and a "sales push". They conducted an experiment with 123 people to estimate the effects of three market variables: government energy labels, energy communications, and an energy sales push. They concluded that "it is unlikely that the presence of government energy labels will have a significant effect on expanding the market for energy-efficient appliances unless this information is supplemented with a heuristic on how to use the information to trade off price differences."

The most complete evaluation of the appliance labeling program was completed by the Federal Trade Commission in 1986. (Dyer 1986, Dyer and Maronick 1988) This longitudinal evaluation was based on surveys taken from a sample of several hundred purchasers of washing machines and refrigerators in 1979, 1982, and 1983. Energy use ranked low on the list of consumer priorities in all three surveys. Table 1 below shows a list of consumer priorities in the purchase of refrigerators from the 1983 survey.

In the 1982 and 1983 surveys, slightly under 60% of refrigerator respondents indicated that they were aware of the labels, and roughly half of these people (or about a third of all refrigerator respondents) indicated that the label affected their buying decision. (Dyer 1986: 35, 37) Dyer and Maronick (1988) concluded that refrigerator purchasers seemed to be more aware of the labels than did purchasers of washing machines and also tended to rely on the labels to a greater extent in their purchase decisions. We are not aware of any studies that have explicitly linked the EnergyGuide label with the decision to purchase a more energy-efficient appliance.<sup>3</sup>

# **Table 1.** Consumer Priorities in the Purchase of<br/>Refrigerators.

Attribute	Percentage mentioning factor as important in purchase decision
size	59.3
self-frost/frost-free	32.7
color, appearance	31.7
price	28.1
energy efficiency	27.6
doors - number/position	25.1
ice maker/water dispenser	13.6

Source: Dyer and Maronick 1988, 88.

## The role of the salesperson

The research on labeling implies that the labels alone are unlikely to have an impact without additional in-store information and an active role on the part of the salesperson. Indeed, previous research makes it clear that the salesperson is an essential and often—from the policy perspective overlooked part of the consumer decision-making process. Beales et al. (1981) reviewed a number of empirical studies and found that policymakers tend to wrongly assume that consumers will overtly search for information and incorporate this into their decision process. In fact, for all but the most expensive consumer durable, consumers only undertake a very limited "external" search. Beales et al. concluded that, "Government agencies interested in altering consumer behavior must acknowledge that they are in competition with sellers for the attention of the consumer."

It appears that the "norm" is for salespeople to play little if any role in pushing energy efficiency in their sales pitch. Ling and Wilhite (1994) examined the emphasis on energy use in transactions between appliance customers and salespeople at 54 different household appliance stores in four Nordic countries. They found that energy efficiency played only a small part in the sales process in those stores, and that it was not used as a sales argument or promotional tool.

Several agencies implement energy-efficiency programs have focused on the role of the salesperson in influencing the purchase of energy-efficient appliances. A study by the Bonneville Power Administration found that refrigerator purchasers relied heavily on the salesperson for product information and recommendations. However, few of the dealers surveyed in the study initiated a discussion of energy efficiency. (BPA 1988) The Danish energy agency tested a strategy that combined energy labeling and sales training. In a pilot project, the labeling and training had an impact on consumer decision-making, although it was not possible to quantify the extent of the effect.

## **Energy Savers Retail Initiative**

Recognizing the crucial link played by the appliance retailer, the U.S. Department of Energy has initiated a pilot project called the Energy Savers Retailer Initiative. (DOE 1995) In the test phase of the project, the researchers have found that the use of a simplified energy label, combined with sales training and promotional materials, increased the relevance of energy in the appliance purchase process. In contrast with previous studies, in which energy efficiency has ranked low (e.g. fifth, sixth, or seventh) on the list of consumer purchase priorities, it ranked second in this survey. The consultant who managed the study is encouraged by the initial results, but he cautions that it is too soon to draw conclusions. Later this year, DOE will be conducting broader consumer surveys in four cities as part of the expanded Energy Savers Retail Initiative (Rivera 1996).

#### Summary of previous research

Previous research has demonstrated that the barriers to the purchase of energy-efficient appliances are significant and are not solely economic. Consumers are not rational economic actors: they make their own simplifying assumptions, consider many options and criteria in addition to price, and rely heavily on the salesperson for information that will affect their purchase decision. In addition, they are quite capable of misunderstanding the information on the Energy-Guide label, and there is no solid evidence that a significant percentage of appliance sales are influenced by the label.

In summary, we conclude that there has been a "cultural gap" between energy policymakers and appliance consumers. In order to effectively influence consumer purchase decisions, energy policymakers will need to adopt an underlying marketing framework that is based on consumer perceptions, understanding, and behavior. This process has begun, and several recent studies have found that a combination of a simplified energy label, sales training, and point-of-sale promotions may be the key to successfully influencing consumers to purchase more energy-efficient appliances.

# INTERVIEW RESULTS

In our interviews with consumers and policymakers, we found that the existing literature does not go far enough in either explaining consumer behavior or in informing policymakers who develop consumer appliance policy. Our interviews addressed the barriers to the sale of energy-efficient products, consumer purchase priorities, effectiveness of appliance policy, and the appropriate role of government.

#### Barriers

The majority of policymakers effortlessly recited a list of existing barriers. Twelve of the 16 policymakers began by mentioning "cost" or "first cost" as one of the major barriers to the sale and production of energy-efficient products. Consumers did not express as much cost-sensitivity as policymakers anticipated based on their responses to our questions. Seven of the 11 consumers said they would be willing to pay more for an energy-efficient appliance. In fact, consumers appeared to negotiate on price only after they had selected an appliance based on a certain set of features. Price was not the highest priority in the consumer purchase decision (see "Consumer priorities" below).

Several of the policymakers did not believe that consumers would be sophisticated enough to calculate the payback for an energy-efficient appliance. One policymaker expressed the belief that consumers tend not to be aware of appliance operating costs and that, even if they were, they would not know how to calculate life-cycle cost and compare appliances based on this measure. He explained:

"Who realizes that two-thirds of the total cost of a refrigerator is electricity, one-third is first cost? You and I and about thirty other people know that. And, you know, even if people did realize that electricity is important, they don't know how to compare costs, how to calculate life-cycle costs, or compare products."

Our consumer interviews tell a slightly different story. Policymakers' perception that consumers do not consider energy, operating cost, and payback were not supported by the consumer responses. All but one consumer indicated that they looked at the EnergyGuide labels. Therefore, all but one respondent at least considered operating cost at some point during the purchasing process. Very few consumers remembered the actual cost of operating the appliance, and some misunderstood what the dollar figure on the label represented. But nearly half of the consumers explicitly mentioned payback as a way of determining how much more to pay for an efficient appliance. The majority of consumers indicated that operating cost was a more important factor in the purchase of an appliances (e.g., refrigerators) that run constantly.

Twelve of the policymakers mentioned lack of information, limited distribution networks, and consumer and manufacturer "perception" of energy efficiency as additional barriers to the production and purchase of these products. Half of the policymakers suggested that manufacturers "perceive" a risk involved with introducing energy-efficient technologies, that manufacturers seem to believe neither that there is a market for energy efficient products<sup>4</sup>, nor that consumers are willing to pay more for such products. These same policymaker respondents also mentioned consumer perception as a barrier.

In fact, the consumers we interviewed did not appear to be constrained by a lack of information or limited selection of appliances. Nor did they appear to perceive energy efficiency as a risky or unreasonable investment. Instead, they were either unclear about how to interpret the label, or were uncertain about how the label related to them and their household. Several consumers wondered about the impacts of behavior, electricity prices, usage patterns, and family size on energy consumption. They seemed to discount the information on the label because of these variables. Three consumers misinterpreted the label completely. Two of them expressed the belief that the dollar figure on the label represented annual energy savings, rather than the annual operating cost of the unit. Several other consumers were skeptical about the information displayed on the EnergyGuide labels, and one consumer described the labels in the following manner:

"They've got these stupid numbers on the door ... they can be misleading because they're an average for different areas of the country. They change ... if they're all using the same standard, then you have to trust them, but I don't know who sets the standard."

This curiosity and skepticism implies that these consumers considered electricity in their purchase process, and that they considered information—such as that on the EnergyGuide label—that was easily available to them. However, people's folk models of energy and behavior, in combination with the unclear presentation of energy-related information, hinder their ability to accurately interpret appliance energy consumption. Policymakers are somewhat accurate when they say that perception of energy efficiency constrains consumer decision making. The problem here seems to be not lack of information *per se*, but rather a lack of clear, easily-interpreted information.

One policymaker, who has more than 20 years experience analyzing and advocating energy-efficiency technologies and programs, gave a unique response to the question about barriers:

"Primarily we don't understand what the barriers are. There is a whole standard list from the literature that you know as well as I do. But I don't think that goes far enough in explaining, from a theoretical viewpoint, what the problem is. For some reason or another, manufacturers have the perception that efficiency doesn't sell, so they don't produce it. Consumers don't have the choice of efficiency in a convenient way and are talked out of it by the salesman when they start making a decision in that direction. There is a role for retailers and distributors. And it isn't understood even by the experts in the business. Sort of like asking why is there so much sex and violence on the television."

This respondent (hereafter referred to as "the dissenter") was the only policymaker who did not recite a list of barriers to energy efficiency. He went on to say that there are no real data on how consumers perceive energy efficiency in the purchasing process. Rather "there are impressions from manufacturers, and there is behavior that follows from those impressions". He appears to believe that policymakers have theories or explanations about why energy efficiency doesn't sell, but that consumer preferences for energy efficiency have never been tested in an experimental way. Based on these impressions about energy efficiency, determinations are made by economic actors up and down the decision making sequence, from producer to consumer, that hinder the production and purchase of energy-efficient products.

These decisions are made in the absence of good information about the true relevance of energy efficiency to the consumer. The "sex and violence on television" analogy underscores this attitude of powerlessness in the decision-making process that he seems to convey. According to this respondent, policymakers are therefore forced to develop policy responses to a problem that is not well understood.

The contrast between policymaker and consumer perceptions of barriers to the purchase of energy-efficient appliances reinforces the dissenter's opinion. From the consumers' point of view, price does not appear to be a major barrier in the sale of efficient appliances. Consumers are using information about energy consumption, but they often do not draw accurate or constructive conclusions from the available data. Nearly all of the consumers indicated that they would be willing to pay more for an energy-efficient appliance. Nearly half indicated that they would calculate payback or life-cycle cost in order to make the comparison. We can infer that energy consumption could play a more significant role in the decision-making process if consumers were better able to comprehend and, therefore, act on available energy information.

## **Consumer priorities**

We asked policymakers to describe consumer priorities when making an appliance purchase. We also asked consumers what their priorities were when they shopped for an appliance. A comparison of the responses indicates that consumer purchasing priorities and processes are neither as clear nor as obvious as most policymakers tend to believe.

Half of the policymakers listed "price" as the consumer's number one priority, with "features", "color", "brand name", "convenience", "performance" and "delivery" as other key factors in the decision. We found that consumers do not really have one single top priority when purchasing an appliance. Price was generally not the determining factor in the process. The majority of consumers had a list of important features or criteria that they required in the appliance. These might include (in no particular order): size, service record, storage, design, and/or brand name (several respondents described an interest in purchasing a "top-ofthe-line" product).<sup>5</sup> Many consumers wanted a "good deal", but did not come to buy the cheapest appliance in the store. Once certain criteria were met, price became the key negotiating point. One consumer put it this way, "the bottom line is that the bottom line makes a difference, but there are some elegant negotiables."

How does energy consumption rate in the list of features? All but two policymakers asserted that energy efficiency was at or near the bottom of the list of priorities. Four policymakers cited manufacturer surveys and salespeople as evidence for these assertions. Several mentioned selfevaluation. Some referred to personal experience and the experience of colleagues and staff. One congressional staffer said: "I have looked at labels, but I've never made a decision based on energy use . . . I'm a pretty normal consumer". Another policymaker, an energy-efficiency advocate, felt that consumers really do care about energy efficiency. Despite reports to the contrary, he said he believed that interest was not decreasing.

Policymakers are correct in asserting that energy consumption is not a top consumer priority. Only two out of 11 consumers mentioned energy as a priority in their purchase. Most of the other consumers did not consider energy consumption in their appliance purchases. Energy was neither a deciding factor, nor a deal breaker. This does not mean, however, that efficiency is irrelevant or might not play a more important role in the consumer decision making process.

The energy-efficiency advocate known as the dissenter suggested that policymakers do not entirely understand how consumers make decisions and, therefore, how interventions will affect their behavior. He used a refrigerator rebate program in California as an example:

"A \$50 rebate can change the market for efficient refrigerators completely in California, even though from a theoretical point of view it shouldn't. If you ask a consumer how much a rebate affects their decision they'll say it doesn't. If you ask a manufacturer: 'how much would you respond to a consumer rebate of \$50?' They'd say they wouldn't bother with it. If you ask a retailer what they think about rebates, they'll say they're a pain in the butt. So in theory, they don't work. Except for one thing: they do work.''

According to the dissenter, an intervention such as a rebate is not supposed to transform the market. If you ask each participant in the market, she will agree that such an intervention will not work. But the question remains: why does a \$50 refrigerator rebate work in the state of California? This appears to be an example of the somewhat mystical nature of consumer behavior. This example provides evidence that we neither entirely understand consumer behavior nor consumer responses to energy-efficiency interventions.

When asked where energy efficiency falls in the list of consumer priorities, two policymakers distinguished between energy efficiency as a consumer priority, and energy efficiency as a "selling point". One federal agency employee described energy efficiency as a potential "deal breaker". He suggested that energy efficiency does not have to be a top priority in order to play a role in the consumer decision-making process, indicating that consumers may be susceptible to marketing campaigns that highlight the merits of reduced operating cost for consumer durables and appliances. Another policymaker suggested that consumers needed guidance during the shopping process, and that a clearer message might bring efficiency more readily to the mind of the consumer.

Indeed, several of the consumers indicated that if efficiency was marketed more clearly, and comparisons between units were easier to make, it might play a more important role in the decision-making process.<sup>6</sup> One shopper explained it this way: "The size of the fridge, all that is laid out real clearly. The energy use thing is kind of a gray area. If [energy use] is difficult to figure out, and it's going to take awhile and be a headache, it will probably never get done." This consumer reinforces the policymaker's emphasis on the need for a clear message in order to highlight energy efficiency, so that consumers can evaluate its relevance, and turn it into an "elegant negotiable."

Policymakers seem to have a set of assumptions about how consumers make decisions. With one exception, they believe that the consumer decision making process is well-understood. In fact, consumers are more sophisticated and less predictable than policymakers believe. We concur with the dissenter and feel that we do not have an adequate understanding of the consumer decision-making process. Based on our limited research, consumers seem to have a capacity to consider and weigh energy in their decision-making process. A clearer message about its relevance and more comprehensible information on operating and life-cycle costs might elevate energy as a decision-making criterion among consumers.

## What programs are effective?

To gain a broad understanding of policymaker perspectives, we asked the policymakers to list what they thought were the most effective federal energy conservation programs. We did not ask this same question of consumers.

Minimum efficiency standards for appliances were widely perceived by policymakers as being an effective policy instrument. Nine of the 16 policymakers named standards as the most effective federal policy. Two congressional staff people indicated that they were ideologically opposed to standards but acknowledged their effectiveness. Another congressional staff person described standards as ineffective, but added that he had no data to back up this assertion.

We found a curious disagreement over the seemingly easyto-measure issue of whether U.S. appliance efficiency standards have in fact saved energy. The minority who claimed that standards were not effective did not offer proof of their argument but rather suggested that the impact of standards was either difficult to discern or had not been measured. Two informants argued that increases in product efficiency are a natural outcome of free markets and competition. One remarked that the lack of a control group hinders our ability to tell whether standards have been effective: "We will never know if industry would have done better without them." Two analysts with non-profits acknowledged the lack of a control group, but pointed out that one could observe the impact of standards by examining the large increases in product efficiency which occurred during the years that standards went into effect. One of them pointed out that the 1993 standard, which was passed into law in 1989, was so stringent that none of the existing 1989 models were capable of meeting it.

Effectiveness vs. ideology. In our discussions with policymakers about program effectiveness, we noticed a tendency for some policymakers to confuse the effectiveness of policy with their philosophical view of the role of government. One congressional staff person mentioned several times the need for "hard science" and "good science" in order to provide legislative decision-makers with objective information on complex policy issues. He proceeded to complain about an advance notice for a proposed federal rule for horizontal axis washing machines, seizing on this as an argument against standards. His argument against horizontal axis machines was based largely on anecdotal evidence: his brother lives in Germany and is dissatisfied with them; he once lived in Japan and found that they were "dinky" and "could only fit two pairs of Levis"; and "people in the U.S. almost overwhelmingly choose vertical axis machines".<sup>7</sup> This person, when asked to compare standards, manufacturers incentives, voluntary programs, and education, argued that education should be the highest priority. When asked which of the four program types has had the most impact, he replied, "I don't know."

The policymakers seemed to divide along ideological grounds, with several arguing against standards on the grounds that they limit consumer and manufacturer choice. Said one congressional staff person: "We have to be real careful that we don't force a technology down peoples' throats. A program is beneficial to some extent if it is putting labels on equipment and providing information. But we have a problem if we mandate production lines and eliminate consumer choice." Another congressional staff person argued that the government role should be to "encourage" and not to "mandate". "Consumers will choose more energy-efficient products as they become available . . . current policy is not demand driven. It seeks to force demand by limiting available products."

In response to the argument that standards limit product availability, another congressional staff person pointed out that individual choices to purchase energy-inefficient products have significant negative environmental impacts: "I think from a public policy perspective we shouldn't give consumers the choice to maximize the externalities they're imposing on the rest of society and on the environment, because of their self-serving choices ... And if consumer choice is less ... energy-efficient, then well, we ought to slap a huge tax on it to offset the societal cost of the externality that you're imposing by maintaining this consumer choice. But [these choices are] not cost-free."

Another policymaker, an energy-efficiency advocate, contended that standards do not limit consumer choice:

"I would say that the standards by and large don't limit choice—you still have all the same colors, features, and with whatever else you want—it's just that all of the units are more efficient. There has been no proven case that I am aware of that, following standards, the amount of choice has actually gone down."

In our discussions with policymakers, we were often left with the feeling that we were talking with two groups of people who speak different languages. In the view of policymakers opposed to minimum efficiency standards, such standards limit the ability of manufacturers and consumers to choose which types of products they want to make and buy, respectively.<sup>8</sup> In the view of the energy-efficiency advocates and most of the federal agency employees, minimum efficiency standards do nothing to alter the amenity provided by a product class, and actually increase choice by offering consumers a way to save money on their energy bills.

## The role of government

Clearly, it was not easy for the policymakers to talk about effectiveness without also referring to the appropriate role of government. Nearly all of the informants (14 of 16) believed that government should play a role in promoting energy efficiency. Those policymakers who support a strong government role were more likely to reply that minimum efficiency standards had been the most effective policy. Those who favored a more limited government role were less likely to point to standards as an effective policy. And those who did not believe that government should promote energy-efficiency argued that standards were not effective; however, they were unable to cite specific studies to discredit the effectiveness of standards.

One individual, a member of a non-profit think-tank, did not believe that the federal government should promote energy efficiency because he views the federal government as a market-distorting force. In his view, if the government were to play any role, it should be limited to the provision of information. At the same time, he even voiced skepticism of the ability of the federal government to provide unbiased information. This policymaker's distrust of government was at odds with the rest of those whom we interviewed. Policymakers who supported a federal role in improving energyefficiency characterized the government as an appropriate medium through which to convey "unbiased" information, largely due to its inherently "broad contact with the public". They cited the benefits of energy efficiency to society, the environment, and consumers. They also described a "moral obligation" to improve the energy efficiency of the economy. Six respondents also stated that market failures justified government intervention to promote energy efficiency.

Among consumers, we found that only one of the 11 was aware of the federal law requiring minimum efficiency levels for appliances.<sup>9</sup> This supports the assertion of several of the policymakers that such standards are essentially invisible to the consumer and do not significantly limit consumer choice.

We also found broad support among the consumers for a government role in promoting energy efficiency. All but one thought that the government should play a role in promoting energy efficiency and that both appliance labeling and standards were appropriate government roles. Support for a government role in these areas seemed to reflect a distrust of manufacturers and a desire to have comparative product information provided by a reliable source. This was a typical comment:

"Yeah, I would say that [energy labeling] goes right up there with unit pricing for canned goods in a grocery store. I don't think there is anything wrong with that. Yeah, they [the government] shouldn't be biased. I mean who are you going to give it to [this responsibility] if it's not the government?"

Lack of consumer input. Few policymakers could point to explicit input from consumers in the policymaking process. One federal agency employee provided a specific example of a strong negative consumer response to a proposed policy intervention. The example involved a proposed rule that would have largely eliminated electric resistance water heaters in favor of a more efficient technology, heat pump water heaters. He explained that, early in the process, he and his staff were aware that consumers and utilities might have concerns about the proposed standard. As the process wore on, however, the initial "gnawing in his gut" about the proposed rule was gradually outweighed by its large dollar and energy benefits. However, after the proposed rule was published, the agency received a torrent of letters and responses directly from consumers (who, in the policymaker's view, seemed to be motivated by the electric utility industry). The policymaker concluded he should have listened to his first instinct and realized that the proposed rule, despite its impressive energy and economic benefits, would stir intense opposition from consumers and industry.

This was an extreme case in which consumer input was not solicited early enough in the policymaking process. However, we found that the policymakers whom we interviewed rarely requested formal input from consumers at any point in policy development. Analysts and policymakers like the one quoted above tend to be more concerned with saving energy and quantifying consequent economic and environmental benefits. Once again, we confront a "cultural gap" between energy policymakers and appliance consumers. The policymakers tend to view the problem in terms of energy and how best to increase market penetration of energy-efficient products. Yet previous research, and our interviews with consumers, suggest that energy is a low priority in the purchase decision. In order to develop truly effective policies, policymakers must become experts in marketing and consumer behavior, in order to develop a better understanding of how to influence the sales transaction. Doing so will result in even greater energy savings.

# CONCLUSIONS

Our interviews with a sample of policymakers and consumers indicate that policymakers often draw inaccurate or limited conclusions about consumer purchase behavior. The extent of consumer sophistication in factoring energy into the purchase decision is often not reflected in policymaker assumptions. Neither of the two models of consumer energy behavior that we proposed in the beginning of this paper accurately describes the typical consumer. Consumers did not actively seek information on product efficiency, and energy was listed as an important decision criterion by only two of the 11 consumers whom we interviewed. At the same time, we found evidence that consumers examined the EnergyGuide labels and-given the right marketing materials and tools for comparing performance across productswould be willing to consider models with lower operating costs and environmental benefits, such as non-CFC refrigerants. All but one of the consumers expressed a willingness to pay a higher price for a more energy-efficient appliance, and they were generally more sophisticated in their analysis than assumed by policymakers; nearly half of the sample indicated that they would calculate payback in order to make the comparison.

We also found a substantial amount of confusion and misconception about the meaning and reliability of the Energy-Guide labels. This supports previous research which has indicated that a large percentage of consumers either ignore or misinterpret the labels. Given the ubiquity of these labels—they are required by law to be posted on most categories of large electrical household appliances—there is an urgent need to explicitly evaluate the extent to which consumers are aware of the labels when shopping for appliances; the extent to which they correctly understand the information presented on the labels; and the extent to which the label influences their purchase decision.

Finally, we found a disturbing tendency among some congressional staff people to confuse discussion of policy effectiveness with their view of the appropriate role of government. In other words, their opinions were often based on political ideology rather than on the "good, hard science" that they advocated. These findings reflect a general tendency among the policymakers whom we interviewed to rely on vague perceptions, anecdotal data, and personal experience to support their claims about consumer behavior, and to rarely cite empirical research. Several policymakers who opposed a role for government in appliance energy policy claimed to have consumer interests in mind and seemed to try to speak on their behalf in opposing appliance efficiency legislation. However, the consumers we interviewed were generally supportive of a government role in appliance energy policy, and all but one were in favor of minimum efficiency standards.

These various findings suggest that energy policymakers who are developing "market transformation" programs would benefit by explicitly and carefully considering consumer behavior and principles of marketing, rather than by focusing only on technical aspects of energy-efficiency policy. Both policymakers and consumers would benefit from a more consumer-friendly approach to the development of appliance energy policy.

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# **ENDNOTES**

1. In its 20-year index (1974–1994), the *Journal of Consumer Research* listed two energy-related articles in the period 1974–1979, 26 articles in the period 1980–1985, only three in the period 1986–1989, and no articles in the 1990s.

- 2. If the goal of a labeling program is to influence consumer decision-making, then it is important to keep in mind Day's (1976) distinction between (1) making information available; (2) whether that information translates into increased awareness and comprehension; and (3) whether that increased awareness has an impact on buyer behavior. Clearly, the EnergyGuide labeling program makes information about appliance energy use available to appliance purchasers. However, consumer research indicates that consumers have a propensity to misinterpret labels. For example, Laric and Sarel (1981) surveyed several hundred consumers in 1972 and in 1980 and found that significant numbers of consumers misread and misunderstood the Good Housekeeping Seal on consumer products.
- 3. The Federal Trade Commission recently amended the regulation that requires consumption data on the Energy-Guide labels (FTC 1994). The amended rule requires manufacturers to label their product's consumption in energy units—kilowatt-hours of electricity consumed per year—instead of estimated annual operating cost. Cost information will be provided at the bottom of the new label as a secondary means for consumers to determine appliance energy consumption and operating cost.
- 4. Policymakers were generally more aware of manufacturers' role in the development of efficient products than consumers were.
- 5. Consumers surprised us in their willingness to consider themselves environmentalists. All but one of the eleven consumers interviewed described themselves as environmentalists. A majority mentioned chlorofluorocarbon (CFC) use as an important environmental issue that might affect their purchase decision.
- 6. These consumer viewpoints support the findings of Redinger and Staelin (1981) and Anderson and Claxton (1982)
- 7. When we pressed him to back up this claim, he said that 98 % of US households have vertical axis washers, based on sales—for example, when you go to Sears, you see it." In other words, he meant that U.S. consumers choose vertical-axis machines because that is what is available.
- 8. One of the staff persons worked for a Congressman who was among the most vocal in pressing for a moratorium on efficiency standards in 1995. In this Congressman's district lies a ballast-manufacturing facility which would have been rendered obsolete by a draft standard for lighting ballasts efficiency proposed in 1995.
- 9. The one individual aware of efficiency standards was the C.E.O. of a local gas company. One other individual said that she was aware of the minimum efficiency standards, but she then incorrectly asserted that she had seen the standard on the EnergyGuide label, and that it was represented by extreme value on the range of annual operating costs.

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