RESIDENTIAL MARKET EFFECTS STUDY: REFRIGERATORS AND COMPACT FLUORESCENT LIGHTS

Final Report

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CHAPTER 1
EXECUTIVE SUMMARY

The Residential Market Effects Study on Refrigerators and Compact Fluorescent Lights (CFLs) was conducted for San Diego Gas & Electric (SDG&E) and Pacific Gas & Electric (PG&E). The primary purpose of this study was to assess the extent to which these utilities' Residential Appliance Efficiency Incentive (RAEI) Programs had transformed the residential market for CFLs and energy efficient refrigerators. To achieve that end, Hagler Bailly gathered and analyzed data to assess the changes in the market for these two technologies, examined evidence that SDG&E's and PG&E's programs created those market effects, and looked for indications that the effects are long-lasting. We examined in greater detail one of the potential market effects, the change in market share (for both CFLs and refrigerators). The research and analysis for this report was conducted in the summer and fall of 1997.

The RFP also called for a net-to-gross study of the 1996 High Efficiency Refrigerator Program (PG&E and SDG&E) and the 1996 High Efficiency Lighting Program (SDG&E). The net-to-gross studies are reported under a separate cover.[1]

1.1 MARKET EFFECTS ASSESSMENT APPROACH

The programs analyzed in this report were primarily designed as resource acquisition programs. They were designed to achieve specific, measurable (on an annual basis) energy savings that utilities could get cost recovery for. As a result, past evaluation work on these programs typically focussed on measuring direct impacts – the electricity saved by refrigerators or CFLs rebated through the programs – or on learning how to improve the effectiveness of the programs.

In contrast, this evaluation attempts to retrospectivly apply market transformation analysis to programs that were not necessarily designed to transform the market as it is currently thought of. Over the years, there has been much discussion of creating broader measures of the total effects of programs that would include actions taken by people who are not usually measured by counting participants or rebates. At first the discussion was framed in terms of spillover. More recently the

[1] *Residential Appliance Efficiency Incentives Program: High Efficiency Refrigeration; 1996 First Year Statewide Load Impact Study; Net-To-Gross Analysis.* Prepared for San Diego Gas & Electric and Pacific Gas & Electric by Hagler Bailly. February 1998. SDG&E Study ID #: 980. PG&E Study ID #: 373-2.
Residential Appliance Efficiency Incentives Program: High Efficiency Lighting; 1996 First Year Statewide Load Impact Study; Net-To-Gross Analysis. Prepared for San Diego Gas & Electric and Pacific Gas & Electric by Hagler Bailly. February 1998. SDG&E Study ID #: 983.

discussion has broadened to focus on market transformation. This market effects study reflects that broadening interest.

A frequently cited report (the “scoping study”) defines market transformation as:

> *A reduction in market barriers due to a market intervention, as evidenced by a set of market effects, that lasts after the intervention has been withdrawn, reduced or changed. A market effect is a change in the structure of a market or the behavior of participants in a market that is reflective of an increase in the adoption of energy-efficiency products, services, or practices and is causally related to market interventions.*[2]

Applying this new metric to resource acquisition programs means we are looking back at programs that were designed to acquire resources and that may have also created market effects. The scoping study says that markets show evidence of being transformed when an intervention (utility program) results in a lasting reduction in market barriers. The scoping study defines market barriers as "any characteristic of the market for an energy-related product, service, or practice that helps to explain the gap between the actual level of investment in or practice of energy efficiency and an increased level that would appear to be cost-effective."

Market transformation can be measured by quantifying the market share of an efficient technology and by measuring a variety of market-effect indicators that provide evidence that barriers to the purchase of an efficient technology are coming down. A change in the market share of an efficient technology is also a market effect. Many investigators think that market share is only one of the market effects that should be studied while investigating a program's impact on the market. Market share is considered a **lagging indicator** because it lags behind those changes that actually cause purchase habits to change. Many other market effects, on the other hand, are considered **leading indicators** because they help predict future changes in market share by measuring changes in barriers that stand in the way of energy efficient purchases. Some argue that since market share is a lagging indicator it is critical information for the final analysis of a program’s effects but is less useful for providing feedback during program implementation to help program managers improve the program.

This study has measured both leading and lagging indicators to determine whether SDG&E and PG&E programs resulted in transforming the CFL and refrigerator markets in their service territories. Our approach was designed to provide evidence of market effects that when taken together might produce a persuasive case for claiming that SDG&E’s and PG&E’s programs have affected, and possibly transformed, the market. We attempt to build the case for attributing market effects to these programs by examining changes that have occurred over a 10-year time period in

[2] *A Scoping Study on Energy-Efficiency Market Transformation by California Utility DSM Programs*, by Joseph Eto, Ralph Prahl, and Jeff Schlegel. Prepared for the California Demand-Side Measurement Advisory Committee. July 1996. (Hereafter referred to as "the scoping study").

the service territories of these two utilities and in a comparison area (in this case, the rest of the country).

Our key data collection and analysis activities were as follows:

- Customer surveys addressing CFL and refrigerator issues
- CFL and refrigerator retailer surveys
- Residential home designer and builder surveys
- CFL and refrigerator manufacturer surveys
- Historical program and data analysis
- Analysis of data on sales patterns and efficiencies.

The **customer surveys** addressed the two major needs of this market change analysis: to (1) calculate a reliable indicator of the market share of efficient refrigerators and CFLs, and (2) measure indicators of market effects that provide evidence of changes in the barriers to adopting efficient refrigerators and CFLs. We implemented a random-digit dialing phone survey of residential households in SDG&E and PG&E service territories and in the country as a whole for the comparison area.

A single, multi-part survey with extensive screening questions was used to estimate market shares and gather data from the following groups of people:

1. People who bought CFLs in 1996
2. People who are familiar with CFLs but have never bought them.
3. People who bought new refrigerators in 1996
4. People who bought new refrigerators in 1991 (5 years ago)
5. People who bought new refrigerators in 1986 (10 years ago).

In the CFL portion of the survey, we asked people if they were aware of and had ever purchased or received a CFL. For those who purchased CFLs in 1996, we asked where they purchased their CFL, how they reached their purchase decision, where they got their information, what factors they considered in making their decision, and where they bought CFLs and incandescent lightbulbs. For those who were familiar with CFLs but had never bought them, we asked where they bought incandescent bulbs, where they got their information on CFLs, and why they had not bought CFLs. For all respondents, including those who did not know what CFLs were, we asked what factors they consider when buying a light bulb.

In the refrigerator portion of the survey, we asked similar questions about the purchase process and information sources. In addition, we asked the refrigerator purchasers to locate and read over the phone the brand name and model information from their refrigerators. By matching that data with data from the Association of Home Appliance Manufacturers (AHAM), we assigned the exact size, type, efficiency, and electricity use per year to each refrigerator. Using formulas established by the federal standards that refer to size and type of refrigerator, we calculated for each

refrigerator the electricity it would have consumed if it were only as efficient as the federal standards in force in the year it was purchased. Comparing numbers from these calculations gives an estimate of the amount of electricity a given refrigerator saves compared to the relevant federal standard. With this method we were able to analyze *historical* efficiency information on refrigerators bought in 1996, 5 years ago (1991), and 10 years ago (1986).

Hagler Bailly completed 337 CFL market effects surveys with 1996 CFL purchasers and 150 with nonpurchasers (who were aware of CFLs), 717 refrigerator market effects surveys, and gathered 476 valid serial numbers on refrigerators. (Of the 717 refrigerator market effects surveys, 241 either provided serial numbers that we could not match to the AHAM data or could not or would not give us their refrigerator serial numbers.)

Hagler Bailly implemented a phone survey of **CFL and refrigerator retailers**. The survey addressed the barriers of product unavailability, hassle cost, information cost, organizational practices, and product performance uncertainty. The retailer survey helped us characterize the markets, examine the most important barriers affecting these markets, and assess the impact of utilities' programs on the market.

Hagler Bailly interviewed a small number of professionals at key companies that design and build residential homes in California to examine their impact on the demand for refrigerators and CFLs in the new construction market.

Hagler Bailly also interviewed by phone key refrigerator **manufacturers** to gather data that addressed the barriers of product unavailability, organizational practices, inseparability of product features, and product performance uncertainty. The interviews included discussions of the manufacturers' opinions on the impact of the utility programs on their own research, product line changes, and future plans.

In light of the distinction we discussed earlier, we divided our discussion of market effects into four segments:

- Refrigerator market effects
- Refrigerator market share (a specific market effect)
- CFL market effects
- CFL market share (a specific market effect).

1.2 REFRIGERATOR MARKET EFFECTS

The data collected in this study suggest that the refrigerator programs of SDG&E and PG&E have successfully created some significant changes in the market for energy efficient refrigerators in their territories. This is evident both in the market share of energy efficient refrigerators and in the level of several critical barriers in the market. However, there is little evidence to predict whether

these effects will prove to be long-lasting. The two territories appear to be significantly ahead of the rest of the country in reducing the following barriers:

- Californians[3] are both more aware of energy efficient refrigerators and more accurate in their assessment of the efficiency of their refrigerator.
- Californians were more likely to consider energy efficiency when shopping for refrigerators, however the difference between California and the U.S. diminished in 1996.
- Retailers in California are more likely to discuss energy efficiency with customers than in the rest of the country and they are more likely to recommend energy efficient models.

Many factors contribute to changing markets. In addition to SDG&E and PG&E programs, the markets were affected by federal (1990 and 1993) and California (1987 and 1990) efficiency standards, federal programs such as the Energy Star program, manufacturer and retailer promotional activities, and programs in or near California sponsored by other utilities. One of the most significant factors in the availability of energy efficient refrigerators is the federal refrigerator efficiency standards. Utility programs deserve credit for helping bring about the 1993 and 2001 federal standards. Both standards required an increase in efficiency of approximately 25% over their predecessors, which had (in 1993, or will have in 2001) a significant impact on the availability of energy efficient refrigerators.

Through helping demonstrate the technology and market acceptance, and through the efforts of individual utility staff, the California utility refrigerator programs had an effect on the federal refrigerator efficiency standards and the 1990 California standards. These standards had a significant impact on the refrigerator market in California and in the rest of the country. Several people involved with California utility refrigerator programs participated in the debates and negotiations that led to the California and national refrigerator standards. They undoubtably had an influence on bringing the standards about and on the level of efficiency specified by the standards. In addition, California utility refrigerator programs helped create a market for refrigerators that were significantly more efficient than the existing standard. By doing so, they provided real-world data that could be used in the cost-benefit models used to examine the proposed regulations. By reducing the uncertainty associated with predicted costs and benefits, the utility programs helped improve the likelihood that the standards would be successfully negotiated and passed.

Energy efficient refrigerators have a significantly higher share of the market in California in 1996 than in the rest of the United States. On average, California refrigerators purchased in 1996 were 12.8% more efficient than the federal standards (saving 108.5 kWh per year on average) compared to 6.9% for the rest of the country (saving 58.8 kWh/year). All the refrigerators sold in California

[3] Throughout the report, when we refer to "California" it should be understood that we are referring to the service territories of SDG&E and PG&E *only*.

in 1996 saved 44.8 GWh when compared to the 1993 federal standards. If they had only been as efficient as the refrigerators sold in the rest of the country, they would have saved 24.3 GWh. The difference, 20.5 GWh, is the amount of electricity savings that can be attributed to the influence of SDG&E and PG&E refrigerator programs (and perhaps some other, unidentified factors unique to California). Savings from rebated refrigerators account for 12.0 GWh of the 20.5 GWh, leaving 8.5 GWh as spillover – influenced by utility programs but not rebated.

Currently, several barriers no longer present problems both in California and in the rest of the country. These include retailer awareness and knowledge, timely availability of energy efficient refrigerators, and technical barriers to manufacturing more efficient refrigerators. Because these are no longer a problem throughout the country, it is difficult to credit California's achievement to the utility programs along. Undoubtably there is some merit in the argument that California refrigerator programs provided some of the impetus that led to the elimination of these barriers throughout the country (and thus deserve some credit), but it is unclear to what extent other forces also contributed to this reduction.

Although significant progress has been made in removing some barriers, the market still faces some significant barriers and there are some concerns about the longevity of the market effects we can see now, which we will discuss in the next section.

1.2.1 Remaining Barriers to Efficient Refrigerators

There appear to be at least two critical barriers that face the current market for energy efficient refrigerators: (1) lack of awareness and knowledge of refrigerator energy efficiency issues (although some progress has been made on this barrier in California), and (2) the relatively low value customers place on saving energy relative to other issues including refrigerator features and saving money up-front when paying for a refrigerator.

It appears that progress has been made on the first barrier in California. There seems to be sufficient evidence to conclude that people in the SDG&E and PG&E territories are more aware of, interested in, and knowledgeable about refrigerator energy efficiency issues than those in the rest of the country. However, customers in California and in particular the rest of the country continue to have over-optimistic perceptions regarding the *actual* energy efficiency of the refrigerators they have purchased. Our study concluded that, while this trend has declined over time, customers are likely to indicate during an interview that they believe the refrigerator they purchased is more efficient than it actually is. Despite these technical misperceptions, other indicators of awareness, interest and knowledge have improved over time in California more significantly than the rest of the country.

The second barrier also remains a significant issue both in California and in the rest of the country. While people say they consider energy efficiency when deciding on a refrigerator, their actions indicate that they are much more likely to be swayed by the up-front price differential and the

availability of specific features than by operating costs and potential future savings. The importance customers say they place on refrigerator energy consumption or energy efficiency has increased over time and currently ranks third, below size and price in both California and the rest of the country. Nevertheless, we find that ultimately, when faced with a refrigerator purchase decision, these other factors do in fact "out-rank" the importance of energy consumption and energy efficiency. If the price of energy should increase in the future, this barrier might be reduced.

In neither California nor the U.S. are the following significant barriers at this time:

- Retailers seem knowledgeable about energy efficiency issues and claim to discuss energy with their customers. On the other hand, only half of the customers said that retailers discussed energy efficiency with them. They also felt that the salesperson did not have much influence on their decision.

- Technical issues (such as the quality of energy efficient refrigerators) do not seem to be a problem for retailer and manufacturers.

- Althought there are fewer energy efficient models than standard models, retailers can deliver energy efficient refrigerators in approximately the same time frame as standard refrigerators.

- Although manufacturers have requirements and suggested stocking patterns for retailers, these do not limit the availability of energy efficient refrigerators.

We found some evidence that availability is no longer a barrier and some that it remains a problem:

- Clearly, greater numbers of energy efficient refrigerators have been introduced in the market over time. Due to changes in federal standards, utility program influences, and support from manufacturers and retailers the number of high efficiency models available to consumers in 1997 has increased dramatically in the past ten years.

- Customers told us that they believe that high efficiency refrigerators are available to them. However, we found that in many cases, they may have based their opinions on a low standard of "efficiency".

- Moreover, while some high efficiency models are displayed in virtually all major retail outlets and are available in a timely manner, it still appears that customers may in fact have little choice in efficiency when they have narrowed down their choices to models with exactly the features they want in the price range they can afford. This lack of choice represents one of the most significant availability barriers remaining.

We found no change in the following barriers:

- The price of electricity and the price of refrigerators have remained relatively unchanged over the years, after adjusting for inflation. Together these factors provide a weak price signal to customers.
- The incremental cost of refrigerators more efficient than the standard remains a barrier. While the evidence is not conclusive, we believe that it points to this conclusion.
- Manufacturers and retailers believe that demand for energy efficient refrigerators, except for that created by utility rebate programs, has not changed and remains low.
- The changes manufacturers have made to their products or production practices to produce energy efficient refrigerators can be relatively easily reversed – they can halt production of energy efficient refrigerators easily and at little cost.

1.3 REFRIGERATOR MARKET SHARE

The data collected in this study suggest that the refrigerator programs of SDG&E and PG&E have successfully created some significant changes in the market share of energy efficient refrigerators. However, there is little evidence to predict whether this effect will prove to be long-lasting.

1.3.1 Comparing Refrigerator Efficiency Over Time

Utility program participation has declined over the years although the average efficiency of refrigerators sold through these programs and their savings relative to federal standards has steadily increased.

The efficiencies of refrigerators bought in California in 1986 were not significantly different from those bought in the rest of the country. However, by 1991, the average refrigerator purchased in California was 10.2% more efficient than the then current (1990) federal standards. This level of savings was significantly higher than the 5.7% found in the rest of the country (Table 1-1). During that year the average refrigerator rebated through SDG&E and PG&E programs was 14.8% more efficient than the federal standards. Some of the difference in efficiency may be attributable to the momentum created by California refrigerator standards which came into effect in 1997. By 1996, the gap between the average refrigerator purchased in California and in the rest of the country had increased even more. California refrigerators were 12.8% more efficient than the now current (1993) federal standards (saving 108.5 kWh per year on average) compared to 6.9% for the rest of the country (saving 58.8 kWh/year). During 1996, the average refrigerator rebated through SDG&E and PG&E programs was 23.3% more efficient than the federal standards (saving 200.1 kWh/year). The differences in savings between California purchases and the rest of the country were statistically significant at the 95% level in 1996 and at the 85% level in 1991.

Table 1-1. Average Refrigerator Savings Compared to Federal Standards

	1991 % over Standard	1996 % over Standard	1996 kWh per year
Rebated Utility Sales	14.8%	23.3%	200.1
California Purchases	10.2%	12.8%	108.5
U.S. Purchases	5.7%	6.9%	58.8

Note: 1991 savings compared to 1990 federal standards and 1996 to 1993 standards
Source: Customer surveys and program documents

1.3.2 Spillover Estimates

By comparing the efficiency of refrigerators purchased in California in 1996 with the current federal standards we were able to calculate the total electricity saved by refrigerators in California when compared to the current federal standards. By performing a similar calculation on refrigerators purchased in 1996 in the rest of the United States, we could estimate the level of naturally occurring conservation in California. Subtracting the latter from the former gives an estimate of the net savings produced by SDG&E and PG&E refrigerator programs in 1996, which amounted to over 20 GWh (Table 1-2). By adjusting savings from rebated refrigerators to account for free riders we estimated savings from true participants at almost 12 GWh. Subtracting true participants from net savings gives us an estimate of the spillover savings, which amounted to 8.5 GWh.

Table 1-2. Refrigerator Net Savings Analysis Results

Component	Result
Net yearly savings	20,483,244 kWh
Composed of:	
True Participant Savings	11,976,830 kWh
Spillover Savings	8,506,414 kWh

Source: *Residential Appliance Efficiency Incentives Program: High Efficiency Refrigeration; 1996 First Year Statewide Load Impact Study; Net-To-Gross Analysis.* Prepared for San Diego Gas & Electric and Pacific Gas & Electric by Hagler Bailly. February 1998. SDG&E Study ID #: 980. PG&E Study ID #: 373-2.

1.4 CFL MARKET EFFECTS

California utility programs have had some significant impacts on the market for CFLs in California, however the evidence is sparse that these impacts would persist in the absence of continued involvement. In only two cases can a case be made that the market effects are

permanent. First, California utility programs, by specifying performance criteria, have probably helped improve the quality of the CFLs available. Second, by helping increase demand, we expect that utility programs have contributed to some decline in the price of CFLs as manufacturers have improved their production processes and gained benefits from economies of scale (although this study did not measure changes in CFL prices). The majority of the evidence on other market effects leads us to conclude that changes in several market barriers are the direct or indirect result of intervention in the market by California utilities. However, the extent to which these programs have produced any lasting change in the barriers is uncertain.

Availability. Over the years, much effort has been taken to increase the availability of CFLs in the consumer market. Some of the more targeted efforts appear to have been the most successful in reducing the availability barrier. For example, several of the utilities' programs were focused on specific product lines or manufacturers, others were delivered through specific retail channels, and yet others were made available only in specific socioeconomic segments (i.e., those likely to purchase CFLs). Our study has shown that Californians who are aware of CFLs know where to buy them, regularly buy lightbulbs at these locations, and (often) do not have to go out of their way to buy lightbulbs at these locations.

Utilities have been successful in leveraging their influence with manufacturers to encourage them to provide higher quality products in expanded size and style configurations. Customers still have some concerns about compatibility with existing fixtures (fit) and quality (reliability, noise, quality of the light) but these may be more a function of education than of availability – they may be reacting more to past problems than to current issues (although this study did not thoroughly examine the evidence for improvements in the technology). These technical improvements have probably had a real, yet difficult to quantify, effect on the transformation of the current CFL market and may have influenced the longer-term market by increasing the likelihood of customer acceptance well into the future.

On the other hand, there remains a segment of the population who are unaware of the technology and/or do not shop for lighting products where CFLs are regularly sold. It is possible that some of these consumers have not been affected by utility efforts. Increased efforts to educate and financially stimulate these customers and to ensure that CFLs are available where they shop for lighting products (e.g., grocery stores) might be successful. Additional research is required to determine how serious this barrier is. (For example, what percent of all bulbs are purchased in stores where CFLs are available? Do people who do not know what CFLs are only shop for lightbulbs at grocery stores and as a result are not exposed to CFLs?)

Price. The high cost of CFLs remains the key barrier in both California and the rest of the country. While Californians are somewhat less sensitive to the cost of bulbs than other US consumers, first cost issues still remain as significant barriers. Over the years, utility programs have been designed – among other things – to reduce the price of CFLs. In fact, nearly every program that the utilities have offered to-date included some type of price incentive (e.g., direct installs/give-aways, discounted retail prices, coupons/rebates). While each program was delivered somewhat

differently and with varying levels of success, it seems apparent that these price incentives have had a significant influence on the current market through the temporary reduction or elimination of the first cost barrier. However, the extent to which these programs have produced any lasting change in the price barrier is uncertain. If consumer demand is sustained through the efforts of utilities and other market actors, it is possible that the unrebated price for these products will come down. While prices may never come down far enough to overcome the first cost barrier completely, lower prices combined with reductions in other important barriers may cause consumers to look more closely at other important benefits of CFLs despite their higher price.

Awareness and Knowledge. Our study has shown that Californians are more aware of CFLs than the rest of the country and we believe that most of the credit for that belongs to utilities. In addition to ensuring product availability and providing price signals that catch the customers' eye, California utilities have provided their customers and retailers with information regarding the benefits of CFLs and appropriate applications for CFLs to address brightness and quality of light issues. Our survey results indicate that these efforts have proven successful – in addition to outpacing the rest of the country in terms of purchase rates and market share, California leads other U.S. markets in terms of consumer awareness of CFL products and benefits. Clearly, there is still significant room for improvement in overcoming awareness and knowledge barriers. However, the CFL message has been successful in reaching the targeted California markets beyond that achieved in other markets.

Whether or not these observed differences in customer awareness and knowledge are long-lasting depends on what level of effort is expended to maintain (and expand) awareness, knowledge, and purchase and use in the future. That is, the current level of customer awareness and "knowledge" (as measured through awareness of advantages and concerns) might be sustainable if the benefits and value of CFL over incandescent alternatives continue to be communicated and promoted to the purchasing market. In addition, messages to the purchasing market will be most effective if reinforced at the point-of-purchase when factors such as price and bulb wattage tend to be "top of the mind" for most customers.

Therefore, the long-term nature of observed market changes is dependent on the effectiveness of the overall messages that are communicated to customers in the future – both prior to and in anticipation of future lighting purchase decisions, and "on-the-spot" while they are shopping for new or replacement lighting products. As utility efforts are shifted, reduced, or eliminated, additional research will be required to assess the long-term nature of the observed changes in the current California market with respect to awareness and purchase and use patterns.

1.5 CFL MARKET SHARE

Our survey data show substantially higher penetration rates for CFLs in California compared to the rest of the country.[4] However, only one-quarter of all California households have a CFL.

The survey data also show substantially higher purchase rates in 1996 in California compared to the rest of the country. The survey data show what appears to be substantial increases in CFL purchases in 1996 in both SDG&E and PG&E territories compared to the penetration rates from previous years. However, extrapolating backwards to calculate saturation rates (subtracting the number purchased in 1996 from the 1996 saturation rate) produces results which conflict with some previous estimates.

CFLs command a higher market share in California than in the rest of the country, yet their saturation is still quite low. CFLs account for 2.4% of all residential lightbulbs purchased in California compared to 1.2% in the rest of the country.

Current Penetration Rates

- 25.3% of California households have at least one CFL, compared to 16.1% in the U.S. as a whole (statistically significant at the 95% level).
- Among households with at least one CFL, California households have an average of 4.08 CFLs compared to 4.02 nationally (not statistically significant at the 95% level).
- Across all households, California households have 1.03 CFLs compared to 0.65 nationally.
- CFL penetration has increased in SDG&E's service territory from 1991 to 1997 but declined in PG&E's territory from 1994 and 1995 to 1997.

PG&E Program Penetration

- 1.3 million CFLs were distributed through the PG&E programs between 1989 and 1995
- In 1994, RASS data suggest 3.1 million CFLs in use and, in 1997, our survey shows 3.3 million CFLs in use.
- Our survey shows over 1 million CFL purchases in 1996 despite the fact that PG&E did not offer a program.

[4] The CFL market share results are discussed in detail in *Residential Appliance Efficiency Incentives Program: High Efficiency Lighting; 1996 First Year Statewide Load Impact Study; Net-To-Gross Analysis.* Prepared for San Diego Gas & Electric and Pacific Gas & Electric by Hagler Bailly. February 1998. SDG&E Study ID #: 983.

SDG&E Program Penetration

- During 1990-1997, nearly 1.6 million CFLs were sold or distributed to customers through SDG&E programs.
- Our survey shows 1.5 million CFLs in use in SDG&E's territory, which is less than the total number of CFLs sold and distributed through SDG&E's programs since 1990 (this issue is addressed in more detail in the body of the report).

1996 Purchase Rates

- 9.5% of Californians purchased at least one CFL in 1996 compared to 5.9% for the rest of the country (statistically significant at the 95% level).
- On average, Californians buying CFLs purchased 3.01 bulbs in 1996 compared to 3.28 in the rest of the country (not statistically significant at the 95% level)
- On average, the number of CFLs purchased across all households in California was 0.27 and 0.19 in the rest of the country.

Current CFL Market Share

- 2.4% of all lightbulbs purchased in California in 1996 were CFLs, compared to 1.2% in the rest of the country.

CFL Spillover Results

Using the number of CFLs purchased per household in the United States as an estimate of naturally occurring conservation in California, we calculated the net number of CFLs purchased per household in California in 1996. Multiplying that by the number of households produces an estimate of the net number of CFLs purchased in California because of utility programs, which amounted to almost 473,000 CFLs (Table 1-3). By adjusting the number of CFLs distributed through utility programs to account for free riders we estimated CFLs purchased by true participants at over 351,000. Subtracting true participant CFLs from net CFLs gives us an estimate of the number of CFLs which can be classified as spillover (121,194 CFLs).

Of the total "net" CFLs purchased in 1996 in the SDG&E and PG&E territories (i.e., net of naturally occurring conservation), 25% represent "spillover" CFL purchases and 75% represent CFL purchases resulting from specific program interventions.

Table 1-3. CFL 1996 Net Savings Analysis Results

Description of Calculation:	Calculation Result:
Number of CFLs purchased in target area	1,485,644
Naturally occurring conservation	1,012,975
Net CFLs purchased in 1996	472,669
Number of CFLs distributed to customers through utility programs	409,979
Free rider CFLs distributed through programs	58,504
CFLs distributed through programs (from true participants, excluding free riders)	351,475
Spillover CFLs	121,194

Source: *Residential Appliance Efficiency Incentives Program: High Efficiency Lighting; 1996 First Year Statewide Load Impact Study; Net-To-Gross Analysis.* Prepared for San Diego Gas & Electric and Pacific Gas & Electric by Hagler Bailly. February 1998. SDG&E Study ID #: 983.

CHAPTER 2
INTRODUCTION

The main objective of the Residential Market Effects Study was to assess the extent to which the Residential Appliance Efficiency Incentive (RAEI) programs offered by San Diego Gas & Electric (SDG&E) and Pacific Gas & Electric (PG&E) had transformed the market for CFLs and energy efficient refrigerators in the service areas of these two utilities. The research and analysis for this report was conducted in the summer and fall of 1997.

2.1 STUDY OBJECTIVES

The primary objective of the study was to look for evidence that the programs offered by SDG&E and PG&E over 10 years had transformed the residential market for efficient refrigerators and CFLs. To achieve that end, we gathered and analyzed data to assess the changes in the market for these two technologies, examined evidence that SDG&E's and PG&E's programs created those market effects, and looked for indications that the effects are long-lasting. We examined in greater detail one of the potential market effects, the change in market share (for both CFLs and refrigerators).

The objectives as set forth in the RFP were to:

- Characterize the markets for refrigerators and compact fluorescent lights (CFLs) and identify barriers linked to specific hypothesized market effects
- Assess the market effects of the Residential Appliance Efficiency Incentive (RAEI) Programs for refrigerators and CFLs by conducting the following tasks:
  - Document changes observed in the market
  - Identify potential analysis tools that would be for useful for quantifying hypothesized market effects due to utility programs
  - Estimate the hypothesized market effects through survey data collection
  - Link the market effects with the specific barriers (quantitatively or qualitatively)
  - Determine if the identified market effects are long-lasting or short-term
- Determine the effects (both short-term and long-term) of RAEI program rebates on future customer purchases of any energy efficient appliance

In addition, the RFP called for a net-to-gross study of the 1996 High Efficiency Refrigerator Program and the 1996 High Efficiency Lighting Program. The net-to-gross studies are reported under separate covers. [1]

2.2 MARKET EFFECTS ASSESSMENT APPROACH

The programs analyzed in this report were primarily designed as resource acquisition programs. They were designed to achieve specific, measurable (on an annual basis) energy savings that utilities could get cost recovery for. As a result, past evaluation work on these programs typically focussed on measuring direct impacts – the electricity saved by refrigerators or CFLs rebated through the programs – or on learning how to improve the effectiveness of the programs.

In contrast, this evaluation attempts to retrospectively apply market transformation analysis to programs that were not necessarily designed to transform the market as it is currently thought of. Over the years, there has been much discussion of creating broader measures of the total effects of programs that would include actions taken by people who are not usually measured by counting participants or rebates. At first the discussion was framed in terms of spillover. More recently the discussion has broadened to focus on market transformation. This market effects study reflects that broadening interest.

This market effects study reflects that broadening interest. However, since we will be examining the effects of programs designed under one regime using a different regime, it is important to understand the context, terms, methods, and limitations. This section will briefly discuss the background for issues discussed later in the report and it will introduce some of the terminology used.

A frequently cited report (the “scoping study”) defines market transformation as:

> *A reduction in market barriers due to a market intervention, as evidenced by a set of market effects, that lasts after the intervention has been withdrawn, reduced or changed. A market effect is a change in the structure of a market or the behavior of participants in*

[1] *Residential Appliance Efficiency Incentives Program: High Efficiency Refrigeration; 1996 First Year Statewide Load Impact Study; Net-To-Gross Analysis.* Prepared for San Diego Gas & Electric and Pacific Gas & Electric by Hagler Bailly. February 1998. SDG&E Study ID #: 980. PG&E Study ID #: 373-2. *Residential Appliance Efficiency Incentives Program: High Efficiency Lighting; 1996 First Year Statewide Load Impact Study; Net-To-Gross Analysis.* Prepared for San Diego Gas & Electric and Pacific Gas & Electric by Hagler Bailly. February 1998. SDG&E Study ID #: 983.

> *a market that is reflective of an increase in the adoption of energy-efficiency products, services, or practices and is causally related to market interventions.*[2]

The scoping study says that markets show evidence of being transformed when an intervention (utility program) results in a lasting reduction in market barriers. The scoping study defines market barriers as "any characteristic of the market for an energy-related product, service, or practice that helps to explain the gap between the actual level of investment in or practice of energy efficiency and an increased level that would appear to be cost-effective."

Market effects are often best viewed in relation to specific market barriers and the actions of market players. For example, if lack of CFL availability is a key barrier to the market, a market player may implement a program to attempt to increase the type and number of stores that carry CFLs. We can measure the market effect of that action by tracking the number of stores that carry CFLs over time. Cause and effect is often difficult to prove conclusively but by examining a variety of market effects and correlating them with the actions of market players, we can look for patterns of evidence that suggest or support conclusions about the credit market actors deserve for bringing about market effects.

Discussions of the best methods for measuring market transformation have often centered around two questions: Can market transformation best be measured by quantifying the market share of an efficient technology, which is the ultimate market effect indicator? Or can it best be measured using a variety of market-effect indicators that together provide convincing evidence that barriers to the purchase of an efficient technology are coming down?

While increasing market share for an efficient technology may be the ultimate goal, accurately and cost-effectively measuring market share for some technologies can be very difficult. In those cases, it may be more appropriate to measure other market effects in order to build a case for concluding that the market has been changed. In these situations, the best approach to measuring the impacts of a utility program is to measure specific market effects and then build the case for spillover or market transformation by examining changes in a variety of those market effects. If the utility has made a good-faith effort to implement programs to bring about changes in the market and if the desired changes can be observed, then the utility should be credited with helping to bring about the changes. (At this point in time, there are no precise methods of determining how much credit utilities deserve. The best approach for determining credit mirrors that of identifying market effects: by looking at a variety of indicators that, together, provide evidence that the utility's actions are correlated with market effects.)

[2] *A Scoping Study on Energy-Efficiency Market Transformation by California Utility DSM Programs*, by Joseph Eto, Ralph Prahl, and Jeff Schlegel. Prepared for the California Demand-Side Measurement Advisory Committee. July 1996. (Hereafter referred to as "the scoping study").

A change in the market share of an efficient technology is also a market effect. Many investigators think that market share is only one of the market effects that should be studied while investigating a program's impact on the market. Market share is considered a **lagging indicator** because it lags behind those changes that actually cause purchase habits to change. Many other market effects, on the other hand, are considered **leading indicators** because they help predict future changes in market share by measuring changes in barriers that stand in the way of energy efficient purchases. Some argue that since market share is a lagging indicator it is critical information for the final analysis of a program's effects but is less useful for providing feedback during program implementation to help program managers improve the program.

The Study Approach. This study has measured both leading (market effects that measure changes in barriers) and lagging indicators (market share) to determine whether SDG&E and PG&E programs resulted in transforming the CFL and refrigerator markets in their service territories. The findings for this study are organized around the distinction we have been discussing:

- **Leading indicators – Market Effects:** Chapters 4 and 6 discuss changes in market effects for refrigerators and CFLs, respectively

- **Lagging indicators – Market Share:** Chapters 5 and 7 discuss changes in market share for refrigerators and CFLs, respectively

Our approach provides evidence of market effects that when taken together could produce a persuasive case for claiming that SDG&E's and PG&E's programs have affected, and possibly transformed, the market. We build the case for attributing market effects to these programs by examining changes that have occurred over a 10-year time period in the service territories of these two utilities and in a comparison area (in this case, the rest of the country).

Many factors contribute to changing markets. In addition to SDG&E and PG&E programs, the markets were affected by federal (1990 and 1993) and California (1987 and 1990) efficiency standards, federal programs such as the Energy Star program, manufacturer and retailer promotional activities, and programs in or near California sponsored by other utilities. Some of these factors, particularly the California and federal refrigerator standards, could have been affected by the California programs. Our focus was on identifying changes in the markets and correlating those changes with SDG&E and PG&E programs. Most of the methods that we could use to try to identify the specific impacts of specific programs are not likely to generate useful results in the context of measuring the effects of many programs over 10 years. For example, purchasers' recall of recently viewed ads or promotional material is often too fuzzy to allow us to attribute changes in knowledge or awareness to specific promotional campaigns. Just as it is not possible to definitively attribute specific market effects to specific programs, it is also not possible to subtract the effects of programs that we were not focusing on.

Our approach to measuring market effects is pragmatic. We recognize this study will leave some questions unanswered and that no one-time research study can answer all of the questions

surrounding refrigerator and CFL market effects and market transformation. We also recognize that this study is a first step. The case for demonstrating permanent and lasting market effects must be built up over time, with a measurement and tracking approach that most would accept as reasonable. Most importantly, our approach sought to reduce the risk of failure (and thereby maximize the likelihood of our success) in measuring market transformation by using multiple forms of evidence that converged on the issue from several different perspectives. Since there is no *single* bullet-proof indicator that could be accurately tracked to provide convincing evidence of market transformation, the best approach is to gather data from a wide variety of sources and look for patterns of evidence that prove convincing. This "multi-perspective" or "triangulation" approach is becoming recognized as the most effective strategy for examining market transformation.

2.3 METHODS

To measure market effects and market share, we collected data from five sources:

- *Customer* surveys that asked residential customers about CFLs and refrigerators
- *Free rider* surveys with program participants
- CFL and refrigerator *retailer* surveys
- CFL and refrigerator *manufacturer* surveys
- *Historical* program and utility records and past evaluations

The **customer surveys** addressed each of the distinct needs discussed above: to (1) calculate a reliable indicator of the market share of efficient refrigerators and CFLs, and (2) measure indicators of market effects that provide evidence of changes in the barriers to adopting efficient refrigerators and CFLs. We implemented a random-digit dialing phone survey of residential households in SDG&E and PG&E service territories and in the country as a whole for the comparison area (see Appendix B).

A single, multi-part survey with extensive screening questions was used to estimate market shares and gather data from the following groups of people:

1. People who bought CFLs in 1996
2. People who are familiar with CFLs but have never bought them.
3. People who bought new refrigerators in 1996
4. People who bought new refrigerators in 1991 (5 years ago)
5. People who bought new refrigerators in 1986 (10 years ago)

In the CFL portion of the survey, we asked people if they are aware of and have ever purchased or received a CFL. For those who purchased CFLs in 1996, we asked questions about where they purchased their CFL, how they reached their purchase decision, where they got their information, and what factors they considered in making their decision. For those who are familiar with CFLs but have never bought them, we asked where they buy incandescent bulbs, where they got their information on CFLs, and why they have not bought CFLs. For all respondents, including those who do not know what CFLs are, we asked what factors they consider when buying a lightbulb.

In the refrigerator portion of the survey, we asked similar questions about the purchase process and information sources. In addition, we asked the refrigerator purchasers to locate and read over the phone the brand name and model information from their refrigerators. By matching that data with data from the Association of Home Appliance Manufacturers (AHAM) we assigned the exact size, type, efficiency, and electricity use per year to each refrigerator. Using formulas established by the federal standards that refer to size and type of refrigerator, for each refrigerator, we calculated the electricity it would have consumed had it been only as efficient as the federal standards in force during the year it was purchased. Comparing numbers from these calculations gives an estimate of the amount of electricity a given refrigerator saves compared to the relevant federal standard. With this method we were able to analyze historical efficiency information on refrigerators bought in 1996, 5 years ago (1991), and 10 years ago (1986).

The customer survey was extensive and long for this type of survey. Because the study examined a wide range of issues, it was impossible to go into depth in all areas touched on by the study and we are left with some unanswered questions. For example, because there are so many factors that could have affected a person's awareness, knowledge, and buying patterns, we did not attempt to isolate the effects of individual programs, whether they were utility programs or national programs such as the Energy Star program.

Hagler Bailly completed 337 CFL market effects surveys with 1996 CFL purchasers and 150 with nonpurchasers (who were aware of CFLs), 717 refrigerator market effects surveys, and gathered 476 valid serial numbers on refrigerators. (Of the 717 refrigerator market effects surveys, 241 either provided serial numbers that we could not match to the AHAM data or could not or would not give us their refrigerator serial numbers.)

Table 2-1. Residential Surveys

	SDG&E Service Territory	PG&E Service Territory	National	Total
Total Screening Surveys	897	1,022	2,011	3,930
CFL Surveys				
1996 CFL Purchasers	117	91	129	337
CFL Non-Purchasers	34	42	74	150
Completed Refrigerator Surveys†				
1996	49	77	147	273
1991	59	59	122	240
1986	55	54	95	204
Total	163	190	364	717
Valid Refrigerator Model Numbers ‡				
1996	42	60	117	219
1991	49	40	77	166
1986	21	28	42	91
Total	112	128	236	476

† Fully completed surveys used in the market effects analysis, some additional partially-completed surveys were included in the market share analysis.
‡ Used in the market share analysis.

Hagler Bailly implemented a phone survey with 213 refrigerator and 206 CFL participants to estimate the **free ridership** rate. This survey was implemented for the net-to-gross analysis but included some questions that illuminated some issues for this report.

Hagler Bailly implemented a phone survey of **CFL and refrigerator retailers**. The survey addressed the barriers of product unavailability, hassle cost, information cost, organizational practices, and product performance uncertainty. The retailer survey characterized the markets, examined the most important barriers affecting these markets, and assessed the impact of utilities' programs on the market. Hagler Bailly completed interviews with 58 CFL retailers and 112 refrigerator retailers (Table 2-2).

Table 2-2. Retailer Surveys

	SDG&E Service Territory	PG&E Service Territory	National	Total
CFL Retailers	14	15	29	58
Refrigerator Retailers	16	46	50	112

Hagler Bailly also interviewed by phone the key refrigerator **manufacturers** to gather data that address the barriers of product unavailability, organizational practices, inseparability of product features, and product performance uncertainty. The interviews included discussions of the manufacturers' opinions on the impact of the utility programs on their own research, product line changes, and future plans.

2.4 REPORT CONTENT

Chapter 3 sets the stage for the report by discussing the relevant CFL and refrigerator programs offered by SDG&E and PG&E. Because a key requirement for transforming a market is reducing or eliminating key barriers to a technology's adoption, Chapter 3 also outlines the key barriers that these programs sought to address.

Four chapters in this report are organized around the distinction between market effects that are leading indicators of market change (Chapter 4 for refrigerators and 6 for CFLs) versus the specific kind of market effect – market share – that is a lagging indicator (Chapter 5 for refrigerators and 7 for CFLs). The discussion in Chapters 4 and 6 will document changes in barriers for purchasing efficient refrigerators and CFLs, respectively. Chapters 5 and 7 will look for evidence that the reduction of barriers has resulted in changes in purchasing habits.

Chapter 8 will draw together and summarize conclusions reached in the preceding chapters.

Several appendices to this report provide background on our methodology and specific results from some of our data gathering efforts. Appendix A presents a complete discussion of our methodology. Appendix B shows the various survey and interview instruments. Appendix C presents summary statistics from the customer survey. Appendix D presents summary statistics from the retailer surveys and manufacturer interviews.

CHAPTER 3
SETTING

This chapter sets the stage for the report by providing some background data on each of the two technologies and describing the refrigerator and CFL programs that SDG&E and PG&E designed and sponsored to affect the market for these two markets. Under each program description, we outlined the primary barriers targeted by the programs. A summary of those barriers by utility and appliance is given at the end of the chapter.

3.1 REFRIGERATOR REGULATORY AND INDUSTRY SETTING

3.1.1 State and Federal Regulations

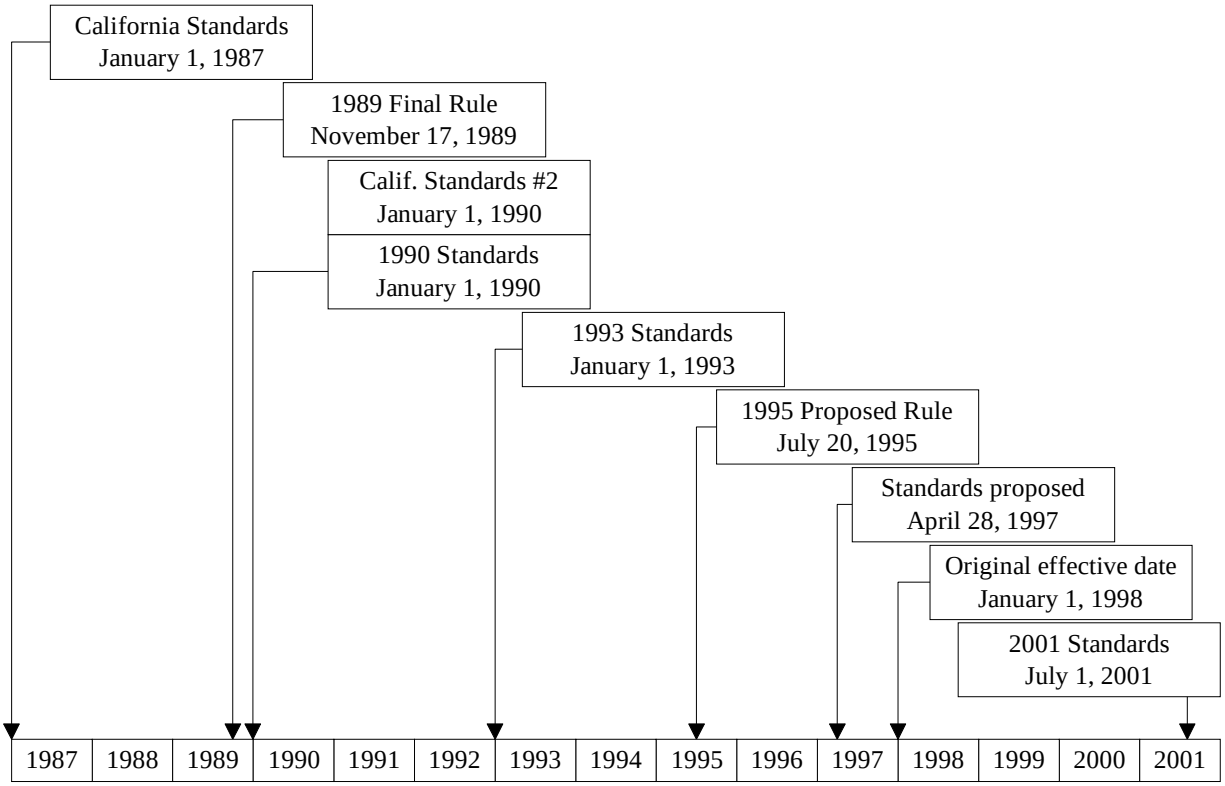
Refrigerator efficiency standards have been central to much of the changes in the industry over the past 10 years. Some advocates have viewed refrigerator rebate programs as a mechanism for influencing the development of federal standards and most refrigerator rebate programs use the standards in their rebate calculations. California led much of the country by developing refrigerator standards in 1987 and revising them for 1990. The California utilities were active participants in the negotiations that led to the standards. On November 17, 1989 the first federal refrigerator efficiency standards were set forth and they became effective on January 1, 1990 (Figure 3-1). The standards specified the minimum efficiency levels based on refrigerator feature and sizes. These were followed by new federal standards that came into force on January 1, 1993, and which are still in force today.

The newest federal efficiency standards will come into effect July 1, 2001. Their development took several years and generated significant controversy. On November 15, 1994, a broad range of organizations and companies (including PG&E) issued a joint recommendation to the Department of Energy (DOE) with their recommendations for the newest set of federal standards. Agreeing to the joint recommendation were manufacturers, their trade association, energy efficiency advocates, electric utilities, and state energy offices. Based on this recommendation, in July of 1995 the Department of Energy issued a proposed rule for the newest set of standards with the expected effective date of January 1, 1998. The proposed standards had two tiers, one for refrigerators using hydrochlorofluorocarbon (HCFC) refrigerants and one for HCFC-free refrigerators, which had 10 percent less stringent standards. In the fall of 1995 the coalition supporting the standards fell apart and some manufacturers indicated that they no longer supported the imposition of updated standards prior to 2003. After extensive debate, revised standards were issued on April 28, 1997 and they will come into effect on July 1, 2001. The new

standard has a single tier with no exceptions for HCFC-free refrigerators and mandates efficiencies approximately 30 percent higher than 1993 regulations. Several people involved with California utility refrigerator programs participated in the debates and negotiations that led to the California and national refrigerator standards.

The California refrigerator standards deserve some of the credit for the fact that Californians buy more efficient refrigerators than the rest of the country (which we will discuss in later chapters). However, California utilities were involved in developing the standards and their programs were offering rebates at levels that exceeded both the California and national standards providing additional impetus to market changes.

Figure 3-1. State and Federal Refrigerator Standards Timeline



3.1.2 Industry and Market Status

Five manufacturers account for almost all of the full-sized residential refrigerators bought in the U.S. (Figure 3-2). General Electric (GE) and Whirlpool together account for almost two-thirds of all refrigerators. Frigidaire, Maytag, and Amana account for most of the remainder. Sanyo, U-

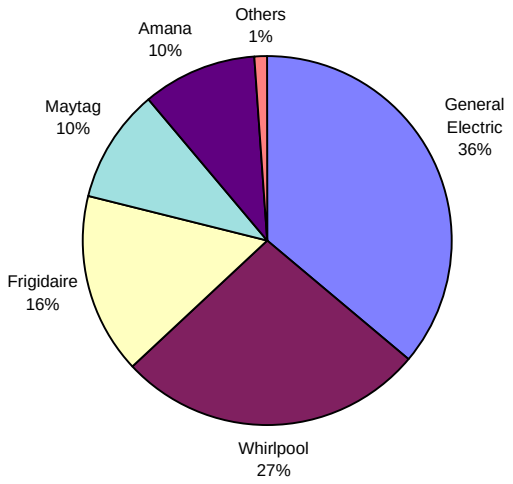
Line, Marvel Industries, and Sub-Zero sell to niche markets including compact, under-the counter, and built-in refrigerators.

Most manufacturers make models sold under a variety of names. The most common names are shown in Table 3-1.

Table 3-1. Refrigerator Manufacturers and Model Names

Manufacturer	Model names
Amana	Amana
Frigidaire	White-Westinghouse Tappan Kelvinator Gibson
General Electric	GE Hotpoint RCA
Maytag	Maytag Magic Chef Jenn-Air Admiral
Whirlpool	Whirlpool Kitchenaide Kenmore (Sears) Roper Estate Inglis (Canada)

Figure 3-2. Manufacturer Market Share

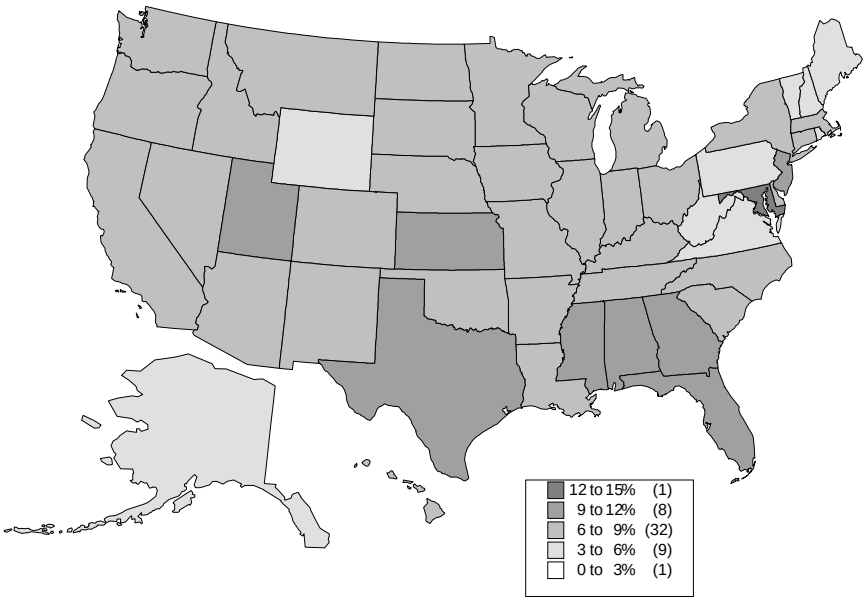


Source: Appliance Magazine, September 1997

Most refrigerators (72%) are purchased as replacements for existing refrigerators. Most of the remainder are purchased as part of a move into a house without a refrigerator. Most (95%) are purchased by members of the family or household, building owners purchase about 3 percent of the models. People in California replace their refrigerators about once every 13 years (7.7% per year), which is slightly less often than the national average of once every 12.3 years (Figure 3-3).[1]

[1] Based on total 1995 refrigerator sales from AHAM data and census data.

Figure 3-3. Percent of Population Buying New Refrigerator Each Year



Source: AHAM (1996) and Census data (1995)

3.2 REFRIGERATOR PROGRAM HISTORY

For many years, SDG&E and PG&E have offered programs designed to increase the penetration of high efficiency refrigerators in their respective service territories. SDG&E's program began in 1990, and PG&E offered programs as early as 1982. While SDG&E's method of program delivery has remained virtually unchanged, PG&E has designed and delivered programs under several names using multiple channels over the years. Nevertheless, most of PG&E's and all of SDG&E's programs have had one common element – financial incentives have been offered to encourage the production of more efficient refrigerators, increase the availability of these models on the retail market, and build and maintain customer demand. Most of the program efforts were targeted at consumers to encourage them to demand energy efficient refrigerators. However, there were some programs aimed at the distribution chain, including incentives for sales staff and rebates to manufacturers, and the utilities participated in the debates that led to the state and federal refrigerator efficiency standards.

Both utilities' programs were designed with minimum qualifying efficiency standards based on the federal efficiency standards. Prior to 1993 they were based on the 1990 standards, following 1993 they were based on the 1993 standards.

Both utilities used the same strategy for setting incentive levels. That is, once the more efficient models became available (as evidenced by increased participation levels for these higher efficiency models) the utilities would scale back the incentive amount for these models, or eliminate the incentive altogether, and offer increased incentives for even high efficiency models.

3.2.1 SDG&E Refrigerator Rebate Programs

Barriers Targeted:		
▸	Awareness	Raise customer awareness.
▸	Availability	Increase demand so that manufacturers would increase production and shipments of energy efficient refrigerators.

As mentioned above, SDG&E began offering financial incentives on efficient refrigerators in 1990. The program was designed to capture potential lost opportunities by encouraging residential customers to purchase higher efficiency refrigerators. The underlying objectives of the program were to (a) offer discounts to customers purchasing refrigerators exceeding federal standards, and (b) encourage manufacturers to produce higher efficiency models than are currently available.

The program involved a point-of-purchase discount on the purchase price of energy efficient refrigerators. These discounts were available to consumers directly from participating appliance dealers and SDG&E provided financial reimbursement to these dealers to cover these discounts.

Over time, SDG&E noted that appliance dealers in its service territory had successfully incorporated the high efficiency refrigerator incentives into their buying and selling habits for refrigerators. SDG&E felt that continuing the incentive programs was important to provide consistency in the marketplace and allow a continuance of the momentum that has been achieved with the program.

Participation rates in SDG&E's program have remained fairly constant over the years, although SDG&E consistently raised the minimum qualifying efficiency levels – while cutting back on incentive amounts – to influence the sale of higher efficiency models. For example, in January 1993, SDG&E adjusted the minimum qualifying efficiency levels to reflect the new federal standards and offered fairly high incentives for these more efficient models. In mid-April, SDG&E reduced the incentive levels for these higher efficiency models in reaction to increased product availability. Then again, toward the end of September 1993, SDG&E eliminated the incentive for the 10% more efficient models and reduced incentives even further for 15% and 20% more efficient models. At this time, manufacturers became more equipped to meet the new 1993 energy efficiency standards, yet some level of incentive was still required to maintain movement in the market toward the higher efficiency models.

Table 3-2 shows the minimum qualifying efficiency levels and per unit incentive amounts for SDG&E's program over time.

Table 3-2. SDG&E Refrigerator Program Incentive Levels ($)

	Percent Over Standards					
Dates Offered	10-14.99%	15-19.99%	20-24.99%	25-29.99%	30-34.99%	35-39.99%
8/30/90-8/25/91	50	100	150	200	250	300
8/26/91-6/14/92	50	75	100	125	150	175
6/15/92-10/25/92	0	0	25	50	75	100
10/26/92-12/31/92	0	0	0	0	0	125
1/1/93-4/14/93	125	175	225	275	325	375
4/14/93-9/25/93	50	75	100	125	150	175
9/26/93-2/14/96	0	50	75	100	125	150
2/15/96-2/14/97	0	25	50	75	100	125
2/15/97-5/15/97	0	0	0	50	75	100
5/15/97-Present	0	0	0	0	0	0

The shaded area pertains to the 1990 federal standards. The non-shaded area reflects 1993 standards, which went into effect 1/1/93.
Note: In November 1994, all 14 cubic foot models above 15% efficiency were assigned $25 rebate. This rebate was terminated in February 1996.
Source: SDG&E, Appliance Efficiency Incentives: Refrigerators, Refrigerator Floor Stock Study Update, June 1997.

In May 1997, SDG&E discontinued its rebate programs and launched a pilot program with the federal Energy Star program. This new program was designed to educate and influence consumer buying habits. Through the Energy Star program, customers are encouraged to buy energy efficient appliances that bear the "Energy Star" logo. SDG&E has teamed up with local retailers to develop materials using this logo to educate consumers about the importance of purchasing energy efficient appliances. In partnership with the US DOE and major retailers, SDG&E plans to test the effectiveness of this new program as an upstream market transformation program.

As mentioned above, SDG&E feels that its efforts to-date have been successful in encouraging appliance dealers to influence customers' buying habits toward the purchase of energy efficient appliances. This new Energy Star program is expected to continue this trend by incorporating more appliances (refrigerators, dish washers, and room air conditioners) and a greater number of energy efficient models in each of the appliance categories.

3.2.2 PG&E's Energy Efficient Refrigerator Programs

PG&E's various refrigerator programs have promoted the installation of energy efficient refrigerators for more than fifteen years. Since 1982, PG&E has offered programs including rebates to single-family customers and large-volume customers, financial incentives to salespeople and dealers, free installation of refrigerators for eligible low-income households,

recommendations provided through home energy audits, and other information through various promotional and educational efforts. A brief summary of each program type is provided below.

3.2.2.1 Efficient Refrigerator Rebate Program

Barriers Targeted:		
▸	Awareness	Raise customer awareness.
▸	Availability	Increase demand so that manufacturers would increase production and shipments of energy efficient refrigerators.
▸	First cost	Reduce first cost barrier by offering rebates.

PG&E has offered customer rebates toward the purchase of energy efficient refrigerators every year since 1982. Initially, PG&E introduced customer rebates for refrigerator purchases to direct customers toward more energy efficient models, since energy efficiency is not normally considered when purchasing refrigerators. Instead, consumers are typically concerned with "color, size and features".

In addition to lack of customer awareness and demand, product availability was limited – for example, when the program began there were very few models of refrigerators available in the market that qualified in the higher efficiency categories. Rebates tended to increase the quantity of qualifying models available for these higher efficiency categories (e.g., there were nearly six times as many refrigerators qualifying in the 20% more efficient category at the end of the 1991 program as there were before the program began).

PG&E's incentive strategy was to provide adequate incentive for qualifying models that were not available on the retail sales floor, so that (a) customers would be more inclined to "look for these models" to get the incentive (i.e., increase consumer awareness and demand) and (b) manufacturers would be encouraged to produce and ship these models to PG&E's service territory (i.e., increased product availability) to meet this increased consumer awareness and demand. Once the models became available (as evidenced by increased participation levels for these higher efficiency models), PG&E would scale back the incentive amount for these models, or eliminate the incentive altogether.

For example, in 1991 there were about 31 different models available that exceeded the federal standards by 20%. Therefore, PG&E offered a fairly high incentive for these models during the 1991 program, and lower incentive amounts for models exceeding the standards by 10% and 15%. At the end of the program year, there were 180 different models that were 20% more efficient. As a result, in 1992, PG&E eliminated the incentives for 10% and 15% more efficient models, reduced the incentive for the 20% more efficient model to $50, and added higher incentives to influence the market for even more efficient models (i.e., 25%, 30%, etc.). Over time, PG&E continued to implement this type of strategy with respect to its incentive levels.

Prior to 1993, PG&E's incentives were based on the 1990 federal standards. When the 1993 standards came into effect, PG&E continued with their strategy of offering higher incentives for models not yet available in the market in sufficient quantity, and reduced or eliminated incentives as increased numbers of these models became available.

Table 3-3 summarizes PG&E's Efficient Refrigerator Rebate Program incentive levels over time, showing the changes in minimum qualifying efficiency levels and the changes in actual incentive amounts.

Table 3-3. PG&E's Efficient Refrigerator Rebate Program Incentive Levels

	Percent Above Standard						
Program Year	10%	15%	20%	25%	30%	35%	40%+
1989	$50	$75	$75	$75	$75	$75	$75
1990	$50	$100	$100	$100	$100	$100	$100
1991	$50	$75	$100	$100	$100	$100	$100
1992	$0	$0	$50	$75	$100	$125	$175
1993	$50	$75	$100	$125	$175	$175	$175
1994	$0	$25	$50	$75	$75	$75	$75
1995	$0	$0	$50	$75	$100	$100	$100
1996	$0	$0	$40	$60	$80	$80	$80
1997	$0	$0	$40	$60	$80	$80	$80

Notes:
Shaded area pertains to 1990 standards. Non-shaded areas reflects 1993 standards which went into effect 1/1/93.
Source: Program documents

3.2.2.2 Salesperson and Dealer Incentives Program (SPIFF)

Barriers Targeted:

- Availability — Increase availability of efficient refrigerators while customer rebates are not being offered.
- Knowledge — Increase efficiency messages in dealer presentations to customers.

PG&E's Salesperson and Dealer Incentives Program (SPIFF) program was initially offered in 1990 and has continued since, with the exception of program year 1995[2]. This program offers salespeople and dealers incentives for every efficient refrigerator sold. Table 3-4 shows the level of incentives offered through this program over time.

The salesperson incentive was designed to encourage salespeople to incorporate an energy efficiency message in their sales presentations to customers to persuade them to purchase

[2] In 1995, the budget for refrigerator rebates was expended via the Energy Efficient Refrigerator (Customer) Rebate Program. Therefore, no additional funding was available to implement either the Salesperson/Dealer Incentive Program or the Contract Sales Program.

efficient refrigerators. The dealer incentive was designed to encourage dealers to stock efficient refrigerators by offering them incentives based on sales of efficient refrigerators.

Typically, the SPIFF program was implemented during the periods when the Efficient Refrigerator Rebate Program was not promoted. Manufacturers had informed PG&E that if utilities offer a customer rebate program for only a portion of the year, retailers discontinue stocking efficient models during the nonprogram months. This program was designed to help retain demand for efficient refrigerator production and ensure that more efficient models would be stocked in stores.

Table 3-4. PG&E's SPIFF Program Incentive Levels

Program	Percent Above Standard						
Year:	10%	15%	20%	25%	30%	35%	40%+
1990	$10/$3	$15/$5	$15/$5	$15/$5	$15/$5	$15/$5	$15/$5
1991	$10/$3	$15/$5	$20/$10	$20/$10	$20/$10	$20/$10	$20/$10
1992	$0	$0	$10/$3	$15/$5	$20/$10	$25/$15	$35-45/$25-35
1993	$0	$10/$3	$15/$5	$20/$8	$25/$10	$30/$15	$30/$15
1994	$0	$10/$3	$15/$5	$20/$8	$20/$8	$20/$8	$20/$8
1995	Not held this year						
1996	$0	$0	$10/$3	$15/$5	$20/$8	$20/$8	$20/$8
1997	$0	$0	$10/$3	$15/$5	$20/$8	$20/$8	$20/$8

Source: Program documents

3.2.2.3 Contract Refrigerator Rebate Program / Multiple Refrigerator Rebate Program

Barriers Targeted:		
▸	Split incentives	Encourage building owners to buy more efficient refrigerators.
▸	First cost	Reduce first cost barrier by offering rebates.

This program was introduced in 1990 and offered incentives to building owners and building managers who replaced large quantities (five or more) refrigerators with efficient models. At that time, it was believed that when building owners and building managers replace refrigerators they usually buy the cheapest refrigerators that meet standards, often the least energy efficient models. The incentives offered through this program were designed to encourage building owners and building managers to purchase more efficient refrigerators.

Table 3-5 shows the level of incentives offered through this program through 1994, at which time the program was discontinued in an effort to focus on providing incentives directly to the residential customer.

Table 3-5. PG&E's Contract/Multiple Refrigerator Rebate Program Incentive Levels

	Percent Above Standard						
Program Year:	10%	15%	20%	25%	30%	35%	40%+
1990	$50	$100	$100	$100	$100	$100	$100
1991	$50	$100	$150	$150	$150	$150	$150
1992	$0	$0	$50	$75	$100	$100	$100
1993	$50	$75	$100	$100	$100	$100	$100
1994	$0	$25	$50	$75	$75	$75	$75

Source: Program documents

3.2.2.4 Small Refrigerator Salesperson and Dealer Incentive Program

Barriers Targeted:

- Knowledge: Increase efficiency messages in dealer presentations to customers.

Originally offered in 1991, this program provided incentives to salespeople and dealers for every efficient small refrigerator they sold. The program was designed around the premise that customers purchasing small refrigerators are usually concerned with the cost of the unit and not energy efficiency. However, due to limited availability of efficient models and the limited amount of sales occurring in a salesperson-oriented market, this program was eliminated in 1992.

3.2.2.5 Targeted Customer Appliance Program (TCAP)

Barriers Targeted:

- High first cost: Eliminate cost as a barrier by giving energy efficient refrigerators to low-income customers.

PG&E has given free energy efficient refrigerators to qualifying low-income households through its Targeted Customer Appliance Program (TCAP)[3]. The goal of TCAP has been to help

[3] TCAP has been offered as a component of PG&E's Direct Assistance Program. Designed to meet regulatory and societal objectives, Direct Assistance offers free weatherization and high-efficiency appliances and

maintain or replace appliances to enable eligible low-income customers to reduce their energy use. Most of the effort of the program went to replacing older, less efficient appliances with new, more efficient ones at no cost to participating customers. More than 85,000 energy efficient refrigerators have been installed in TCAP participants' homes since 1989.

3.2.2.6 Super-Efficient Refrigerator Program (SERP)

Barriers Targeted:

- Availability: Demonstrate the technical and market feasibility of a super-efficient refrigerator.

The Super-Efficient Refrigerator Program (SERP) is a California-based nonprofit corporation formed by public and private utilities nationwide. SERP is designed to advance the technology of super-efficient refrigerators and bring energy-efficient and environmentally friendly refrigerators to consumers years ahead of normal market expectations. The objective was to create a competitive contest where the winning manufacturer would be provided an incentive to develop and distribute over 250,000 refrigerators that were at least 25-50% more efficient than the 1993 federal standards. These refrigerators are also free of CFCs.

Over $30 million was planned to be invested by participating SERP utilities. The amount provided by the respective utilities was in proportion to the number of customers each serves. Under the terms of the contract between PG&E and SERP, Whirlpool Corp. (the bid winner) was to sell a maximum number of a particular refrigerator to customers within PG&E's service territory. PG&E, through SERP, made an agreed upon payment to Whirlpool for each refrigerator sold (up to a maximum number) through 1997.

As winner of the contract, Whirlpool Corp. was responsible for providing these units to the marketplace. PG&E promoted SERP through a variety of mechanisms, including bill inserts, point-of-purchase materials, customer educational materials, etc.

Under PG&E's contractual agreements, SERP, Inc. was to pay Whirlpool as units are sold in PG&E's service territory. Payments were to be based on proof-of-purchase documentation as provided by Whirlpool. Due to documentation problems experienced by Whirlpool and resultant processing backlog, no units have been paid and incentive payment have remained in SERP, Inc. holding accounts until Whirlpool is able to supply the necessary documentation as specified in contractual agreements. As a result, PG&E has deferred reporting the accomplishments of this

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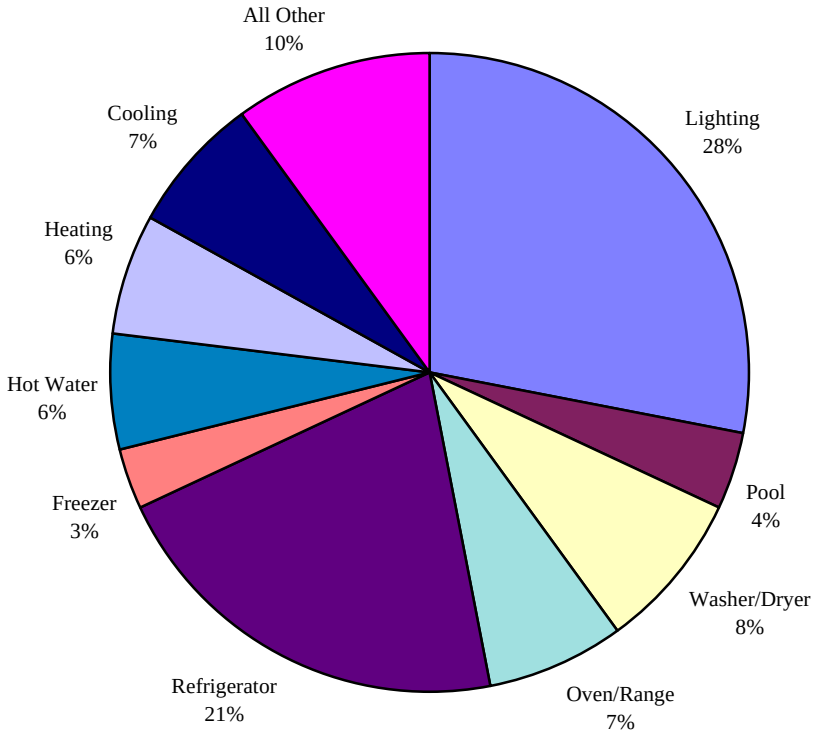
devices to qualified low-income home owners and renters. The Direct Assistance Program helps to minimize hardship on low-income customers by helping them control their energy costs.

program until the proper documentation is provided by year end 1997. It will be under the manufacturers discretion as to when the units are sold before the 1997 contractual deadline.

3.3 COMPACT FLUORESCENT LIGHTING INDUSTRY SETTING[4]

Residential lighting energy use constitutes about 8% of all electric energy use in California (1996), or 28% of total residential electricity use in California (1992) (see Figure 3-4). This is relatively higher than other states where the proportion of electricity used for space and water heating is much greater, according to the baseline study results and other reports[5].

Figure 3-4. Statewide Residential Electricity Consumption by End Use (1992)



Source: Lighting Efficiency Technology Report, Volume I, California Baseline.

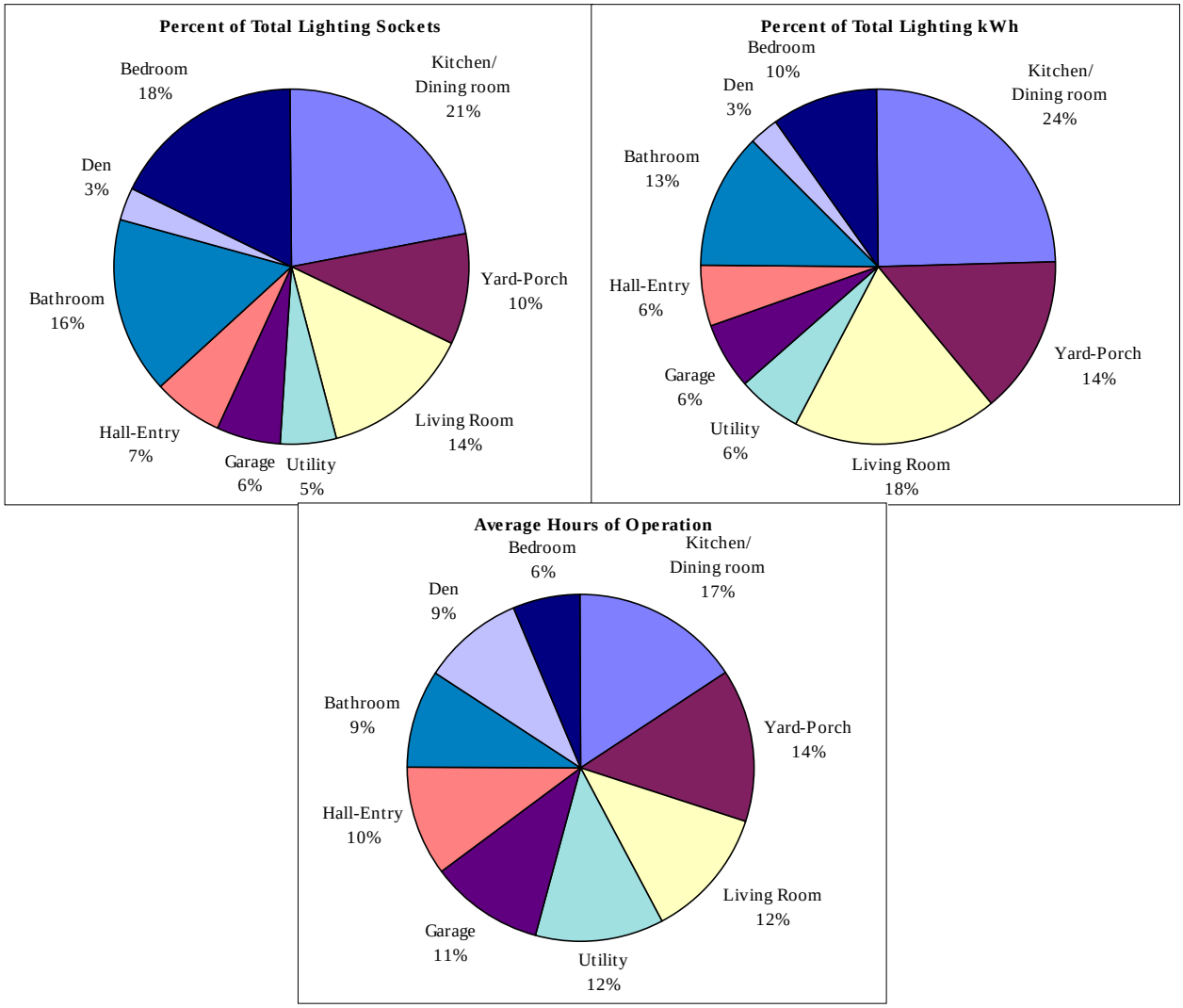
[4] Data on statewide residential lighting and CFL energy use are taken from *Lighting Efficiency Technology Report, Volume I, California Baseline*, prepared by Heschong Mahone Group for the California Energy Commission (CEC), May 1997, CEC Contract #400-95-012.

[5] According to the Energy Information Administration's (EIA) 1993 Residential Energy Consumption Survey, electricity consumption for lighting is only 9.4 percent of all electricity consumption in the residential market. Heating, cooling, water heating, and appliances each accounts for a larger proportion of electric use than lighting.

In California, nearly 19,500 GWh are consumed annually for residential lighting – both indoor and outdoor. The average household (including multi-family dwellings) has about 21 lighting fixtures (34 sockets), which consume approximately 1,700 kWh annually. The typical lighting fixture (socket) consumes about 58 watts for an average 2.34 hours per day.

Figure 3-5 illustrates residential lighting energy use by room and hours of operation. As shown, kitchens and dining rooms contain the most household lights, which are switched on the most hours per day and account for the most energy use. Although many homes use lights in the bedroom and bathroom (constituting a fair share of energy use), these lights are switched on much less frequently.

Figure 3-5: Statewide Residential Lighting Energy Use, by Room and Hours of Operation



Source: Lighting Efficiency Technology Report, Volume I, California Baseline.

Figure 3-6 shows the percentage of residential energy use attributable to different types and sizes of lamps (bulbs). As shown, compact fluorescent lighting accounts for about 1% of residential lighting energy use. Compact fluorescents have their greatest energy use outdoors, followed by the living room – however, the overall energy use for CFLs is insignificant at the statewide level when compared to other types of residential indoor and outdoor lighting.

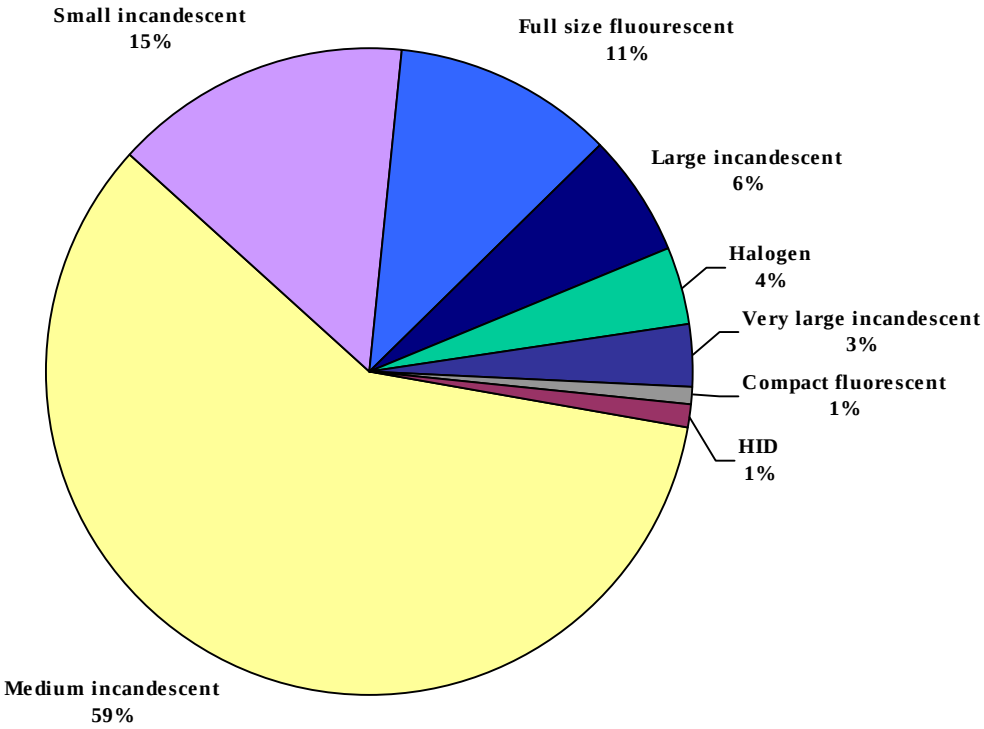
The California Baseline study reported the following data for CFL penetration in 1993:

- 20% of households had small CFLs (less than 20 watts), with an average of 2.1 lamps per household for those that had them, resulting in an average saturation of 0.40 small CFLs per household (total number in use = 4.8 million)

- 27% of households had mid-size CFLs (20-30 watts), with an average of 2.3 lamps per household for those that had them, resulting in an average saturation of 0.60 mid-size CFLs per household (total number in use = 7.3 million)

Small CFLs were found to operate an average of 3.28 hours per day, and mid-size CFLs operate an average of 3.13

Figure 3-6:
Statewide Residential Lighting Electricity Consumption, by Fixture/Lamp Type



Source: Lighting Efficiency Technology Report, Volume I, California Baseline.

3.4 COMPACT FLUORESCENT LIGHTING PROGRAM HISTORY

3.4.1 SDG&E Programs

Barriers Targeted:

▸	Awareness	Increase consumer awareness of the benefits of CFL technologies.
▸	First Cost	To increase demand, provide CFLs to customers at no cost and discounted prices.
▸	Performance Uncertainty	To encourage manufacturers to improve the quality and performance of CFLs (high power factor, low harmonic distortion, color, flicker).
▸	Availability	To stimulate consumer demand to make it more economical for retailers to stock and sell CFL products.
▸	Acceptance	To encourage manufacturers to produce a greater variety of products (e.g., different sizes, shapes, color, etc.) to increase customer acceptance and use.

SDG&E began its efforts to promote the use of CFL products in 1990. At that time, technologically advanced CFL products were being introduced in the marketplace. SDG&E initiated discussions with manufacturers and retailers and found that there was a general lack of customer awareness of these more advanced lighting products. SDG&E designed its early programs to influence this barrier – by purchasing CFLs in bulk from two manufacturers, the utility provided the products to residential customers at no cost in the hopes of increasing their awareness and encouraging their use of CFLs.

During 1990 and 1992, SDG&E used several channels to distribute CFLs to customers including direct installation during in-home energy audits, distribution to customers through contact with field office personnel, and distribution to its own employees. In addition, SDG&E developed consumer information materials that accompanied the installation and distribution of CFLs. These materials were designed to educate customers about this “advanced technology,” and discuss the many applications, simple installation methods, and (especially) life cycle cost benefits.

In 1992, SDG&E solicited bids from CFL product manufacturers in preparation for its retail program launch. Jointly, Lights of America and SDG&E initiated the retail “buy-down” program in pilot form toward the end of 1992. This pilot program provided useful insight into retail market processes and a total of 5,000 CFLs were sold through this pilot effort in four weeks.

By 1993, SDG&E’s retail program had stimulated enough demand to make it more economical for retailers to stock and sell the newly introduced, high quality and improved performance CFLs.

While the retail program served as the primary channel for CFL program delivery, SDG&E continued to distribute CFLs through its field personnel and other programs as secondary channels. SDG&E's CFL programs continued through these mechanisms through 1997.

During 1992-1997, nearly 1.6 million CFLs were sold or distributed to SDG&E customers through these programs. Over this period, overall market penetration rates for CFLs have steadily increased in SDG&E's service territory – from 13% in 1991 to 30% in 1997 (according to our survey, discussed in Chapter 7).

3.4.2 PG&E Programs

PG&E has promoted the use of CFLs through various programs over the years. Through its programs, over 1.3 million CFLs have been directly installed, distributed via direct mail coupons, and sold at reduced prices in retail outlets since 1989. The primary mechanisms through which PG&E has promoted the use and sale of CFLs are briefly described in the following sections.

3.4.2.1 Coupon Programs

Barriers Targeted:

▸	Awareness	Increase customer awareness of CFLs.
▸	First cost	Reduce first cost barrier by offering discounted prices for CFLs.

In 1989, 1990 and 1991, PG&E implemented a $4 coupon offer for CFLs. In 1989, 5,873 bulbs were purchased by participating customers, in 1990 10,124 bulbs were purchased, and in 1991, a total of 47,479 CFLs were purchased. This $4 coupon offer was discontinued in March 1991 in order to initiate the Retailer Program.

3.4.2.2 Retailer Program

Barriers Targeted:

▸	Awareness	Increase customer awareness and demand for CFLs.
▸	First cost	Reduce first cost barrier by offering discounted prices for CFLs.
▸	Availability	Establish an infrastructure and increase the availability of "new generation" CFLs.

Originally, the Retailer Program was conceptualized to promote the "new generation" of CFLs incorporating electronic ballasts. This program was originally planned to offer customers and/or retailers $7 per bulb, which would greatly reduce the normal $16-22 bulb. As implemented, the rebate was provided only to retailers. The customer incentive was promoted through direct mail channels as described below). Due to the shortage of electronic ballast CFLs available from

manufacturers and limited stocking of these products among retailers in 1990, significant time was spent establishing an infrastructure to handle and market this large quantity of bulbs. Thus, actual marketing of this program did not start until late 1990.

In 1991, a total of 158,209 electronic ballast CFLs were sold in various retail locations throughout PG&E's service territory.

3.4.2.3 Direct Mail

Barriers Targeted:		
▸	Awareness	Increase customer awareness and demand for CFLs.
▸	First cost	Reduce first cost barrier by offering discounted prices for CFLs.

PG&E implemented a direct mail program through its publication, Progress, for one year only during 1991 resulting in sales of over 125,000 bulbs. These bulbs were sold to customers at a discounted price that PG&E did not fund but arranged during negotiations with the specific manufacturer prior to implementing the program.

3.4.2.4 Manufacturer's Cost Credit Program

Barriers Targeted:		
▸	Awareness	Increase customer awareness and demand for CFLs.
▸	First cost	Reduce first cost barrier by offering discounted prices for CFLs.
▸	Manufacturers' risk	Reduce risk to manufacturers of producing a product in the face of uncertain demand
▸	Performance Uncertainty	To encourage manufacturers to improve the quality and performance of CFLs (high power factor and low harmonic distortion).
▸	Knowledge	Increase customer awareness and knowledge of the benefits of CFLs.

Beginning in 1992, PG&E initiated a program that offered cost credit to manufacturers of compact fluorescent lights. Participating manufacturers were required to meet certain specifications for distribution to hardware, grocery, drug, discount or lighting specialty stores within PG&E's service territory and sale to residential customers below a target price. Compact fluorescents meeting the basic technical specifications received a $5 incentive, and those meeting higher technical standards received a $7 incentive. A total of 243,928 bulbs were sold through the program during 1992, representing 76% of the 1992 goal.

In 1993, the process of selecting manufacturers was initiated earlier in the program year to allow sufficient time to promote and achieve their awarded goals. The basic program concept was to

remain unchanged, although more effort would be spent improving communication of this program and the product benefits to customers. Under the 1993 program design, cost credits of $4 per bulb were offered for products meeting Green Seal standards and $7 per bulb for products meeting or exceeding Green Seal "Class A" requirements. A total of 260,000 bulbs received cost credit, 95% of goal for 1993.

In 1994, PG&E did not implement a CFL cost credit program due to unresolved issues with the manufacturers participating in 1993. By the time these issues were resolved, PG&E did not have enough time to implement the 1994 program.

PG&E attempted to eliminate these issues for 1995 by participating in the manufacturer's cost credit program designed by the Consortium for Energy Efficiency (CEE). Through this program, PG&E would provide a maximum of $5 per bulb distributed within its service territory, with a unit goal of 125-150,000 bulbs. Manufacturers were to be competitively bid based on certain technical specifications and other market distribution information. Product incentive awards were to be completed by May 1995 with product being available in the fall of 1995. However, after review of this strategy, PG&E decided instead to test the effectiveness of a consumer information campaign (see below) and did not implement a cost credit program.

3.4.2.5 Consumer Education Campaign

Barriers Targeted:		
▸	Awareness	Increase customer awareness and demand for CFLs.
▸	First cost	Reduce first cost barrier by offering discounted prices for CFLs.
▸	Performance Uncertainty	To encourage manufacturers to improve the quality and performance of CFLs (high power factor and low harmonic distortion).
▸	Knowledge	Increase customer awareness and knowledge of the benefits of CFLs.

As mentioned above, PG&E proposed to implement a cost-credit CFL program in 1995 using the CEE-proposed performance standards and implementation strategies. However, after review of this strategy, PG&E decided instead to test the effectiveness of a consumer information campaign. This campaign, implemented in 1995 and 1996, focused on educating customers on the cost savings benefits of CFLs, generating trade interest, aiding new distribution, and motivating target audiences to buy selected high performance products. The proposed performance standards suggested by CEE were still used.

As part of this campaign, PG&E used a consumer pull strategy with a combination of advertising and promotion for selected products. In 1996, the campaign was scheduled in the Fall to coincide with daylight savings time and increased electrical lighting use. Products and manufacturers were selected in May 1996 to allow sufficient opportunity to manufacture needed product, to develop

retail distribution in the targeted area and to prepare needed in-store promotional materials for retailer use. By expanding the number of manufacturers involved in the program, PG&E expected to increase the number of CFLs sold in the marketplace.

In 1997, PG&E incorporated information on CFLs in the general lighting information provided to customers. PG&E also switched its efforts to promote the use of fluorescent lighting fixtures as a "next step" in the progression of fluorescent lighting. Upon completion of a market research study of fluorescent lighting fixtures used in residential dwellings, PG&E will develop a plan to further commercialize the production of specific fixtures and conduct an educational campaign to increase customer awareness.

3.4.2.6 Direct Install

Barriers Targeted:		
▸	Awareness	Increase customer awareness and demand for CFLs.
▸	First cost	Reduce first cost barrier by directly installing CFLs free-of-charge.
▸	Knowledge	Increase customer awareness and knowledge of the benefits of CFLs.

Over the years, PG&E offered several programs through which CFLs were directly installed in customers' homes:

- Home Energy Surveys – PG&E found it to be particularly efficient to install low-cost items, such as CFLs, during on-site home energy surveys. In addition, the direct installation process proved to be an easy way to "demonstrate" that energy efficiency improvements were as "easy as replacing a bulb." In 1991, a total of 57,084 CFLs were installed in customers' homes during home energy surveys, a total of 72,875 CFLs were installed in 1992, and 65,811 in 1993. In 1994, a total of 13,643 bulbs were installed through these on-site surveys and the 1993 Multi-Family Direct Install Program (see below, units not previously claimed until 1994).

- TCAP – Over the years, participants in PG&E's Targeted Customer Appliance Program (TCAP) received free installation of CFLs as part of their participation in this low-income program. About 170,000 CFLs were directly installed through this program between 1989-1995.

- Multi-Family Direct Install Program – In 1993, additional bulbs were directly installed through the Multi-Family Direct Install Program. The purpose of this program was to test the delivery of showerheads and CFLs to the multi-family market through a third-party direct install program. A consultant was hired to do the marketing and installation of these measures, and the program ran from September through December 1993. A total of 44,970 CFLs were installed, which represented 70% of the 1993 goal. Due to the costs

associated with directly installing CFLs, no program was planned for 1994 although remaining inventory was used up through small programs in 1994.

3.4.2.7 New Construction Incentives

Barriers Targeted:		
▸	Awareness	Increase customer awareness and demand for CFLs.
▸	First cost	Reduce first cost barrier by offering discounted prices for CFLs.

In 1992, PG&E introduced an incentive program to encourage the installation permanent, high efficiency lighting fixtures in new homes (beyond Title 24 requirements). Incentives were offered for the installation of interior fluorescent (both full-size and compact) and exterior high-intensity discharge (HID) fixtures. Target market penetration for the three-year program was estimated at 6,000 units. In July 1993, this program was discontinued due to (a) the lack of fixture availability covered under the program, and (b) potential overpayment due to program design. In March 1994, the "third generation" of the Comfort Home Program was launched and included incentives for fluorescent lighting.

3.4.2.8 Multi-Family Property Direct Rebates (formerly, Multi-Unit Dwelling Rebate Program)

Barriers Targeted:		
▸	Awareness	Increase customer awareness and demand for CFLs.
▸	First cost	Reduce first cost barrier by offering discounted prices for CFLs.

The target audience for this program was building owners and managers of apartment, condominium and mobile home parks with five or more units. In 1992, the program offered incentives for (among other products) hard-wired compact fluorescent bulbs installed in common-use areas. The 1992 program concluded in November 1992 with less-than-expected results (the scope of vendor marketing was limited because it was a new program, and there was limited desire for capital investments).

3.5 SUMMARY OF PROGRAMS AND BARRIERS TARGETED

As described above, SDG&E and PG&E have offered numerous programs designed to increase awareness, acceptance, availability and purchase of energy efficient refrigerators and CFLs. These programs have targeted specific barriers facing these markets, as summarized below in Table 3-6.

Table 3-6. Programs and Barriers Targeted

	1	2	3	4	5	6	7	8
Refrigerator Programs								
SDG&E Refrigerator Rebate Programs	X		X					
PG&E's Energy Efficient Refrigerator Programs								
Efficient Refrigerator Rebate Program	X		X	X				
Salesperson and Dealer Incentives Program (SPIFF)		X	X					
Contract Refrigerator Rebate Program / Multiple Refrigerator Rebate Program				X			X	
Small Refrigerator Salesperson and Dealer Incentive Program		X						
Targeted Customer Appliance Program (TCAP)				X				
Super-Efficient Refrigerator Program (SERP)			X					
Compact Fluorescent Lighting Programs								
SDG&E Programs	X		X	X	X			X
PG&E Programs								
Coupon Programs	X			X				
Retailer Program	X		X	X				
Direct Mail	X			X				
Manufacturer's Cost Credit Program	X	X		X	X	X		
Consumer Education Campaign	X	X		X	X			
Direct Install	X	X		X				
New Construction Incentives	X			X				
Multi-Family Property Direct Rebates (formerly, Multi-Unit Dwelling Rebate Program)	X			X				

Barriers:

1. Awareness
2. Knowledge
3. Availability
4. First Cost
5. Performance Uncertainty
6. Manufacturers' Risk
7. Split Incentives
8. Acceptance

CHAPTER 4
REFRIGERATOR MARKET EFFECTS

4.1 INTRODUCTION

Chapter Overview. This chapter discusses changes in the market for energy efficient refrigerators in California and draws conclusions about which of those changes may have been created or influenced by SDG&E and PG&E programs.

Utility programs can create changes in the market through three mechanisms[1]:

- Changes in what market actors know, think, or believe
- Changes to the structure of incentives facing market actors
- Changes to the options available to market actors

We organize our discussion of the changes in the refrigerator market into three categories following these three mechanisms. As we discussed in the introduction to this report, this chapter will analyze the most significant market effects but will not directly address one of the most important market effects, changes in market share, which will be discussed in Chapter 5.

In this chapter, we will examine data from a variety of sources to look for changes in a number of barriers, including the following:

- Limited customer or retailer awareness, knowledge, or interest.
- Lack of availability in all price and feature categories and on a timely basis.
- Low perceived demand independent of rebates
- Financial barriers, such as the price premium, weak incentives for dealers, weak electricity price signal.

Summary of Findings. At the conclusion of the chapter we will discuss our conclusions about which market effects we believe have been most significant and which barriers remain as significant problems. As we will demonstrate, two barriers appear to be the most critical ones in the market for energy efficient refrigerators: lack of awareness and knowledge of refrigerator

[1] These mechanisms are discussed in "Evaluating Market Transformation" by Ralph Prahl and Jeff Schlegel, 1993 Energy Program Evaluation Conference proceedings.

energy efficiency issues (although some progress has been made on this barrier in California), and relatively low value customer place on saving energy relative to other issues including refrigerator features and saving money up-front when paying for a refrigerator. This barrier remains a significant issue both in California and in the rest of the country.

California has made progress relative to the rest of the country in customer awareness, customer knowledge, and to a lesser degree in customer interest. Significant barriers remain in manufacturers' plans and capabilities: they do not believe that significant demand exists for energy efficient refrigerators independent of utility rebate programs and can easily adjust their output to limit the availability of energy efficient refrigerators if they believe demand is drying up. We found no evidence of significant barriers to the current market on issues of retailer knowledge, delivery times compared to standard efficiency refrigerators, or technical issues (i.e., the capability of manufacturing efficient refrigerators). We got mixed signals on the availability of energy efficient refrigerators. Purchasers did not believe availability was an issue nor did retailers but purchasers may have based their opinions on a low standard of "efficiency" and manufacturers believe retailers rarely offer true comparable choices in efficiency.

4.2 CHANGES IN WHAT MARKET ACTORS KNOW, THINK, OR BELIEVE

After technological feasibility (addressed later), information barriers are some of the most basic and critical barriers to promoting the sales of energy efficient technologies. For the refrigerator market, we needed to understand which of the information barriers were most critical and what had been happening over time. We needed to answer such questions as:

What do purchasers know about energy efficient refrigerators?

What do they look for in a refrigerator and how does that affect their demand for energy efficient refrigerators?

Are retailers promoting energy efficient refrigerators?

What do retailers think are the barriers to selling more energy efficient refrigerators?

What do manufacturers think are the barriers?

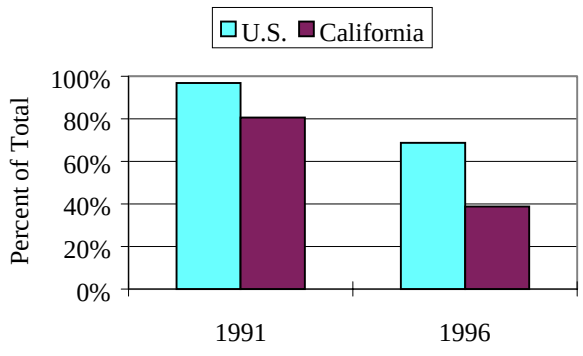
4.2.1 Market Effect: Changes in Customer Awareness and Knowledge

Barrier:	Lack of customer awareness. Limited customer knowledge.
Findings:	Californians are more aware of energy efficient refrigerators than the U.S. in general.

One of the most important barriers to the dissemination of any technology is lack of customer awareness and knowledge. If purchasers do not understand that energy use is a significant issue for refrigerators, they will not look for efficient models. **People in California appear to be more aware and better educated on refrigerator efficiency issues than people in the rest of the country, and the gap seemed to have increased between 1991 and 1996.**

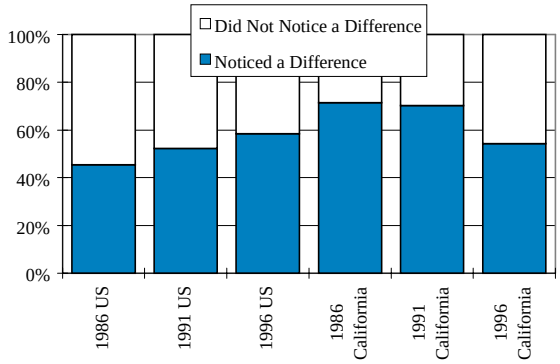
Most of the purchasers both inside and outside California (85.4% California, 84.9% U.S., 85.1% total) believe that they bought efficient refrigerators. Most of the remainder (12%) did not know if they bought an efficient refrigerator. Among 1991 refrigerator buyers who thought they had efficient refrigerators, the vast majority were less than 15% more efficient than the 1990 federal standards. Californians were significantly less likely to claim their medium- or less-efficient refrigerators were high efficiency but 80 percent still thought so (Figure 4-1). Supporting this finding is a 1990 SDG&E study that found that 78% of non-participating customers thought they purchased an energy efficient refrigerator when in fact they did not. By 1996, awareness seems to have improved significantly in California according to our data, as only 39% of Californians thought they had energy efficient refrigerators when their efficiency was less than 15% better than the federal standard. This was significantly different from the rest of the country.

Figure 4-1. Understanding of Refrigerator's Efficiency Level



Percent of respondents who said they bought a high efficiency refrigerator but whose refrigerator was less than 15% more efficient than the federal standard.
Source: Customer Survey

Figure 4-2. Percent Noticing a Difference in Refrigerator Efficiency



Refrigerator Purchasers by Year

Source: Customer Survey

One half of the national sample did not notice a difference in the efficiency of the refrigerators available compared to 39% of the California respondents (a statistically-significant difference). This is supported by a 1991 PG&E study found that also found approximately 39% of the program participants and non-participants did not notice a difference in refrigerator efficiency. Since most trade allies (77%) told us that they have models on display that have similar features but different efficiency levels, it appears that people in California are more aware of that fact than the people in the remainder of the country. However awareness is growing in the country as a whole but dropping in California (based on evidence from individuals, see Figure 4-2) and in 1996 the difference between California and the rest of the country was not significantly different. Both national and California retailers think energy efficiency awareness is increasing.

According to retailers, customer education/awareness is one of the leading barriers to selling energy efficient refrigerators. When asked to rate their customers' on their level of knowledge regarding the benefits of energy efficient refrigerators on a scale of 1 to 10, retailers gave an average rating of 5.1. This was slightly higher in California where the average rating was 5.9. Although this level of customer awareness is fairly low, most retailers said customers have become either more informed (55%) or stayed the same (35%) over the past two years.

According to manufacturers, the lack of customer knowledge and concern for energy issues is the key barrier to selling energy efficient refrigerators. They believe customers are primarily motivated by price and features and energy issues fall far down their list of concerns. They have not seen any significant change in this factor over the past few years.

We heard from some manufacturers and retailers that retailers often stress to potential buyers that any new refrigerator is an "energy efficient" refrigerator when compared to older models. This dilutes the message that some new refrigerators are significantly more efficient than other new refrigerators. Because of this tendency, we expect that customers in California and the U.S. will continue to overestimate the relative efficiency of their new refrigerators. It also appears possible that the difference in awareness between Californians and the rest of the country may not last because of this steady stream of information from retailers unless someone keeps providing information to customers to improve their understanding and works with retailers to improve the message they are giving customers about energy efficiency.

Further research should be done to gain a deeper understanding of purchasers' perceptions of the efficiency of refrigerators on the market today, where and how they develop their opinions, and what standard of comparison they are using. When they think a "standard" efficiency refrigerator is an energy efficient one, do they really not know that there are other refrigerators more efficient or have they made some value judgement that the "standard" is now so efficient that it deserves the label "energy efficient"? How much do people know about the efficiency of their refrigerators? How accurate are their perceptions? What are the causes of any misperception? What role do the energy guide labels play? What role do the Energy Star labels play? Would knowledge of relative efficiency be improved if a standardized definition of efficiency was developed so that dealers and customers use same reference point?

4.2.2 Market Effect: Changes in Customer Interest In Energy Efficient Refrigerators

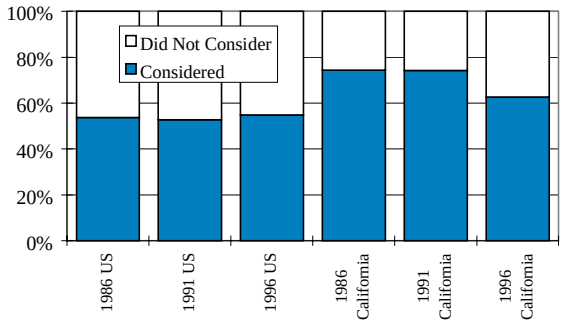
Barrier:	Limited customer interest. Low relative priority.
Findings:	The evidence is mixed: California purchasers are more interested in energy efficient refrigerators than the country as a whole, but that interest dropped off in 1996.

Even if purchasers know that there are differences in efficiency between refrigerators, they may not care enough to factor it into their decision-making. Increases in the priority buyers assign to energy efficiency is an indication of the removal of this barrier.

On the whole, California purchasers are more likely to consider energy efficiency but by 1996, that tendency dropped significantly. Among 1986 and 1991 refrigerator purchasers, 74 percent of California purchasers and 53 to 54% of U.S. purchasers said they considered energy consumption or the efficiency of the refrigerator when they were making their purchase (Figure 4-3). (A 1991 PG&E study found that 84% of participants and 77% of non-participants said they considered energy consumption when selecting a refrigerator and a 1990 SDG&E study found 87% of purchasers thought energy efficiency was important in the purchase decision.) However, as we saw in the previous section, the percentage in California dropped in 1996 (63%) and was no longer statistically significantly different from the U.S. as a whole (55%).

Over two-thirds (67%) of those who did not consider energy efficiency when looking at refrigerators cited some aspect of lack of knowledge as their reason (the first three reasons shown in Table 4-1). The results were similar for California and the U.S. and the difference was not statistically significant, except when looked at on a yearly basis. Then only one-third of 1991 refrigerator buyers in California cited knowledge reasons (n = 15 in California and 24 in U.S.).

Figure 4-3. Considered Efficiency When Shopping for Refrigerator?



Refrigerator Purchasers by Year
Source: Customer Survey

Table 4-1. Reasons For Not Considering Efficiency When Purchasing Refrigerator

Reason	Percent of U.S. Respondents	Percent of California Respondents
Knowledge		
Didn't think about efficiency when choosing new refrigerator	31.5	31.7
Did not know that the energy efficiency levels varied	19.4	14.7
Did not know enough about them	17.6	10.7
Too hard to learn about them	2.8	1.3
Features		
Didn't have features I wanted	14.8	14.7
Not the size I wanted	13.0	17.3
Price and Payback		
Too expensive, more that I wanted to pay	13.0	13.3
Payback on efficient refrigerators is too long	1.9	0.0
Availability		
Not available at store I purchased from	4.6	1.3
Not available as quickly as I needed	3.7	6.7
Other		
Efficient refrigerators do not save enough energy or money	3.7	0.0
Not as reliable	1.9	0.0
Don't pay the electricity bill	0.9	1.3
Number of respondents	(108)	(75)

Source: Customer Survey

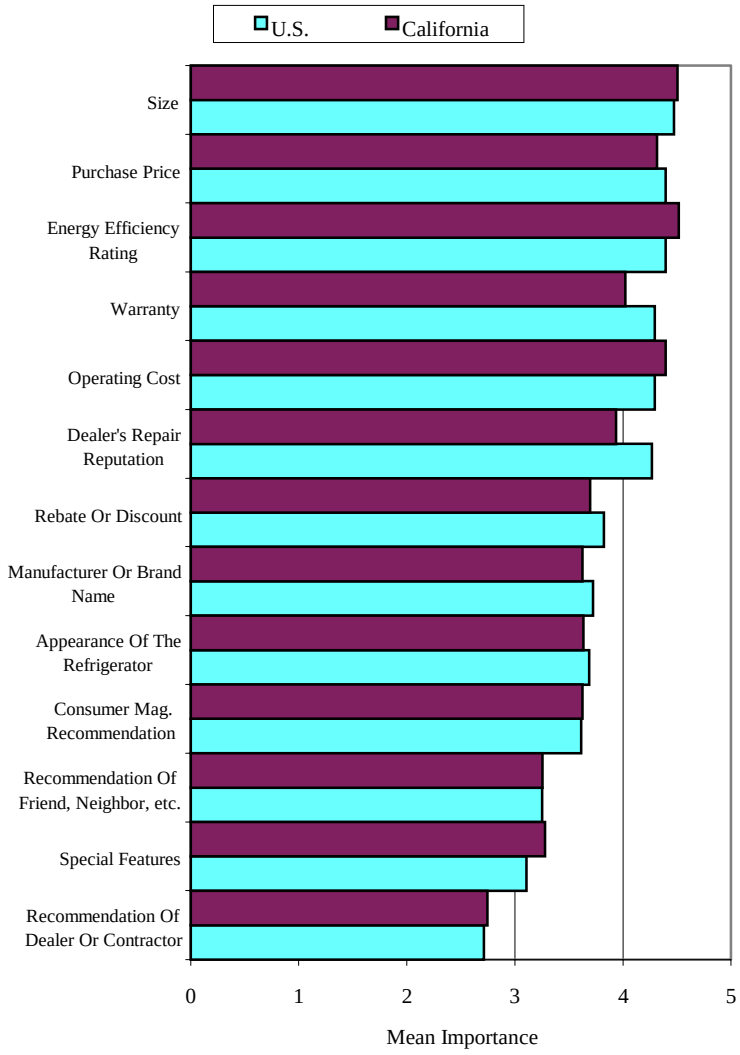
When asked to rate on a 10-point scale how often sales staff discuss energy efficiency with customers, retailers gave an average rating of 7.04. The differences between California and the nation, however, are dramatic. The average rating given by retailers in California was 8.1 with 68% of retailers giving a rating of 8 or higher. In comparison, the average rating given by national retailers was 5.2 with only 28% of these retailers giving a rating of 8 or higher.

The Home Builders consulted for this study said they had little to do with the type of refrigerator that is installed in new homes. Customers purchase their own appliances and rarely consult the builder for a recommendation.

On average, purchasers both inside California and in the U.S. as a whole rank energy efficiency as the third most important factor they consider if they were to look for a new refrigerator, behind size and price (Figure 4-4). There were no significant differences between California responses and those from the U.S. as a whole.

As we discussed above, manufacturers believe that customers place very little priority on energy issues when looking for a refrigerator. They believe customers are primarily motivated by price and features and energy issues fall far down their list of concerns. They think that when presented with a refrigerator that is more expensive and more efficient but otherwise similar in features to a less expensive less efficient refrigerator, the vast majority of customers will choose the less expensive model. Manufacturers have implemented their own surveys to measure issues customers care about when looking at refrigerators and they report that energy is rarely higher than 8th in a 10-item list. They have not seen any significant change in this factor over the past few years; if anything, they believe it has become more of a problem since utilities have stopped offering rebates.

Figure 4-4. Importance of Factors in Refrigerator Purchase



(1 = Not at all important; 5 = Very important)

Source: Customer Survey

There does not appear to be sufficient evidence to support a conclusion that the difference in interest in efficiency between Californians and the rest of the country is likely to be long-lasting. A more thorough examination of the factors customers weigh when buying a refrigerator would provide a better basis for tracking this potential market effect over time.

Manufacturers and retailers told us refrigerators have become more feature-laden over time. This implies that customers have become more willing to spend extra money for specific features. With that in mind, any further examination of purchasers' attitudes toward energy efficiency should try to determine the relative value people place on various features, including energy efficiency and such things as glass shelves, through-the-door ice, wide shelves on doors.

4.2.3 Market Effect: Changes in Retailer Knowledge and Interest

Barrier:	Lack of retailer awareness. Limited retailer knowledge. Low relative priority for retailers.
Findings:	Retailers are generally knowledgeable about energy efficient refrigerators, but high prices and lack of customer knowledge and demand make energy efficiency a lower priority.

Retailers appear to be aware and knowledgeable about energy efficient refrigerators. They have energy efficient models on display, they often talk to customers about energy efficiency, over two-thirds promote energy efficient models and the majority have participated in utility programs.

Talking to customers about energy efficiency is the norm. When asked to rate how often sales staff discuss energy use with customers on a scale of 1 to 10, retailers gave an average rating of 7.04. Twenty-seven percent of retailers said they always talk about energy use (a rating of a 10) while only 5% of retailers said they never talk to customers about energy use. On average, retailers are more likely to bring up energy efficiency than customers. According to retailers they initiate the subject of energy use 60% of the time. There were no significant differences between California retailers and U.S. retailers on these measures.

Sixty-nine percent of retailers say they promote energy efficient refrigerators. Thirty-nine percent use labeling, 37% use displays and 27% talk to customers to promote energy efficiency.

There appears to be a small group of refrigerator retailers (15%) who do not believe in energy efficiency. These retailers do nothing to promote energy efficient models and rarely talk to customers about energy use. In general, these retailers work in independent appliance stores located outside of California that sell less than 300 units annually. These retailers generally do not participate in utility programs and feel customers are not informed about the benefits of energy efficient refrigerators.

Retailers feel that the main influences on customer demand for energy efficient refrigerators are (1) the creation and expansion of utility conservation and DSM programs, (2) improvements made in energy efficient models, and (3) their own efforts to market energy efficiency. Retailers in California are almost twice as likely as national retailers to attribute utility programs with having a major influence on customer demand.

Over half (53%) of retailers believe that higher prices for energy efficient models are a key barrier to selling energy efficient refrigerators. Nineteen percent of retailers said a key barrier was lack of consumer education and awareness. Twenty-four percent of retailers said there are no barriers to selling energy efficient refrigerators.

Seventy-four percent of all retailers said that sales of energy efficient refrigerators have increased in the past two years. These retailers attribute this increase to (1) availability (48%), (2) increased consumer knowledge about energy efficiency (39%), (3) availability of rebates (39%), and (4) lower prices for energy efficient models (26%).

This trend appears to be different in California than in the rest of the nation. One-hundred percent of the national retailers said they saw an increase in energy efficient sales. In California, however, over half of the retailers (53%) said they saw a decrease in the past two years. Reasons cited by these California retailers were (1) a reduction in utility rebates (63%), lack of demand (38%), and fewer energy efficient models on display (25%).

Customers in California are being encouraged to purchase energy efficient refrigerators somewhat more often than those in the rest of the U.S. However they report that the salespeople did not have much influence on their decision-making. According to the purchasers, somewhat less than half of the salespeople discussed energy efficiency with them, both in California (46.3%) and nationally (43.3%). This rate has been growing slowly from 40.1% in 1986 to 48.2% in 1996. The differences between California and the U.S. were not significant. However, in 1996, when they did discuss energy, California salespeople were significantly more likely to recommend energy efficient refrigerators than their national counterparts, which was an increase from prior years (Table 4-2). Neither in California nor in the U.S. did purchasers feel that the salesperson had much influence on their decision (giving their influence a score of 2.5 on a 1-5 scale with 1 being no influence). This attitude did not change over time. In a 1991 study, PG&E found that 76% of participants and 61% of non-participants felt salespeople had influenced their purchase decision, which would indicate a drop from then to the present.

Table 4-2. Percent of salespeople talking about energy who recommended high efficiency refrigerators.

	U.S.	California
1986	52.9%	53.7%
1991	52.3%	52.0%
1996	42.2%	61.1%*
Number of respondents	142	145

* Statistically significant difference from U.S. rate.
Source: Customer Survey

The evidence we collected on retailer knowledge and interest does not allow us to draw strong conclusions about whether the market effects will last. Evidence from purchasers indicates that retailers are more likely to discuss energy efficiency now than in 1986, but there is some indication that salespeople are less influential now than in the past. The measures of potential market effects discussed in this section should be tracked over time to provide evidence of their lasting ability.

4.2.4 Market Effect: Changes in Retailer Views on Utility Programs

Issue:	Attribution of credit for market changes to utility actions.
Findings:	Almost all retailers in California have participated in utility programs compared to less than a quarter in the rest of the nation. Therefore retailers in California are much more likely to give credit to utilities for changes in the market.

Participation in utility programs differs dramatically in California compared to the rest of the nation. Less than a quarter of national retailers (22%) said they participated in a utility refrigerator program, whereas almost all retailers in California (94%) have participated in a utility-sponsored refrigerator program.

Retailers in California feel that utility rebate programs can be credited with influencing the demand for energy efficient refrigerators. Retailers in the rest of the nation, however, are less likely to think of these programs as influential. Eighty-four percent of California retailers said that utility rebate programs have a great deal of influence on demand (giving a rating of 4 or 5 on a 5-point scale), while only 29 percent of national retailers gave a similar rating.

Utility education programs are not considered as influential on demand as rebate programs. Forty-three percent of retailers in California said educational programs had a great deal of influence on demand but only six percent of national retailers thought education programs were influential.

4.2.5 Market Effect: Changes in Manufacturer Issues

Barrier:	Low perceived demand independent of rebates
Findings:	There has been no change in this barrier over the past few years.

Manufacturers believe that very few customers are willing to pay for the true incremental up-front cost of an energy efficient refrigerator. Utilities can create demand by offering rebates that reduce or eliminate the price difference between a standard refrigerator and an energy efficient refrigerator but without that financial involvement in the market, manufacturers believe there will be little demand for energy efficient refrigerators.

4.3 CHANGES TO THE STRUCTURE OF INCENTIVES FACING MARKET ACTORS

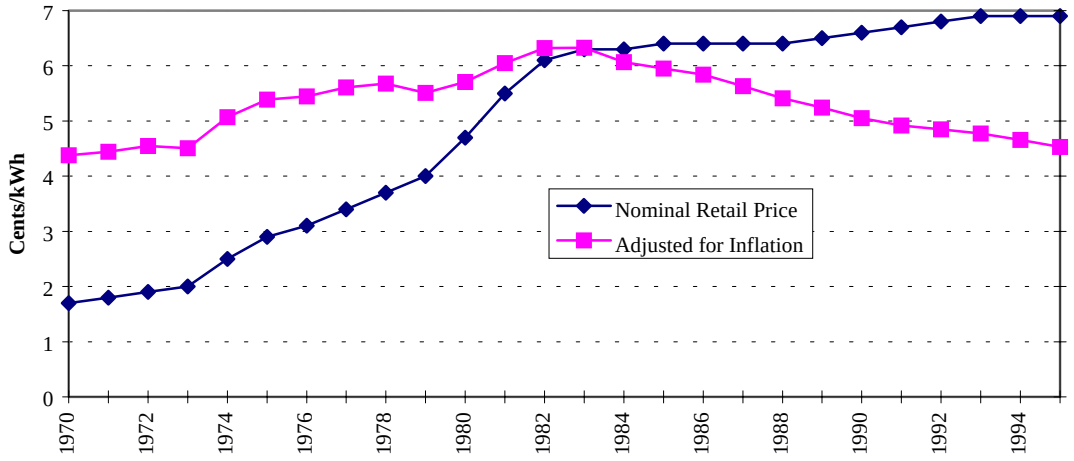
Lasting changes to the structure of incentives facing market actors can be expected to cause lasting changes in the way market actors behave. At all market levels, positive incentives reinforce the idea that it is in the players' best interest to continue manufacturing, displaying, advertising, or purchasing efficient refrigerators. Utility rebate programs certainly create temporary changes in the price of products. If they help cause permanent changes, e.g., through economies of scale at the manufacturer, then they deserve credit for permanently changing the structure of incentives for market actors. This section will primarily discuss price issues as the most powerful incentive of interest.

4.3.1 Market Effect: Changes in the Price of Electricity

Barrier:	Weak electricity price signal.
Findings:	Electricity prices are beyond the control of any program.

Retail refrigerator purchasers face two incentive issues, the price of the refrigerator and the price of the electricity to run it. They have not seen a significant change in electricity prices in the past ten years. In inflation-adjusted terms, retail electricity prices are now about the same as they were ten years ago (Figure 4-5).

Figure 4-5. Retail Electricity Prices



Source: Electricity data: U.S. Department of Energy, Energy Information Administration. The Changing Structure of the Electric Power Industry: An Update. December 1996. DOE/EIA-0562(96). Consumer Price Index: http://stats.bls.gov/cgi-bin/surveymost?cu

4.3.2 Market Effect: Changes in the Refrigerator Price

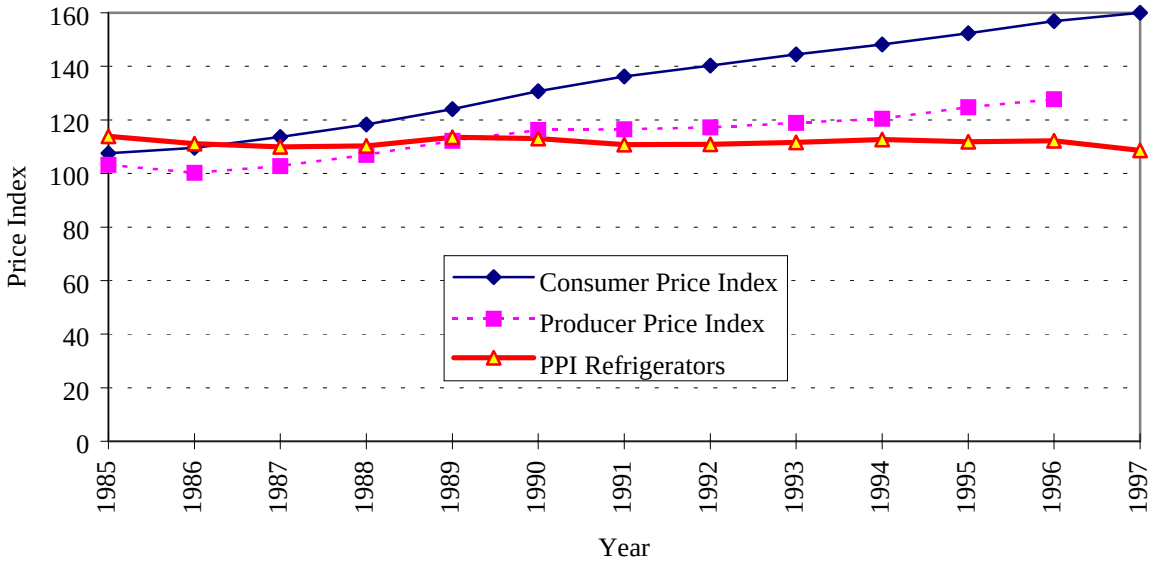
Barrier:	Increasing refrigerator prices decrease customer interest in paying a higher up-front price for long-term savings. OR Decreasing refrigerator prices decrease customer interest in making economically rational purchase decisions.
Findings:	Refrigerator prices have been relatively stable over the past 10 years, therefore there has been no change in this barrier.

Three of the price factors that affect demand for energy efficient refrigerators are 1) the price of refrigerators, 2) the difference in price between an efficient refrigerator and a standard refrigerator, and 3) the annual savings from an efficient refrigerator compared to a standard refrigerator. If consumers behaved as some standard economic models say they should, they would compare the savings to the incremental cost and decide if the payback was short enough to justify the higher up-front cost of the energy efficient refrigerator. If we saw that refrigerator prices were increasing over time, we might conclude that purchasers were facing an increasing incentive to behave according to the economic model. On the other hand (and ignoring that economic model), because refrigerators are sufficiently expensive to make it likely that most consumers think seriously about the price while making their purchase decision, we might expect that any increase in refrigerator prices over time (over and above inflation) would make consumers more sensitive to price – with the effect that they may be less inclined to purchase refrigerators with what they see as non-essential features, one of which may be efficiency.

Manufacturers believe that the average refrigerator has become more feature-laden over time, with specialty features migrating from high-end refrigerators to the less-expensive models. This seems to indicate that purchasers are now more willing to pay for extras since they are not demanding cheaper, less feature-packed refrigerators. In addition, refrigerators have increased in average size from 19.8 cubic feet to 20.8 cubic feet (significant at the 90% level but not at the 95% level). However, refrigerator prices have been quite stable over the past 10 years (Figure 4-6) leading us to conclude that there has been no significant change in this factor.

The fact that refrigerator prices have remained stable while their average efficiency has increased substantially indicates that consumers are able to buy higher levels of efficiency for the same amount of money. However, to understand the actual effect on purchase behavior we need to consider the second and third price factors, which we discuss in the next section.

Figure 4-6. Refrigerator Price Changes Over Time



Source: U.S. Bureau of Labor Statistics, September 1997

4.3.3 Market Effect: Changes in the Price Differential Between Standard and Energy Efficient Refrigerators

Barrier:	Up-front cost premium is significant compared to potential savings.
Findings:	Energy efficient refrigerators are sufficiently more expensive than standard refrigerators to result in a significant barrier.

If refrigerator purchasers behave according to the economic model discussed above, they compare the savings they can get from a more efficient refrigerator to the extra up-front costs of buying it. As a result, they should be sensitive to both the incremental cost of energy efficient refrigerators and to the annual savings they offer. For this study we did not gather direct evidence of either of these factors, but we did ask purchasers, retailers, and manufacturers about those factors.

Refrigerator retailers and manufacturers believe that the price premium for energy efficient refrigerators is a significant barrier but only one quarter of purchasers thought energy efficient refrigerators were more expensive. One quarter of the refrigerator purchasers said that they noticed that high efficiency refrigerators were more expensive than other refrigerators. A rate that did not vary significantly over time nor between U.S. and California respondents. On average they thought energy efficient refrigerators were $78 more expensive, growing from $50 in 1986 to $110 in 1996. Only 13% of U.S. and California respondents

mentioned that energy efficient refrigerators were too expensive when saying why they did not consider efficiency when choosing a new refrigerator.

Manufacturers, on the other hand, believe that the up-front cost premium for energy efficient refrigerators is critical to the failure of these units in the marketplace. Manufacturers think that outside of a few individuals, demand for energy efficient refrigerators is primarily dependent on utility rebate programs that reduce or eliminate the up-front cost premium.

Retailers agree that energy efficiency costs more and consider it to be the major barrier to selling energy efficient models. They do, however, feel that trade allies have attempted to remove or change this barrier. Many retailers said that manufacturers have attempted to remove or change this barrier with lower prices, rebates, sales and financing. Some retailers thought that utilities and retailers have addressed this barrier by offering sales and rebates.

A recent study completed in Wisconsin found that "The difference in *annual* operating cost between a refrigerator at the 25th percentile (a refrigerator more energy efficient than 25 percent of units purchased) and a refrigerator at the 75th percentile is $5.52 for top-mounts and $7.28 for side-by-sides."[2] While the SDG&E/PG&E study did not measure the price difference between standard and energy efficient refrigerators, a difference of as little as $55 would indicate that the payback period could be up to 10 years, which is long by many standards (but significantly less than the expected life of a refrigerator).

While the evidence is not conclusive, we believe that the preponderance of the evidence points to a conclusion that the incremental cost of energy efficient refrigerators remains a barrier. To support that conclusion, we point to the following factors:

- According to manufacturers, the lack of customer knowledge and concern for energy issues is the key barrier to selling energy efficient refrigerators. They believe customers are primarily motivated by price and features and energy issues fall far down their list of concerns. However, we must interpret this opinion in light of the fact that manufacturers benefit from utility rebate programs.

- Over half (53%) of retailers believe that higher prices for energy efficient models are a key barrier to selling energy efficient refrigerators. However, retailers also benefit from rebate programs.

- Because many purchasers over-rate the efficiency of the refrigerator they purchased, we discount the weight we give to their opinion on the incremental cost of energy efficient refrigerators.

[2] *Appliance Sales Tracking: 1997 Residential Survey.* Opinion Dynamics Corp for the Energy Center of Wisconsin. January 1998.

- In our survey, purchasers rank energy efficiency as the third most important factor they consider if they were to look for a new refrigerator, behind size and price. However, the survey that produced this data was not designed with this as a central issue and we suspect that respondents may have felt that ranking energy efficiency high was the socially acceptable answer since by the time this question was asked, they had already been asked several other energy-related questions. A more rigorous attempt to accurately measure purchaser priorities should be undertaken before assigning more weight to this factor. Manufacturers have issued their own surveys and believe customers are primarily motivated by price and features with energy issues far down their list of concerns.

- Thirty-seven percent of California refrigerator purchasers (45% in the U.S.) did not consider energy efficiency when shopping for a refrigerator. It seems unlikely that these people would pay any more for an efficient refrigerator if they did not even consider the issue.

The high-first-cost barrier may, in turn, be created by other barriers which we could not measure with the currently-available data. For example, some purchasers may have considered the costs and benefits of buying an energy efficient refrigerator but bought a standard efficient refrigerator because their high discount rate made it the economically rational purchase. Others may not have believed the savings estimates, which would make their decision economically rational as well.

Due the importance of this issue for convincing retailers to promote energy efficient refrigerators and customers to purchase them, it seems crucial that further study is warranted to establish better information comparing the current price difference and savings potential of energy efficient refrigerators and looking at changes over time to see whether this issue has become more or less of a problem. Further study is also called for to understand how purchasers come to their decisions about the believability of savings estimates and the value of the potential savings. Do they not understand or believe the savings estimates and thus don't accurately factor them into their decision process? Do purchasers have a higher discount rate than we expect and so more of their decisions to purchase standard efficiency refrigerators are economically rational? Do purchasers know that there are federal standards and that savings are measured against those standards?

Refrigerator manufacturers will need to manufacture to a new efficiency standard by 2001. This standard may further erode the savings potential of refrigerators that are more efficient than the standard. Analyzing the price-efficiency tradeoff issue now, before the standards come into effect, can help decision makers determine the need for and focus of future refrigerator programs.

4.4 CHANGES TO THE OPTIONS AVAILABLE TO MARKET ACTORS

The previous sections discussed features that affect the creation of demand for energy efficient refrigerators. This section will address barriers that limit the market's ability to meet that demand

and to sustain the development of that demand. We will discuss issues of availability, the timeliness of availability, the permanence of changes seen in the market, and evidence of technical barriers.

4.4.1 Market Effect: Changes in the Availability of Energy Efficient Refrigerators

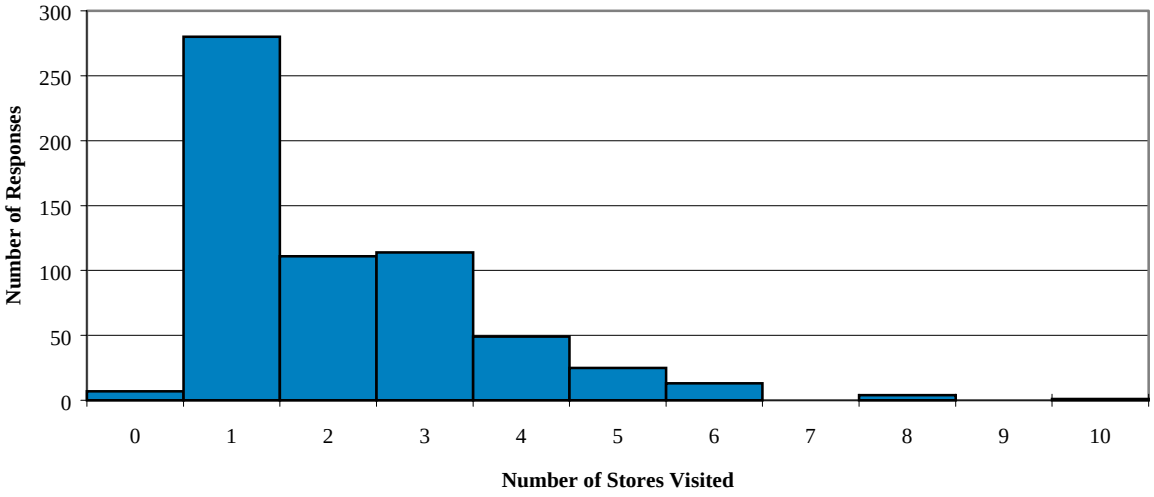
Barrier:	Lack of availability. Lack of availability in relatively inexpensive refrigerators. Lack of availability with and without common features.
Findings:	The data are contradictory: Purchasers do not feel that it is hard to find energy efficient refrigerators, yet their definition of energy efficient may not significantly exceed current federal standards. Retailers believe customers are presented with choices but manufacturers disagree.

One of the most important barriers in earlier years was the lack of availability of energy efficient refrigerators. Efficient refrigerators can now be found almost anywhere refrigerators are sold but a key issue is whether they are available in the range of prices and with the range of features that most purchasers look for in refrigerators. A criticism leveled at the SERP program was that it only included expensive, feature-laden refrigerators. Do manufacturers make and retailers stock efficient models that meet the specifications of those looking for inexpensive, simple models as well as those who want deluxe refrigerators and are less price-sensitive? To examine changes in this barrier, we considered the following issues:

- Availability in stores where regular efficiency refrigerators are sold.
- Availability in a broad range of prices.
- Availability with the same range of features as standard efficiency refrigerators (or with few costly features for those looking for inexpensive models).

Most purchasers do not visit very many stores while shopping for a refrigerator; therefore, it is even more important that all stores offer choices of energy efficient refrigerators if the availability barrier is to be overcome. According to retailers, almost all retailers sell at least some refrigerators that are energy efficient (only two out of 112 reported that they do not). Over two-thirds of all purchasers (65.7%) visit no more than 2 stores while shopping for a refrigerator (84.5% 3 or fewer) (Figure 4-7). There were no significant differences over time or between California and the U.S. Almost two-thirds (63.3%) of the participants surveyed for the free rider survey also visited no more than 2 stores.

Figure 4-7. Number of Stores Visited While Looking for a Refrigerator



(Zero = Specified refrigerator to their builder without visiting a store.)
Source: Customer Survey

Californians, are more likely to be aware of the availability of energy efficient refrigerators but that distinction largely disappeared among 1996 refrigerator purchasers. As we discussed above, purchasers in California are more likely to notice the availability of energy efficient refrigerators than purchasers in the remainder of the U.S. (61% vs. 50%); however, that was no longer statistically significant in 1996 (see Figure 4-2).

Purchasers who considered energy efficiency when shopping for a refrigerator thought it was relatively easy to find the type of refrigerator they wanted in a high-efficiency model, both in California and in the U.S. as a whole. (However, as we discussed earlier, their definition of energy efficient may not significantly exceed current federal standards.) On a 1 to 5 scale where 1 is very easy and 5 very difficult, on average they rated it 1.83. There were no significant differences over time or between California and the U.S. Participants surveyed for the free-rider survey rated it a 1.68.

Purchasers also thought it was relatively easy to find a high efficiency refrigerator in their price range, both in California and in the U.S. as a whole. On a 1 to 5 scale where 1 is very easy and 5 very difficult, on average they rated this 2.02. There were no significant differences over time or between California and the U.S.

However, those who thought it was hard to find a high efficiency refrigerator cited features, size, price, and availability as problems. Over one-quarter of the respondents who said it was hard to find an energy efficient refrigerator said that energy efficient models were not the size they wanted (29.6%), did not have the features they wanted (25.9%), and were too expensive (25.9%). Somewhat fewer (18.5%) said that there were few energy efficient units available.

Manufacturers and retailers disagree on whether customers are being offered true choices for energy efficient refrigerators. Since efficiency is rarely the highest consideration, few retailers or manufacturers would disagree that customers would only consider an energy efficient refrigerator if it also offered the set of features they were looking for. As a result, a key barrier is the lack of availability of efficient refrigerators with desirable features.

Manufacturers claim to offer energy efficient refrigerators across the spectrum of large and small, feature laden and spare, inexpensive and expensive. For every energy efficient model manufacturers make, they also make a standard efficiency twin (i.e., models that look alike and have the same features but differ only in their efficiency). However, the reverse is not true. Although they make them, manufacturers believe that retailers rarely show twins on the sales floor. Retailers are allowed to "double-tag" refrigerators by putting two price stickers on it, one for the energy efficient model and the other for the standard efficiency twin. However manufacturers believe that they almost never do.

According to retailers, customers have a choice of efficiencies when purchasing a refrigerator. Seventy-seven percent of retailers said they have models on display that have similar features but different efficiency levels. When asked how often customers have a choice of efficiency on a scale of 1 to 5, half of these retailers said 4 or 5. Finding floor space for energy efficient models is not a problem according to retailers. When asked about potential barriers to selling energy efficient refrigerators, no retailers cited lack of floor space or reduction in floor space as a barrier.

Although manufacturers claim that they continue to offer a wide selection of energy efficient refrigerators, they also state that they have been reducing their offerings of energy efficient refrigerators in the past few years. Manufacturers state that the elimination of many utility rebate programs has reduced demand for energy efficient refrigerators. As a result, they have been cutting back the number of models they offer.

If, as manufacturers claim, the number of energy efficient refrigerator models manufactured is declining, this bodes ill for the availability of energy efficient refrigerators in the near future indicating that the market effects are not likely to be permanent. However, by 2001 manufacturers will be required by federal regulations to produce refrigerators roughly 25% more efficient than the 1993 standards required. Manufacturers can produce even more efficient models (some SERP models were 40% more efficient than the 1993 standards) but the current evidence does not support a conclusion that they would produce significant numbers of them once the 2001 standards are in place.

We studied availability from three perspectives, manufacturer, retailer, and customer and found contradictory evidence. Manufacturers firmly believe that customers do not have plentiful, true equivalent choices between standard and efficient refrigerators. Retailers disagree, however what, to a dealer, may seem like an equivalent choice, or comparable model may not seem so to purchasers. Manufacturers believe that retailers rarely double-tag refrigerators – displaying one price tag with the price and energy usage of the standard efficiency version and a second tag

showing the price and energy usage of an energy efficient model with the same appearance and features. Customers believe they have had a choice of energy efficient models but are over-generous in attributing energy efficiency to refrigerators. If it is the case that purchasers are unlikely to buy a refrigerator without being able to see a model on the sales floor, then the availability of energy efficient refrigerators is a critical issue. Because of the importance of this issue and of the contradictory evidence uncovered so far, further study in this area seems warranted. Several issues should be investigated: How available are energy efficient refrigerators from manufacturers? Do they, as they claim, make them with all ranges of size and features? How often are energy efficient refrigerators found in display areas with features comparable to standard efficiency refrigerators? How often are standard/high efficiency twins available? How often do retailers double-tag refrigerators when a high-efficiency twin is available? Are existing double-tags clear enough that they do not cause customer confusion? Is the higher-efficiency option getting overlooked because it is obscured by a variety of other information on the tags?

A study of these issues could productively be combined with an analysis of the cost and energy savings difference between standard and energy efficient refrigerators.

If it is found that little double-tagging is occurring, this could prove to be a very productive area for future program activity. Double-tagging should cost retailers little but could significantly increase purchasers' understanding of the difference in efficiency and cost between standard and energy efficient refrigerators. Programs could help dealers or manufacturers develop tags that educate and do not confuse customers. Programs could also help sales staff appreciate the significance of the efficient tag so that they do not "sell against" the efficient model.

One of the most significant factors in the availability of energy efficient refrigerators is the federal refrigerator efficiency standards. Utility programs deserve credit for helping to bring about the 1993 and 2001 federal standards. Both standards required an increase in efficiency of approximately 25% over their predecessors, which had (in 1993, or will have in 2001) a significant impact on the availability of energy efficient refrigerators.

Through helping demonstrate the technology and market acceptance, and through the efforts of individual utility staff, the California utility refrigerator programs had an effect on the federal refrigerator efficiency standards and the 1990 California standards. These standards had a significant impact on the refrigerator market in California and in the rest of the country. The 2001 federal standards were developed through negotiations between manufacturers, utilities, and energy efficiency advocates. Several people involved with California utility refrigerator programs participated in the debates and negotiations that led to the California and national refrigerator standards. They undoubtedly had an influence on bringing the standards about and on the level of efficiency specified by the standards. In addition, California utility refrigerator programs helped create a market for refrigerators that were significantly more efficient than the existing standard. By doing so, they provided real-world data that could be used in the cost-benefit models used to examine the proposed regulations. By reducing the uncertainty associated with predicted costs and benefits, the utility programs helped improve the likelihood that the

standards would be successfully negotiated and passed. The energy efficiency advocates also used the efficiency gains seen in existing models (some of which were developed to meet rebate requirements or produced for the SERP program) to help them determine efficiency levels that they would push for in negotiations with manufacturers.[3]

4.4.2 Market Effect: Changes in Delivery Time of Energy Efficient Refrigerators

Barrier:	Lack of timely availability.
Findings:	This is not a significant barrier since it appears that purchasers do not face significantly different delivery schedules for efficient refrigerators compared to standard refrigerators.

Retailers primarily sell refrigerators from their own stock and do not special-order them. As a result, it appears that obtaining delivery of an efficient refrigerator is no more difficult than for a standard efficiency refrigerator. However, a not insignificant minority of retailers did report some problems obtaining delivery of efficient refrigerators.

Over a third of retailers (35%) sold all of their refrigerators from stock in their own warehouse. On average, retailers sell 79% of refrigerators from their own warehouse stock. According to retailers, customers usually buy refrigerators that are identical to models on display (84% of sales are identical to display models).

A small portion (19%) of retailers experienced more severe delays or backorders for energy efficient refrigerators than for standard models. However, it can be assumed that the length of these delays are relatively short – retailers have virtually identical lead time estimates for energy efficient versus standard. Manufacturers do not experience any more delays producing and delivering efficient refrigerators than they do producing and delivering standard refrigerators.

Only 14 percent of retailers observed a change in lead times from previous years. If there is a trend here, it is toward fewer delays and backorders for energy efficient equipment. Forty-three percent of those who observed a change said they had experienced delays or backorders previously. Thirty-one percent said they had not previously experienced such delays.

Some retailers (13%) said that lack of product supply or reduction in product supply is a barrier to selling energy efficient refrigerators.

While there may, in the future, be fewer energy efficient models manufactured (at least according to manufacturers), the manufacturing and distribution process for those that are made is not different from standard efficiency refrigerators so we do not expect that the “lack of timely availability” barrier will become a problem in the future.

[3] Personal communication with one of the advocates involved in the negotiations.

4.4.3 Market Effect: Changes in Manufacturing

Barrier:	Expense of decommissioning a product line or re-tooling (a negative barrier: the higher the cost, the less likely the manufacturer is to stop producing the efficient refrigerator).
Findings:	Manufacturers can adjust their production lines fairly easily to eliminate the features that make a model efficient.

Some manufacturers have invested significant resources in researching energy efficient refrigerators and components, However, it appears that the changes they have made to date to their production lines are not of the "no-going-back" variety. They can increase or decrease output of efficient models with little trouble. One (very big) manufacturer can change efficiency features in a very short time with little cost. Another (also very big) manufacturer can change some models quickly and cheaply, but others would require major changes to production lines.

4.4.4 Market Effect: Changes in Technical Barriers to Production

Barrier:	Technical problems limit ability to develop or produce energy efficient refrigerators.
Findings:	There do not appear to be any technical barriers that are inhibiting the current market.

The SERP program demonstrated that refrigerators can be made that are significantly (25-40%) more efficient than the current federal standards. Manufacturers currently offer refrigerators in a wide range of efficiencies throughout their product lines, a strong indication that significant barriers are not holding back the market at this time. Manufacturers were concerned about whether there would be sufficient supplies of substitutes for HCFC chemicals in time for the 2001 standards, but those concerns are subsiding and they are not affecting the current market. The 2001 standards are approximately 25% higher than the 1993 standards. Because manufacturers can currently make some refrigerators that are 40% more efficient than the standard, it appears that technical limitations won't stand in the way of further improvement. However, at some point the costs of obtaining further efficiency gains (in either purchase costs or changes to the utility of the refrigerator – e.g., reduced interior space to accommodate thicker walls) may significantly outweigh the savings they offer.

Retailers do not feel that technical barriers are a hindrance to the development of the market for energy efficient refrigerators. Only 2% of retailers cited lack of features as a barrier and only 3% said operation characteristics were a barrier. Other than those responses, technical barriers were not mentioned by retailers.

4.4.5 Market Effect: Changes in Manufacturers-to-Retailer Incentives

Barrier:	Limited availability
Findings:	Manufacturers' recommendations and incentives have no direct effect on the efficiency of the refrigerators stocked.

Manufacturers do offer incentives to their dealers to encourage them to display specific refrigerators and those incentives can have a significant impact on the retailer's decisions. However energy efficiency plays no part in the definition of those recommendations and manufacturers believe dealers can meet the recommendations by using efficient refrigerators if they want to.

4.5 SUMMARY

There appear to be at least two critical barriers that face the current market for energy efficient refrigerators: (1) lack of awareness and knowledge of refrigerator energy efficiency issues (although some progress has been made on this barrier in California), and (2) the relatively low value customers place on saving energy relative to other issues including refrigerator features and saving money up-front when paying for a refrigerator.

It appears that progress has been made on the first barrier in California. There seems to be sufficient evidence to conclude that people in the target territories in California are more aware of, interested in, and knowledgeable about refrigerator energy efficiency issues than those in the rest of the country.

However, the second barrier remains a significant issue both in California and in the rest of the country. While people say they consider energy efficiency when deciding on a refrigerator, their actions indicate that they are much more likely to be swayed by the up-front price differential and the availability of specific features than by operating costs and potential future savings. If the price of energy should increase in the future, this barrier might be reduced.

Table 4-3 reiterates the barriers examined in this chapter and our findings. California has made progress relative to the rest of the country in customer awareness, customer knowledge, and to a lesser degree in customer interest.

In neither California nor the U.S. are the following significant barriers:

- Retailers seem knowledgeable about energy efficiency issues and claim to discuss energy with their customers.
- Technical issues do not seem to be a problem for retailer and manufacturers.

- Retailers can deliver energy efficient refrigerators in approximately the same time frame as standard refrigerators.

- Manufacturers do not impose requirements on retailers that limit the availability of energy efficient refrigerators.

We found some evidence that availability is no longer a barrier and some that it remains a problem:

- Clearly, greater numbers of energy efficient refrigerators have been introduced in the market over time. Due to changes in federal standards, utility program influences, and support from manufacturers and retailers, the number of high efficiency models available to consumers in 1997 has increased dramatically in the past ten years.

- Customers told us that they believe that high efficiency refrigerators are available to them. However, we found that in many cases, they may have based their opinions on a low standard of "efficiency".

- Moreover, while some high efficiency models are displayed in virtually all major retail outlets and are available in a timely manner, it still appears that customers may in fact have little choice in efficiency when they have narrowed down their choices to models with exactly the features they want in the price range they can afford. This lack of choice represents one of the most significant availability barriers remaining.

We found no change in the following barriers:

- Electricity prices have remained relatively stable over the past 10 years, providing a weak price signal to purchasers.

- The incremental cost of refrigerators more efficient than the standard remains a barrier. While the evidence is not conclusive, we believe that it points to this conclusion.

- Manufacturers and retailers believe that demand for energy efficient refrigerators, except for that created by utility rebate programs, has not changed and remains low.

- The changes manufacturers have made to their products or production practices to produce energy efficient refrigerators can be relatively easily reversed – they can halt production of energy efficient refrigerators easily and at little cost.

Table 4-3. Barriers and Results

Market Effect	Barrier	Findings
Changes in What Market Actors Know, Think, or Believe		
Changes in Customer Awareness and Knowledge	Lack of customer awareness. Limited customer knowledge.	Californians are more aware of energy efficient refrigerators than the U.S. in general.
Changes in Customer Interest In Energy Efficient Refrigerators	Limited customer interest. Low relative priority.	The evidence is mixed: California purchasers are more interested in energy efficient refrigerators than the country as a whole, but that interest dropped off in 1996.
Changes in Retailer Knowledge and Interest	Lack of retailer awareness. Limited retailer knowledge. Low relative priority for retailers.	Retailers are generally knowledgeable about energy efficient refrigerators, but high prices and lack of customer knowledge and demand make energy efficiency a lower priority.
Changes in Manufacturer Perceptions	Low perceived demand independent of rebates	There has been no change in this barrier over the past few years.
Changes to the Structure of Incentives Facing Market Actors		
Changes in the Price of Electricity	Weak electricity price signal.	Electricity prices are beyond the control of any program.
Changes in Refrigerator Price	High refrigerator prices decrease customer interest in paying a higher up-front price for long-term savings.	Refrigerator prices have been relatively stable over the past 10 years, therefore there has been no change in this barrier.
Changes in the Price Differential Between Standard and Energy Efficient Refrigerators	Up-front cost premium is significant compared to potential savings.	Energy efficient refrigerators are sufficiently more expensive than standard refrigerators to result in a significant barrier.
Changes to the Options Available to Market Actors		
Changes in Availability of Energy Efficient Refrigerators	Lack of availability. Lack of availability in relatively inexpensive refrigerators. Lack of availability with and without common features.	The data are contradictory: Purchasers do not feel that it is hard to find energy efficient refrigerators, yet their definition of energy efficient may not significantly exceed current federal standards. Retailers believe customers are presented with choices but manufacturers strongly disagree.
Changes in Delivery Time of Energy Efficient Refrigerators	Lack of timely availability.	This is not a significant barrier since it appears that purchasers do not face significantly different delivery schedules for efficient refrigerators compared to standard refrigerators.
Changes in Manufacturing	Expense of decommissioning a product line or re-tooling (a negative barrier, the higher the cost, the less likely the manufacturer will stop producing the efficient refrigerator).	Manufacturers can adjust their production lines fairly easily to eliminate the features that make a model efficient.
Changes in Technical Barriers to Production	Technical problems limit ability to develop or produce energy efficient refrigerators.	There do not appear to be any technical barriers that are inhibiting the current market.
Changes in Manufacturer-to-retailer incentives	Limited availability	Manufacturers recommendations and incentives have no direct effect on the efficiency of the refrigerators stocked.

The research that led to the analysis presented in this chapter provided some information on the structure and functioning of the refrigerator market in California. This information helped us understand the progress made in removing barriers to the sale of efficient refrigerators in California. A study that was designed to characterize the market would provide additional useful information to allow us to more fully understand how to eliminate the remaining barriers and develop additional program design recommendations.

CHAPTER 5
ENERGY EFFICIENT REFRIGERATOR MARKET SHARE

5.1 INTRODUCTION

Chapter Overview. This chapter presents data on the market share of energy efficient refrigerators and energy savings over time. First we examine the program actions that sought to achieve market effects. This involved looking at the number of refrigerators rebated and their average savings over time. Then we looked for evidence of market effects in California (by which we mean PG&E and SDG&E service territories) and in the rest of the country (which we used for the comparison area). This showed how the market for energy efficient refrigerators increased over time in California – over and above what happened in the rest of the country and over and above the relevant federal standards. We used these data to estimate the percent of the total savings that could be attributed to direct program effects (rebated refrigerators) and the percent that is defined as spillover.

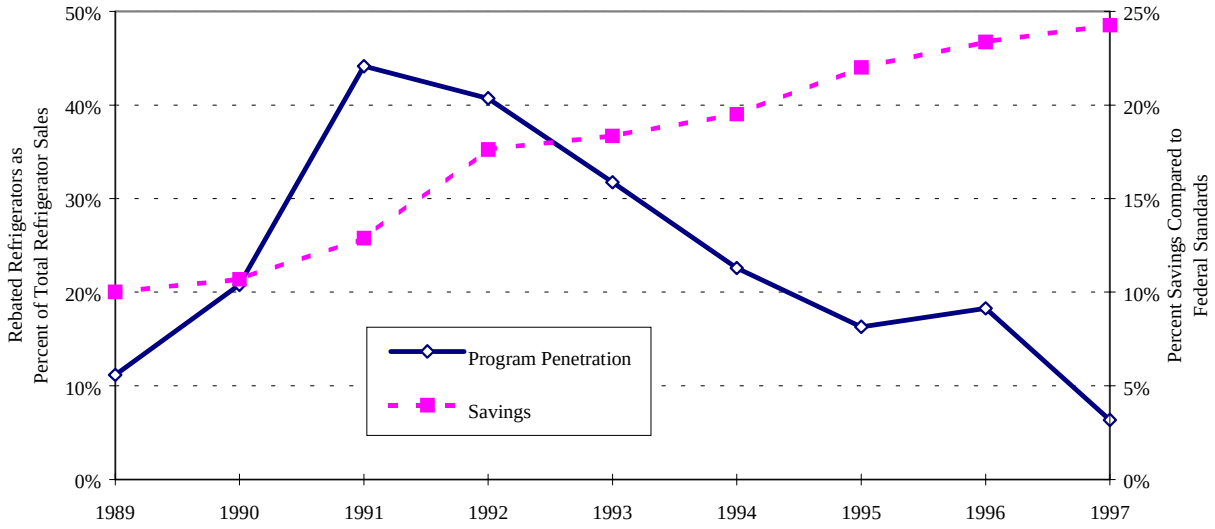
Summary of Findings. We found that utility program participation has declined over the years although the average efficiency of refrigerators sold through these programs and their savings relative to federal standards has steadily increased. The efficiencies of refrigerators bought in California in 1986 were not significantly different from those bought in the rest of the country. However, by 1991, the average refrigerator purchased in California was 10.2% more efficient than the 1990 federal standards, which was significantly higher than the 5.7% found in the rest of the country. By 1996, California refrigerators were 12.8% more efficient than the 1993 federal standards compared to 6.9% for the rest of the country. Only a portion of this 12.8% is accounted for by direct program effects (rebated refrigerators). We estimate approximately 45 GWh in energy savings compared to the federal standards were realized in the target areas in 1996. Just over half of this amount (54%) "would have occurred anyway" due to naturally occurring conservation. About 27% was a direct result of the utilities' rebate programs in 1996, and the remaining 19% represents spillover savings.

5.2 UTILITY PROGRAM PARTICIPATION RATES

As described in Chapter 3, utility program participation has declined over the years, although the average efficiency of refrigerators sold through these programs and their savings relative to federal standards has steadily increased. Figure 5-1 displays these trends for PG&E and SDG&E

programs combined, using data from program documents[1]. Under these programs, energy efficient refrigerators achieved about 23% market penetration for refrigerator sales. The average efficiency of units sold through the program during this time was 16.8% above the 1993 federal standards.

Figure 5-1. Utility Program Penetration and Efficiency Gains From Rebated Refrigerators



Source: Utility program documents

Program penetration, as shown in Figure 5-1 above, is calculated as the ratio of total number of refrigerators rebated through utility program (1989-1997) to total number of refrigerators purchased (1989-1997). Data on the number of refrigerators rebated through utility programs were obtained from PG&E and SDG&E Annual Summary Reports on DSM Programs, 1989-1997. Estimates of the number of refrigerators purchased were derived by multiplying annual purchase rates from these documents by estimates of total residential households in each utility's service territory.

Figure 5-1 also shows that the average efficiency of refrigerators sold through utility rebate programs (1989-1997) increased over time, with sharp increases as the market prepared for the new 1993 federal standards. The graph of average efficiency levels was calculated using 1993 federal standards. Efficiency levels for refrigerators sold through the utilities programs prior to 1993 were adjusted to reflect the difference between the 1990 and 1993 standards.

[1] Sources: Annual Summary Reports on DSM Programs, 1989-1997, PG&E and SDG&E.

5.3 EFFICIENCY CHANGES IN THE CALIFORNIA MARKET

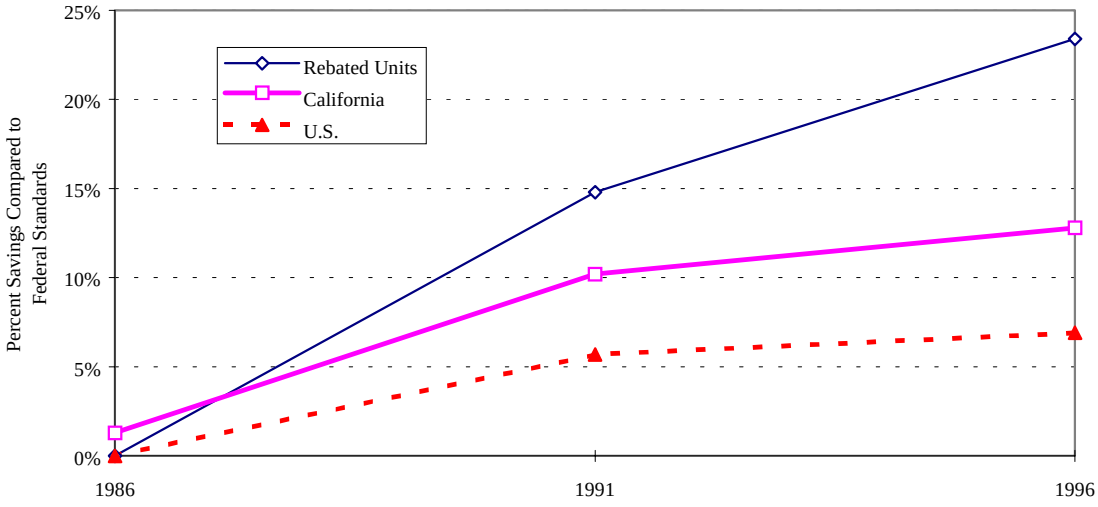
For this study, we collected data on the efficiency of refrigerators over time, specifically for refrigerators bought in 1996, 1991 (5 years ago), and 1986 (10 years ago). These data provide an historical picture of the efficiency of refrigerators purchased in California and the rest of the country. If SDG&E and PG&E programs were having an effect in California, we would expect to see the difference in efficiency between California and the rest of the country increase with time. As seen in Figure 5-2, the data support this hypothesis.

In 1986, utility programs were in their infancy in California and there were no federal standards in place. As a result, we did not expect to see a significant difference between the efficiency of California and the rest of the country and we found none. (Since there were no national standards in 1986, we compared the efficiency of California refrigerators to the average in the rest of the country.)

In 1991, the average refrigerator rebated through SDG&E and PG&E programs was 14.8% more efficient than the 1990 federal standards. The average refrigerator purchased in California was 10.2% more efficient, which was significantly higher than the 5.7% found in the rest of the country.

In 1996, as the utilities continued to ratchet up the efficiency requirements in their programs, the average refrigerator rebated through SDG&E and PG&E programs was 23.3% more efficient than the 1993 federal standards. The gap between the average refrigerator purchased in California and in the rest of the country increased from the 1991 level. California refrigerators were 12.8% more efficient than the federal standards compared to 6.9% for the rest of the country.

Figure 5-2. Comparison of Refrigerator Efficiency Gains



Note: In 1986, US refrigerator efficiency was used as a proxy for the federal standard.
Source: Customer survey and utility program documents

Table 5.1 summarizes the data on average efficiency gains for the utility programs, the California market, and the rest of the country.

Table 5-1. Comparison of Refrigerator Efficiency Gains

	1991			1996		
	Rebated Utility Sales	California Purchases	U.S. Purchases	Rebated Utility Sales	California Purchases	U.S. Purchases
0 - 9.99%	0%	29.3%	44.1%	0%	40.8%	64.9%
10-14.99%	37.2%	47.6%	45.2%	0%	7.5%	9.9%
15-19.99%	29.0%	15.9%	8.3%	4.1%	5.4%	6.3%
20-24.99%	33.8%	7.3%	2.4%	45.1%	23.7%	8.1%
25-29.99%	0%	0%	0%	34.3%	20.4%	10.8%
30-34.99%	0%	0%	0%	15.0%	2.5%	0%
35% or more	0%	0%	0%	1.5%	0.0%	0%
Average	14.8%	10.2%	5.7%	23.3%	12.8%	6.9%

Note: 1986 data not presented since there were no utility programs and no federal efficiency standards. 1991 data were compared to 1990 federal standards, and1996 data were compared to 1993 federal standards. Utility sales data were taken from PG&E and SDG&E summary reports, 1991 and 1996. California and U.S. purchase data were derived from Hagler Bailly's 1997 survey of refrigerator purchasers. California consists of PG&E and SDG&E service territories combined.
Source: Customer survey and utility program documents

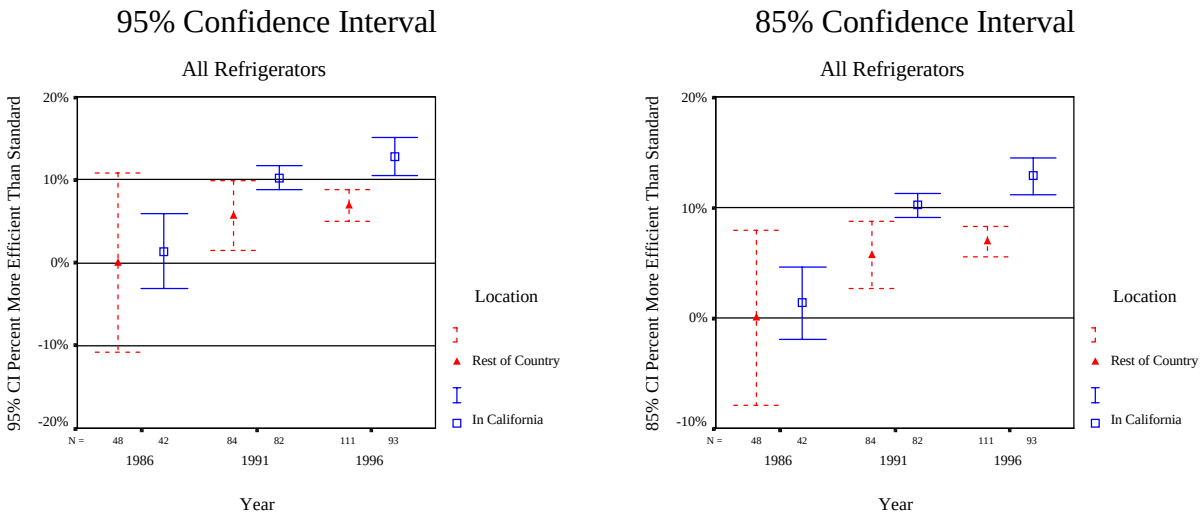
To test the significance of the findings presented above, we looked at the confidence intervals for the mean savings (over federal standards) for California and the U.S. as a whole. The graphs below show the error bands around the means for all refrigerators. If the vertical lines overlap, then differences between the means are not statistically significant.

When we look at all refrigerators together, by year, at the 95% confidence level (Figure 5-3) the confidence intervals overlap in 1986 and 1991 indicating that these means are not statistically different. (The means shown in Figure 5-3 are the same values as shown for California and the U.S. in Figure 5-2.) At the 85% level, the confidence interval lines no longer overlap in 1991.[2] Therefore, we can conclude that refrigerators bought in California in 1996 were significantly more efficient than the national average and, using less stringent criteria, refrigerators bought in California in 1991 were also more efficient. As expected, since programs were in their infancy

[2] The 90% confidence intervals for the 1991 means also overlap.

and there were no national standards, the means were quite close in 1986 and the confidence intervals overlap even at the 85% level.

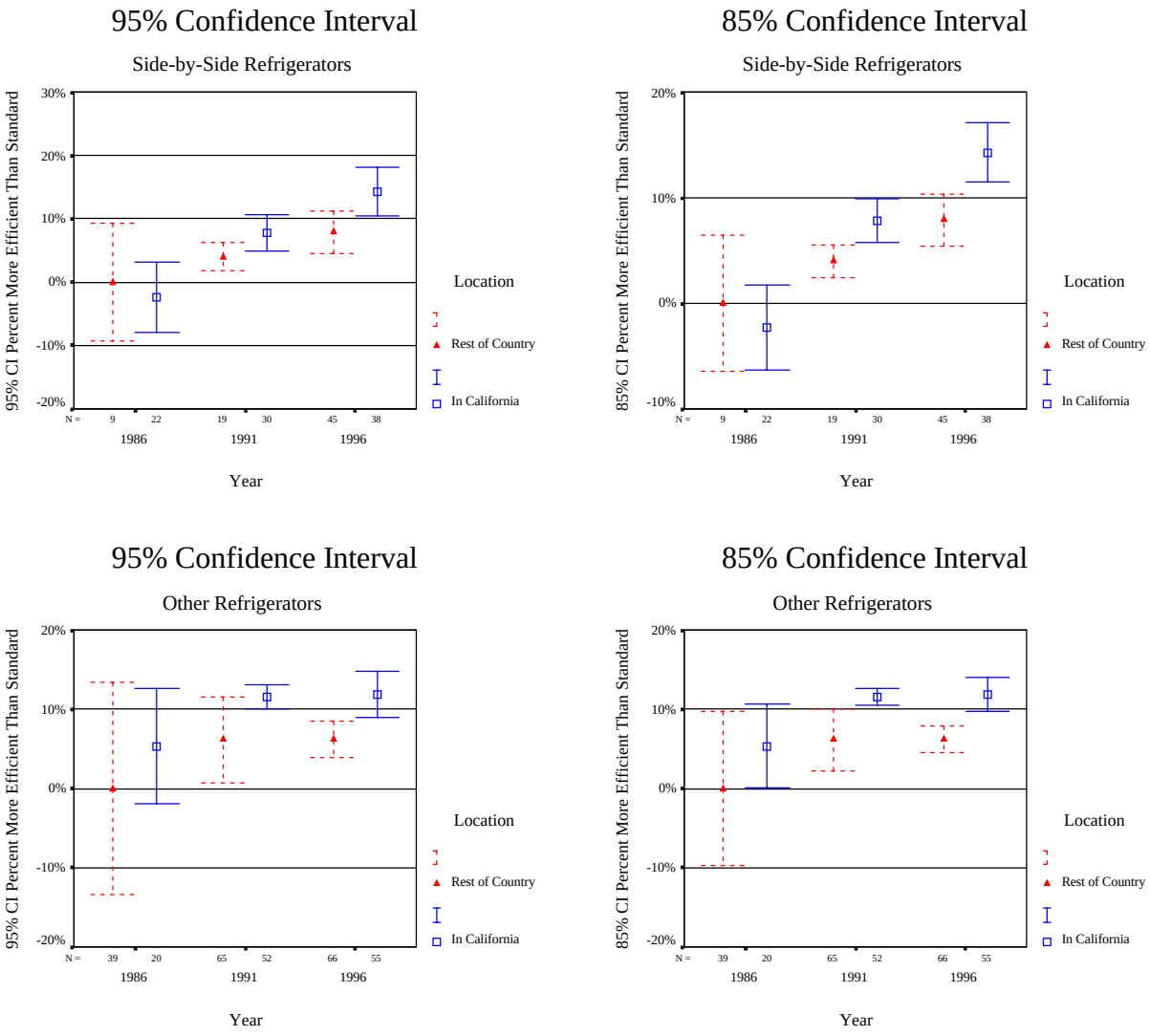
Figure 5-3. Tests of Significance of Difference in California v. U.S. Refrigerator Efficiency Over Time



Source: Customer Survey

Side-by-side refrigerators tend to be larger and more electricity-intensive than refrigerators with top- and bottom-mounted freezers. If populations have different buying patterns, the differences in efficiency between side-by-side models and regular models can mask differences in overall efficiency. As a result, we ran the analysis separately on side-by-side refrigerators and all other refrigerators. As shown in Figure 5-4, we see the same pattern discussed above. For both refrigerator types, means are not different at the 95% level but are at the 85% level.

Figure 5-4. Tests of Significance of Difference in California v. U.S. Refrigerator Efficiency Over Time, by Refrigerator Type



Source: Customer Survey

5.4 SPILLOVER ESTIMATE

In this section we will discuss the a numeric estimate of spillover created by the refrigerator programs. We will begin with a description of the methodology, followed by a description and discussion of the results.

5.4.1 Methodology

Our methodology was designed to allow us to estimate the market share of energy efficient refrigerators and disaggregate total savings from those refrigerators into savings attributable to true participants, free riders, and spillover. There were four steps needed for the basic calculations. A fifth step was necessary to disaggregate total savings into its component parts. The sixth and final step relates to estimating the level of precision for our estimates. These six steps are:

1. Calculate the **total savings** from all refrigerators purchased in 1996 in California (both rebated and non-rebated).

2. Determine the extent of **naturally occurring conservation** in 1996 in California.

3. Calculate **net savings** in 1996 in California by subtracting naturally occurring conservation (Step 2) from total California savings (Step 1).

4. Collect the **gross savings** from rebated refrigerators from PG&E and SDG&E (which were calculated from program tracking records according to rules in Table C3b of the protocols).

5. Disaggregate total savings to quantify the level of **"true program savings"**, **"free rider savings"** and **"spillover savings."**

6. Estimate the **precision** of the estimates.

The following sections describe the methodological processes employed for each of these analysis steps.

Step 1: Total Savings from Refrigerators Purchased in 1996 in California

Hagler Bailly implemented a random-digit dial phone survey of residential households in SDG&E and PG&E territories to estimate refrigerator purchase rates and efficiencies. The survey included extensive screening questions to locate people who had bought new refrigerators in 1996 (they may or may not have been program participants). When we found refrigerator purchasers we asked them to read us their refrigerator model numbers and manufacturer names. By matching that data with the 1996 *Directory of Certified Refrigerators & Freezers* from the Association of Home Appliance Manufacturers (AHAM), we identified the exact size, type, efficiency, and electricity use per year of each refrigerator. Using formulas established by the current federal standards that refer to size and type of refrigerator, we calculated for each refrigerator the electricity it would have consumed if it consumed as much electricity as allowed in the current federal standards (which were established in 1993 and are in effect throughout the country). Comparing numbers from these calculations gives an estimate of the amount of

electricity a given refrigerator saves compared to the federal standard. (This method is in compliance with Table C-3B of the protocols.)

To determine the total savings from refrigerators purchased in 1996 in California, we first estimated the total number of refrigerators purchased in California in 1996 (both rebated and non-rebated) by multiplying the 1996 refrigerator purchase rate (determined through our customer survey) by the total number of households in California in 1996. (Throughout this report, when we refer to California we are referring to the service territories of SDG&E and PG&E only.) Then, we multiplied the total number of refrigerators purchased in 1996 in California by the average per-unit savings over the 1993 federal standards for refrigerators purchased in 1996 in California. This gave us the estimate of the total savings in California compared to the federal standards.

Step 2: Determine Extent of Naturally Occurring Conservation in 1996 in California

Hagler Bailly implemented a random-digit dial phone survey of residential households in the United States (excluding California) to estimate refrigerator purchase rates and efficiencies using the same method as discussed in Step 1. This data represented the comparison area and provides us with an estimate of the level of naturally occurring conservation in California. Since some of the people surveyed in this method would have been in regions with utility refrigerator programs, this method gives us a conservative estimate of the level of naturally occurring conservation.

We multiplied the average per-unit savings for refrigerators purchased in 1996 in the comparison area by the total number of refrigerators purchased in 1996 in California to get an estimate of the level of naturally occurring conservation (NOC) in California.

Step 3: Calculate Net Savings in 1996 in California

Subtracting naturally occurring conservation (Step 2 results) from total savings in California (Step 1 results) gives us the total net savings in 1996 realized in California.

Step 4: Collect 1996 Gross Program Savings

PG&E and SDG&E provided 1996 refrigerator rebate program gross savings estimates for use in this analysis.[3] Both utilities employed an engineering approach to calculate gross savings in accordance to rules in Table C-3B of the protocols. Data was used from each program's program tracking database and from the CEC's Directory of Certified Refrigerators and Freezers. Energy savings for each refrigerator purchased with a rebate through a utility program were calculated by subtracting the model's annual energy consumption from the annual energy consumption based

[3] PG&E's estimates were developed in a separate impact evaluation and are reported in PG&E Study ID #373-1.

on the federal standard for a model of the same size and attributes. Total gross energy savings were calculated by summing the annual energy savings for all rebated refrigerators.

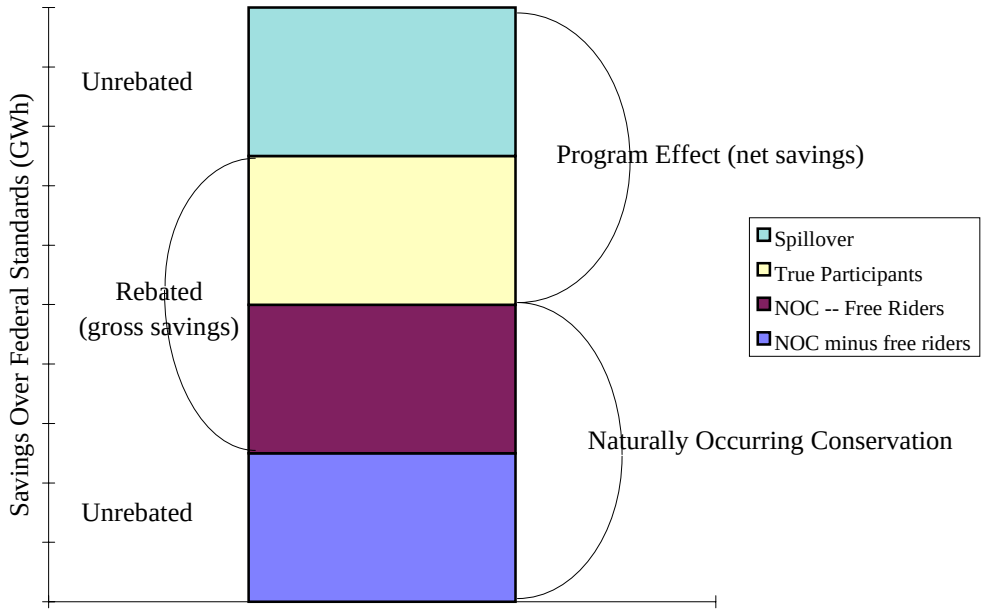
Step 5: Disaggregation of Total Savings to Estimate True Program Impacts and Spillover

The total savings compared to federal standards of refrigerators in California is composed of four components:

1. Savings from true participants
2. Savings from free riders
3. Spillover
4. Unrebated naturally occurring conservation (or total NOC minus free riders)

Figure 5-5 shows these components divided into equal parts. We will present another version of this graph in the next chapter with the actual results.

Figure 5-5. Components of Total Savings - Theory



(Components divided into equal parts for illustration only.)

The total savings compared to federal standards (the entire bar) is comprised of two main pieces: 1) total program effects and 2) naturally occurring conservation. Savings from true participants and spillover represent the total program effect (the "Program Effect" semicircle in the graph).

As we discussed above (Step 3), total program effects (net savings) are calculated by subtracting NOC from total savings.

Naturally occurring conservation (the "Naturally Occurring Conservation" semicircle in the graph and calculated in Step 2) is composed of savings from free riders and unrebated NOC (purchases of high efficiency refrigerators that were not affected by the program and did not receive rebates). Free riders are part of NOC because they would have purchased the refrigerator without the rebate.

To further disaggregate total savings and allow us to calculate spillover, additional calculations were applied to the program effect semicircle and the NOC semicircle. For this study, we estimated the free rider component using a self-report survey. The free ridership rate allows us to fix the lower bound of the rebated semicircle, which allows us to calculate the amount of spillover. The math for this calculation is as follows:

Total rebated savings - free riders = true participants
Total program effects - true participants = spillover

To measure the free-ridership rate, we implemented a separate survey of participants in the 1996 rebate programs (see Step 6a below). This free ridership rate was multiplied by the gross program savings to determine the level of "free rider savings".

Step 5a: Calculation of Free Ridership Rate

The free ridership rate for the 1996 programs was determined using a self-report survey of program participants, as follows:

- We completed a brief telephone survey with a total of 213 people who received refrigerator rebates for 1996 purchases ("participants") and asked a number of questions to determine the extent to which the program rebates influenced their purchase decisions.
- Based on participant responses to these questions, those who met at least one of the following criteria were <u>not</u> considered to be free riders (i.e., they were true participants):
  - Had <u>not</u> planned to buy a model of the same high efficiency level <u>before</u> hearing of the program rebate
  - Would <u>not</u> have paid the full price for the same high efficiency model of refrigerator if the rebate had <u>not</u> been available
  - Indicated that the rebate had at least some impact on their decision to purchase a high efficiency refrigerator (e.g., would not have purchased the same model without it, influenced the decision of when to buy new refrigerator, etc.)

- Of the remaining participants, respondents were classified as free riders if they reported that they:
  - Had planned to buy a model of the same high efficiency level before hearing of the program rebate
  - Would have paid the full price for the same high efficiency model of refrigerator regardless of the rebate
  - Indicated that the rebate had no impact on their decision to purchase a high efficiency refrigerator (e.g., would have purchased same model without it).
- There were a few participants who could not be classified as 100% free riders, but their responses indicated partial free ridership. We assigned them a free ridership rate of 50%.

Table 5-2 presents the specific question wording and logic used to determine free ridership rates.

Table 5-2. Free Ridership Question Wording and Logic

Question Number	Question Wording	Skip Pattern and Free Ridership Determination Logic
F1	Had you planned to buy a model of same high efficiency level before you heard of the rebate?	NO – *not a free rider* YES/DK – ask F2
F2	Would you most likely have paid the full price for the same high efficiency model of refrigerator if the rebate had not been available?	NO – *not a free rider* YES – ask F4a DK – ask F3
F3	So, you are saying the rebate had no impact on your decision to purchase this high efficiency model of refrigerator?	NO/DK – ask F4a YES – *free rider*
F4a	Can you clarify for me in your own words what impact, if any, the rebate had on your decision to purchase that high efficiency model of refrigerator?	Open-ended question. *Verbatim responses used to determine free ridership.*

Step 6: Estimate the Precision of the Calculations

The precision estimate was calculated using the same method used in the 1994 study with the following equation.[4]

$$\sigma_{\bar{x}_1-\bar{x}_2} = \sqrt{s^2 pooled\left(\frac{1}{N_1}+\frac{1}{N_2}\right)}$$

where:

$\sigma_{\bar{x}_1-\bar{x}_2}$	= standard error of the difference
S^2 pooled	= pooled variance estimate
N_n	= number of observations

The range of net savings = net savings estimate ± $\sigma_{\bar{x}_1-\bar{x}_2}$ * t

where

t	= critical value for t test at appropriate confidence interval.

The next section will present the results of the analyses completed in each of these six steps.

5.4.2 Spillover Results

This section presents the results of Hagler Bailly's market share analysis for PG&E and SDG&E 1996 refrigerator rebate programs. Results are presented below in Table 5-3 and discussed in more detail in the sections that follow.

[4] *Residential Appliance Efficiency Incentives Program High Efficiency Refrigeration: 1994 First Year Statewide Load Impact Study*, Xenergy, Inc., prepared for Southern California Edison and SDG&E, February 1996.

Table 5-3. Net Savings Analysis Results

Analysis Step	Description of Analysis	Result
1	Calculate total yearly savings in California	44,767,630 kWh
2	Determine extent of naturally occurring conservation in California	24,284,386 kWh
3	Calculate net yearly savings by subtracting results of Step 2 from results of Step 1	20,483,244 kWh
4	Calculate gross savings from rebated refrigerators	15,697,025 kWh
5	Disaggregate net savings results from Step 3:	
5a	Determine free ridership rate	23.7%
5b	Apply free ridership rate to disaggregate savings	
	Free Rider Savings	3,720,195 kWh
	True Participant Savings	11,976,830 kWh
	Spillover Savings	8,506,414 kWh

Step 1: Total Savings from Refrigerators Purchased in 1996 in California

As discussed in Chapter 2, the total yearly savings from refrigerators purchased in 1996 in California were estimated by matching model and manufacturer data provided by survey respondents with data from AHAM. On average, the typical refrigerator purchased in 1996 in California saved 108.5 kWh per year compared to the current federal standard.

The survey results produced an annual refrigerator purchase rate of 7.5% – that is, 7.5% of the households in California purchased a new refrigerator in 1996. Multiplying this number by the number of households in SDG&E and PG&E territories (5,502,918) yields an estimate of the number of refrigerators purchased in California in 1996 (412,719). Finally, multiplying the per-unit savings by the number of refrigerators purchased gives us the estimate of the yearly savings in California when compared to the federal standards (44.8 GWh, or 108.5 * 412,719).

Step 2: Determine Extent of Naturally Occurring Conservation in 1996 in California

The comparison area (which was the entire country minus California) provides us with an estimate of the level of naturally occurring conservation in California. Using the same method employed for Step 1, we calculated the average per-unit yearly savings for refrigerators purchased in 1996 in the comparison area compared to the current federal standards (58.8 kWh). Multiplying this by the number of refrigerators purchased in California in 1996 gives us an estimate of the level of naturally conservation in California (24.3 GWh).

Step 3: Calculate Net Savings in 1996 in California

Subtracting naturally occurring conservation (Step 2 result) from total savings in California (Step 1 result) gives us the total net savings attributable to the program (20.5 GWh).

Step 4: Determine 1996 Gross Program Savings

Both PG&E and SDG&E 1996 refrigerator rebate program gross savings estimates were provided to us for use in this analysis.[5] Together, the utilities report a total of 15,697,025 kWh in gross program savings for 1996.

Step 5: Disaggregation of Total Savings

Step 5a: Calculation of Free Ridership Rate

Using the methodology described in Chapter 2, the free ridership rate for the 1996 programs was determined to be 23.7%. Table 5-4 presents the results of this determination. We assigned a free ridership rate of 0.5 to partial free riders (adding 0.7% to the free-ridership rate).

Table 5-4. Free Ridership Rate Determination

Category	Response	Number of Responses	Percent of Responses
Non-Free Rider	Did not plan on purchasing same model of refrigerator before hearing about rebate	107	50.2%
	Would not have paid full price for same model of refrigerator if rebate was not available	16	7.5%
	Rebate confirmed decision of which model to purchase	13	6.1%
	Would not have purchased same model without rebate	8	3.8%
	Rebate influenced decision of when to buy	4	1.9%
	Don't know if rebate would have influenced purchase decision	13	6.1%
		161	**75.6%**
Free Riders	Rebate did not influence purchase decision	34	16.0%
	Had not heard of rebate until survey	2	0.9%
	Would have purchased anyway, rebate was a "nice bonus"	13	6.1%
		49	**23.0%**
Partial Free Rider	Rebate allowed purchase of larger unit with same efficiency level	2	0.9%
	Rebate was like a "reimbursement" to validate purchase	1	0.5%
		3	**1.4%**

[5] PG&E's estimates were developed in a separate impact evaluation and are reported in PG&E Study ID #373-1.

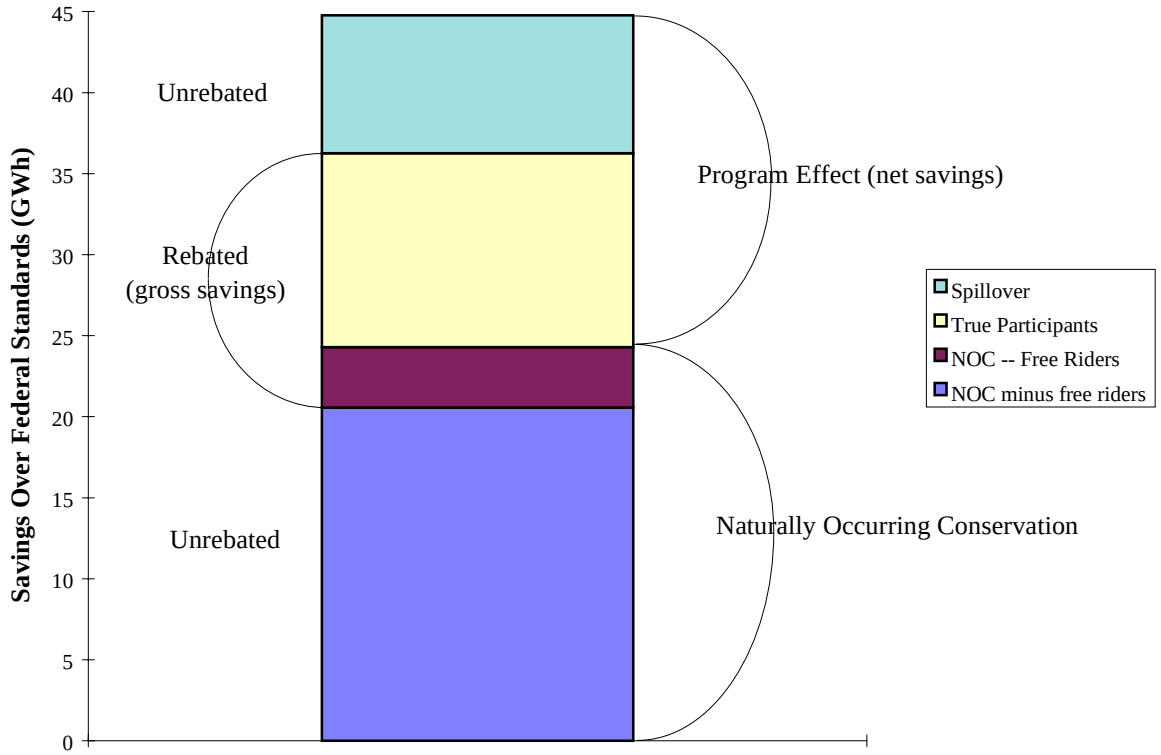
Step 6b: Disaggregate Net Impacts

As described in Chapter 2, the total savings compared to federal standards of refrigerators in California is composed of four components (Figure 5-6):

1. Savings from true participants
2. Savings from free riders
3. Spillover
4. Unrebated naturally occurring conservation (or total NOC minus free riders)

The free ridership rate derived from the analysis completed in Step 6a was found to be 23.7%. Multiplying this free ridership rate by the gross program savings produces about 3.7 GWh of "free rider savings." Subtracting these free rider energy savings from gross savings yields about 12.0 GWh of "true program savings" (or savings that were the result of the program's direct influence – the rebate). Subtracting the true participant savings from the net savings realized in California (Step 3 result) results in about 8.5 GWh in "spillover savings" (20.5 GWh - 12.0 GWh). Spillover savings represent the amount of savings realized in California (a) outside of the direct influence of the utility rebate programs (i.e., unrebated purchases), and (b) over and above what naturally occurred in the market.

Figure 5-6. Components of Total Savings



Step 7: Precision Estimate

The analysis discussed above produced an estimate of 20 GWh of net savings. Using the method described above, we calculated confidence intervals around this estimate. The 90% confidence interval around this number ranges from 10.9 GWh to 30.1 GWh. (see Table 5-5). The 80% confidence interval around this number ranges from 13.0 GWh to 28.0 GWh.

Table 5-5. Precision Estimate

Description of Analysis	Per-Unit kWh	Number of Units	Total kWh
Gross savings from rebated refrigerators			15,697,025
Net savings	49.6	412,719	20,483,244
90% Upper Bound	72.9	412,719	30,083,017
90% Lower Bound	26.4	412,719	10,883,471
80% Upper Bound	67.8	412,719	27,964,647
80% Lower Bound	31.5	412,719	13,001,840

(Note: The data used in the calculations have more decimals than shown in this table, as a result, multiplying per-unit kWh shown by the number of units shown will not result in the exact total kWh shown.)

5.4.3 Spillover and Free Ridership Results

This section presents a discussion of the methodology used in and the results of Hagler Bailly's market share analysis for the PG&E and SDG&E 1996 refrigerator rebate programs. This discussion is organized around two principal issues: (a) spillover results, and (b) free ridership results.

Spillover Results

As reported in Chapter 3, we estimate approximately 45 GWh in energy savings were realized in California in 1996. Just over half of this amount "would have occurred anyway" due to naturally occurring conservation (54%). About 27% was a direct result of the utilities' rebate programs in 1996, and the remaining 19% represents spillover savings.

Another way of interpreting the spillover results is to think of gains in refrigerator efficiency over time in terms of "percent above federal efficiency standards". Our market effects research found that although utility program participation has declined over the years, the average efficiency of refrigerators sold through these programs relative to federal standards has steadily increased.

- In 1986, the efficiencies of refrigerators bought in California were not significantly different from those bought in the rest of the country.

- In 1991, the average refrigerator purchased in California was 10.2% more efficient than the 1990 federal standards, which was significantly higher than the 5.7% found in the rest of the country. We estimate that virtually 100% of the difference in average efficiency between the refrigerators sold in California and the rest of the country is accounted for by refrigerators sold through utility programs. Therefore, it appears that had the utilities not offered rebate programs in 1991, refrigerators purchased in California would have been similar to those purchased in the rest of the country.

- An assessment of the refrigerator rebate programs offered by Southern California Edison and SDG&E in 1994 concluded that the average efficiency of refrigerators purchased in Southern California was also higher than the comparison area, and 100% of the difference in refrigerator efficiencies was attributable to the utilities' rebate programs.[6]

- In 1996, California refrigerators continued to be more efficient than those in the rest of the country, however it is unlikely that 100% of this difference can be accounted for by program rebates alone.

    - In 1996 the average refrigerator sold in the U.S. was 6.9% more efficient than the 1993 federal standards. If we assume that this represents the efficiency level of refrigerators not rebated in California, then we can calculate the average efficiency in California if only the rebated refrigerators were affected by the utilities' programs.

    - The result of this calculation, when adjusted for free riders, indicates that, on average, all California refrigerators would have been 9.2% more efficient than the federal standards if all non-rebated refrigerators were the same efficiency as the national average.

    - Since our market effects research suggests that, on average, California refrigerators purchased in 1996 (including rebated units) were 12.8% more efficient than the 1993 standards, the difference – 3.6% – can be interpreted as spillover. That is, California refrigerators had 3.6% more savings compared to the federal standards than those in the rest of the country because of the effects of California utility programs.

[6] *Residential Appliance Efficiency Incentives Program, High Efficiency Refrigerators, 1994 First year Statewide Load Impact Report*, Xenergy, Inc., prepared for Southern California Edison and SDG&E, February 1996, page 4-2.

Factors Contributing to Spillover

We speculate that a combination of factors have contributed to the magnitude of spillover savings observed in the 1996 refrigerator market, as discussed below.

Refrigerator Efficiency Standards

Refrigerator efficiency standards have been central to much of the changes in the industry over the past 10 years. California led much of the country by developing statewide refrigerator standards in 1987 and revising them for 1990. On November 17, 1989 the first federal refrigerator efficiency standards were set forth and they became effective on January 1, 1990. At that time, the federal standards were not as stringent as the statewide standards adopted in California for 1990. On January 1, 1993, the federal standards were revised and became consistent with the California statewide standards. These 1993 standards are still in force today.

Utility Program Incentive Design

California utilities have been working for many years to influence the production of refrigerators that are even more efficient than required by the relevant standards. Consistently each year, utilities have altered their incentive structure as the more efficient models became available on the market (as evidenced by increased participation levels for these higher efficiency models). In reaction to increased equipment availability and improved market demand, utilities would scale back the incentive amount for the earlier models, or eliminate the incentive altogether, and offer increased incentives for even higher efficiency models.

Market Reactions and Interactions

The changes in efficiency standards and utility incentive structures have led to several reactive and interactive effects within the distribution channel for refrigerators:

- "Market Push" – manufacturers have produced high efficiency refrigerators both to (a) comply with changing statewide/federal standards, and (b) capture the market demand created by utility rebate programs designed to encourage the adoption of even higher efficiency models.

- "Market Pull" – increased consumer awareness and demand for higher efficiency refrigerators has served to influence both manufacturer production and retailer sales of these models.

Overall, these factors combined have contributed to the magnitude of spillover savings observed in the 1996 California refrigerator market.

Free Ridership Results

The methodology used by in the 1994 study[7] incorporated the effects of spillover and free ridership and did not produce estimates of these factors separately. Hence, from that research it was not possible to determine whether spillover and free ridership effects were small or large and were canceling each other out. Our study produced results using a methodology that was similar to Xenergy's, but also calculated a separate free ridership rate. This free ridership rate was used to determine the magnitude of spillover effects observed in the market.

Our approach to determining the rate of free ridership was based on participants' self-reported responses and was consistent with the protocols and with the California DSM Advisory Committee (CADMAC) *Quality Assurance Guidelines* regarding procedures for using self-report methods. For example, we included "set-up" questions which were used to guide respondents through a process of establishing benchmarks against which to remember the decision making process. In addition, our survey instrument also made use of multiple questionnaire items to measure free-ridership and address inconsistencies.

Earlier studies of free ridership also included participant responses regarding whether or not they had compared energy efficiency levels and prices of refrigerators prior to learning of the rebate. While these questions were included in our survey, the responses were not used in the free rider calculation for the following reasons.

Based on discussions with both PG&E and SDG&E prior to implementing the survey, it was agreed that in some parts of the market for refrigerators, rebates may have created situations where customers have no choice but to purchase an energy efficient refrigerator for certain types and sizes of refrigerator. In such areas, we expect free rider rates will be higher. For example, in those areas, customers shopping for refrigerators with no interest in or knowledge of efficiency or rebates are likely to come across one model that fits their needs (e.g., size, features, color, etc.) – they decide to buy it (literally have no choice) and only then learn that there is a rebate for the model they have chosen. To be conservative, in this analysis we have counted these people as free riders although earlier methods would have classified them as non-free riders since they did not compare efficiency levels or price differentials. (The definition of these purchasers as free riders is complicated by the fact that even though they would have bought the energy efficient refrigerator without the rebate, without the effects of the utility program they would not have been forced to purchase the energy efficient refrigerator, and so are in this sense affected by the program and are not free riders.) Thus, we agreed that we would ask questions about comparing efficiency levels and price differentials as part of the "set-up questions", but would not use participant responses to these questions in the free rider calculations.

[7] *Residential Appliance Efficiency Incentives Program, High Efficiency Refrigerators, 1994 First year Statewide Load Impact Report*, Xenergy, Inc., prepared for Southern California Edison and SDG&E, February 1996.

5.5 SUMMARY

5.5.1 Comparing Refrigerator Efficiency Over Time

Utility program participation has declined over the years although the average efficiency of refrigerators sold through these programs and their savings relative to federal standards has steadily increased.

The efficiencies of refrigerators bought in California in 1986 were not significantly different from those bought in the rest of the country. However, by 1991, the average refrigerator purchased in California was 10.2% more efficient than the federal standards, which was significantly higher than the 5.7% found in the rest of the country (Table 5-6). During that year the average refrigerator rebated through SDG&E and PG&E programs was 14.8% more efficient than the standards. By 1996, the gap between the average refrigerator purchased in California and in the rest of the country had increased even more. California refrigerators were 12.8% more efficient than the federal standards (saving 108.5 kWh per year on average) compared to 6.9% for the rest of the country (saving 58.8 kWh/year). During that year, the average refrigerator rebated through SDG&E and PG&E programs was 23.3% more efficient than the 1993 federal standards (saving 200.1 kWh/year). The differences in savings between all California purchases and the rest of the country were statistically significant at the 95% level in 1996 and at the 85% level in 1991.

Table 5-6. Average Refrigerator Savings Compared to Federal Standards

	1991 % over Standard	1996 % over Standard	1996 kWh per year
Rebated Utility Sales	14.8%	23.3%	200.1
All California Purchases	10.2%	12.8%	108.5
U.S. Purchases	5.7%	6.9%	58.8

Note: 1991 savings compared to 1990 federal standards and 1996 to 1993 standards
Source: Customer survey and utility program documents

5.5.2 Spillover Estimates

The SDG&E and PG&E refrigerator programs helped create almost 12 GWh of electricity savings in 1996 and created 8.5 GWh of spillover savings (Table 5-7).

Table 5-7. Net Savings Analysis Results

Component	Result
Net yearly savings	20,483,244 kWh
Composed of:	
Spillover Savings	8,506,414 kWh
True Participant Savings	11,976,830 kWh

CHAPTER 6
COMPACT FLUORESCENT MARKET EFFECTS

6.1 INTRODUCTION

Chapter Overview. This chapter discusses changes in the market for CFLs in California and draws conclusions about which of those changes may have been created or influenced by SDG&E and PG&E programs.

Utility programs can create changes in the market through three mechanisms[1]:

- Changes in what market actors know, think, or believe
- Changes to the structure of incentives facing market actors
- Changes to the options available to market actors

We organized our discussion of the changes in the CFL market into three categories following these three mechanisms. As we discussed in the introduction to this report, this chapter will analyze the most significant market effects but will not directly address one of the most important market effects, changes in market share, which will be discussed in Chapter 7.

In this chapter, we will examine data from a variety of sources to look for changes in a number of barriers, including the following:

- Limited customer or retailer awareness, knowledge, or interest.
- Lack of availability.
- Technical problems that limit supply or inhibit demand.
- Low perceived demand.
- Financial barriers, such as high up-front cost, insensitivity to life-style cost, weak electricity price signal.

Summary of Findings. At the end of the chapter, we will discuss our conclusions about which market effects we believe have been most significant and which barriers remain as significant

[1] These mechanisms are discussed in "Evaluating Market Transformation" by Ralph Prahl and Jeff Schlegel, 1993 Energy Program Evaluation Conference proceedings.

problems. As we will demonstrate, the high cost of CFLs remains the key barrier in both California and the rest of the country. Availability does not appear to be a problem for many people, particularly for Californians since they are more likely to buy their incandescent lightbulbs in stores that also carry CFLs. However, many people buy their incandescent bulbs at grocery stores where CFLs are rarely available.

Awareness of CFLs is fairly high among Californians and the rest of the country, although there are segments of both the California and national markets where awareness remains a problem. Overall, retailers in California and the rest of the country have limited interest in and knowledge of CFLs and as a result have done little promoting of CFLs. California has made progress in increasing purchase rates, perhaps due, in part, to the fact that Californians are more likely to have seen information on CFLs from their utility. Finally, retailers do not believe that CFLs still have technical problems, but customers are inclined to disagree.

6.2 CHANGES IN WHAT MARKET ACTORS KNOW, THINK, OR BELIEVE

After technological feasibility (addressed later), information barriers are some of the most basic and critical ones. We wanted to understand which of the information barriers were most critical for CFLs and what had been happening to them over time. In the customer survey, we asked:

- What do customers think about CFLs and how does that affect their demand?
- Are retailers promoting CFLs?
- What do they think are the barriers to selling CFLs?
- What do manufacturers think are the barriers?

6.2.1 Market Effect: Changes in Customer Awareness

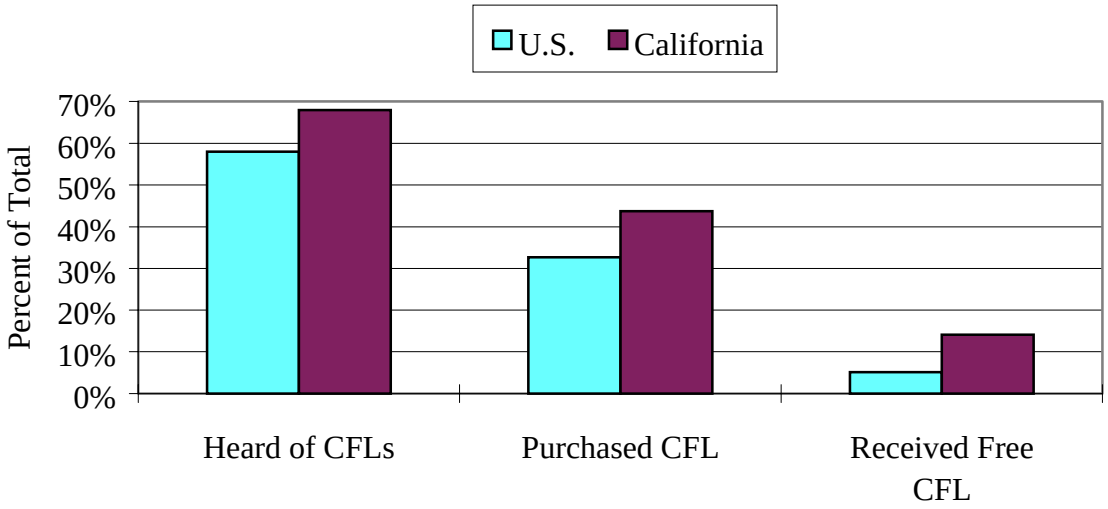
Barrier:	Lack of customer awareness.
Findings:	Californians are more aware of CFLs and are more likely to have purchased one than the rest of the country. However, a substantial minority had never heard of CFLs.

One of the most important barriers to the dissemination of any technology is the lack of customer awareness. If customers do not know that CFLs are available they will not buy them.

People in California are more aware of CFLs and are more likely to have purchased one than the rest of the country. Californians are significantly more likely to have heard of CFLs than those in the rest of the country (67.9% heard of them in California vs. 58.0%). Similarly, Californians are significantly more likely to have purchased a CFL or to have received one free than in the rest of the country. (43.7% of Californians and 32.7% of the rest of the country had purchased a CFL and 14.1% of Californians and 5.1% of the rest of the country had received one

free.) Most people purchased their first CFL in the early 1990s, in both California and the country as a whole. Californians were somewhat more likely to have purchased their first CFL earlier than the rest of the country (see Chapter 7). Most people also received their first free CFL in the early 1990s, however, Californians were much more likely than customers in the rest of the country to receive their first free CFL in 1996.

Figure 6-1. Awareness and Purchase Rates



Source: Customer Survey

There is a sizable "non-purchasing" market in both California and the rest of the country and, among this market, awareness of CFLs remains a significant (but not the only) barrier. In California, about 66% of the households have not purchased/used CFLs and in the rest of the country 80% of the households have not purchased/used CFLs. These findings indicate that there is a sizable "non-purchasing" market in both California and the rest of the country.

Among the non-purchasing market, awareness remains a significant barrier, but not the only one. For example, prior to our survey, 49% of the non-purchasing Californian households were not aware of CFLs and 53% of the non-purchasing US households were not aware of CFLs. This implies that about half of the non-purchasing market is aware of CFLs but has yet to purchase one.

People in California are significantly more likely than the rest of the country to have seen information on CFLs, particularly from their electric utility. Significantly more CFL purchasers in California than in the rest of the country had seen information from their electric utility on CFLs (61% v. 44%). Significantly more non-purchasers (but aware of CFLs) had seen information from their utility or in stores (Table 6-1). The most commonly cited other source of information, for both purchasers and non-purchasers, was magazine articles, TV, or newspaper articles.

At first glance, the data in Table 6-1 suggest that with few exceptions customers are just as likely to report that they have been informed of CFLs by their utility as they are to report they heard of CFLs through channels not directly related to utility interventions (i.e., in-store displays, magazine/TV/newspaper articles). We did not attempt to distinguish between utility and non-utility information channels, but it is likely that many of the in-store promotions and "other" information sources reported by respondents could be linked to utility interventions (see discussion below on utility-funded retailer promotions).

Table 6-1. Percent Receiving CFL Information by Source

	Purchasers			Non-purchasers		
	California	U.S.	Total	California	U.S.	Total
In Stores	57.3	46.8	53.2	36.1*	14.1*	25.2
From Utility	61.0*	43.9*	54.5	42.0*	20.3*	31.6
From other sources	56.4	48.0	53.1	45.2	36.1	40.7
From any source†	87.9	80.6	85.1	79.2*	55.1*	67.4

* Statistically significant difference between the means of California and the rest of the country.

† From any of the previous three sources.

Source: Customer Survey

CFL retailers (i.e., salespeople) may not be an effective means of increasing customer awareness and communicating the value of CFLs. In fact, CFL retailers reported limited promotion at all. Relatively few customers have ever talked with a salesperson about CFLs and, of those who have, few felt the salesperson was particularly influential on their decision to purchase CFLs. Only 13.1% of CFLs purchasers had talked with salespeople about them, and only 7.3% of non-purchasers had talked to salespeople about CFLs. There were no statistically significant differences between California and the rest of the country on this issue. Moreover, neither in California nor in the rest of the country did purchasers feel that the salesperson had much influence on their decision (giving their influence a score of 2.6 on a 1-5 scale with 1 being no influence).

CFL retailers confirmed these findings – according to the CFL retailers interviewed as part of this study, most customers do not ask about CFLs when purchasing light bulbs. On average, only about 12% percent of customers' lighting questions are about CFLs and 23% of retailers said customers never ask about CFLs.

Aside from responding to customers direct inquiries, most retailers do not promote CFLs at all. Only 20% of the CFL retailers reported that they had funded their own CFL promotional campaigns in the past two years, and 31% implemented promotional campaigns in that time period that were funded by someone else (i.e., utilities, manufacturers, etc.).

Although limited to only a few of the retailers we interviewed, there is some evidence from our retailer survey that suggests that California retailer efforts to promote CFLs were more likely to

be funded by utilities. For example, 38% of the California retailers reported that CFL promotions were sponsored by utilities, as compared to 17% of the other US retailers.

In addition, when CFLs were promoted, advertising was the most often used method. Thirty-seven percent of retailers who promoted CFLs used newspaper ads, and thirty-three percent used point-of-purchase displays. (These findings link some of the in-store and media advertisements reported above in Table 6-1 to specific utility interventions.) Additionally, 10% of the retailers who promoted CFLs used price discounts and about 8% offered rebates.

In summary, the research results with respect to customer awareness of CFLs suggests that California households are more aware of CFLs and more likely to have purchased/used one. We also speculate that both direct and indirect utility interventions (i.e., direct mail, bill inserts, funding for in-store promotions, media advertisements) should be credited for much of the difference in reported levels of awareness and purchase/use among California households and those in the rest of the country. However, the extent to which customers will remain aware of or interested in purchasing/using CFLs – absent these utility interventions – is questionable.

It is also important to note that, once the barrier of awareness is addressed, concerns regarding the price of the bulb and its perceived value remain and represent significant barriers to further and sustained adoption within the residential market. Given that California utilities have been involved in activities designed to raise customer awareness of CFLs and encouraging their purchase/use (i.e., direct installs, rebates, discounted prices) for many years, additional research will be required to assess the long-term nature of the observed changes in the California market with respect to awareness and purchase/use patterns.

6.2.2 Market Effect: Changes in Customer Knowledge

Barrier:	Limited customer knowledge (product advantages).
Findings:	Customers tend to be relatively aware of CFL advantages such as longer bulb life, energy efficiency, and lower operating costs. There do not appear to be any significant differences between California and the rest of the country with respect to knowledge of CFL advantages.

If customers do not understand the benefits of CFLs and their advantages, they will not see a reason to spend more on a CFL than they do on incandescent lightbulbs.

Purchase/use of CFLs, especially in California, is related to higher levels of awareness of the advantages of CFLs. California purchasers were just as likely as US purchasers to be aware of at least one "advantage" of CFLs (Table 6-2). Few purchasers (California and US) reported that, based on what they knew about CFLs, they "didn't know" what were some of the advantages of these types of light bulbs. The top three reported "advantages" of CFLs were (1) longer bulb life, (2) energy efficiency, and (3) lower operating costs. While the differences

between California purchasers and US purchasers are not statistically significant, it is interesting to note that knowledge of the advantages related to energy efficiency and energy use was somewhat higher among California purchasers, whereas US purchasers were more likely to report the advantage of longer bulb life.

Table 6-2. Awareness of Advantages of CFLs (Among CFL Purchasers)

	Percent of CA Purchasers	Percent of US Purchasers	Percent of Both CA and US Purchasers
Longer bulb life	52%	68%	58%
Energy efficient	57%	45%	52%
Lower operating costs	31%	28%	30%
Give off better light	12%	12%	12%
Cooler	7%	7%	7%
Better for the environment	0%	1%	1%
Liked shape	0%	1%	0%
Don't know	12%	11%	11%

Non-purchasers reported similar advantages of CFLs (Table 6-3): longer bulb life, energy efficiency and lower operating costs. Again, while not statistically significant, California non-purchasers were more likely to report advantages related to energy efficiency and energy use, and US non-purchasers were more likely to report the advantage of longer bulb life. About 22% of the non-purchasers (California and US) were more likely than purchasers to report that, based on what they knew about CFLs, they “didn’t know” what were some of the advantages of these types of light bulbs. California non-purchasers were less likely to report this than US non-purchasers (17% v. 27%).

Table 6-3. Awareness of Advantages of CFLs (Among CFL Non-Purchasers)

	Percent of CA Non-Purchasers	Percent of US Non-Purchasers	Percent of Both CA and US Non-Purchasers
Longer bulb life	36%	43%	39%
Energy efficient	45%	20%	33%
Lower operating costs	22%	19%	21%
Better for the environment	5%	9%	7%
Give off better light	5%	5%	5%
Liked shape	5%	3%	4%
Cooler	7%	0%	3%
Smaller	1%	0%	1%
Don't know	17%	27%	22%

Barrier:	Limited customer knowledge (product concerns).
Findings:	Customers have surprisingly few concerns with respect to CFLs. Californians tend to be somewhat less concerned about the cost of CFLs and more concerned about the quality of light produced and the lamp's size/shape.

Customers may have concerns about CFLs that indicate a relatively limited level of awareness or knowledge of the product's benefits and value.

Californians are no different from other US households in that a significant percentage (about 50%) have no concerns with (or do not know of any concerns with) CFLs. However, Californians are different than other US households in that they are (a) somewhat less concerned about the cost of CFLs and (b) somewhat more concerned about the quality of light produced and size/shape of the bulb itself.

When asked to indicate what concerns they have about CFLs, about half of the purchasers (48%) reported that they "did not know" of any concerns. Similarly, about one third of the non-purchasers (33%) reported that they "did not know" of any concerns and another 13% reported they had "no concerns." There were little differences by location.

Among those with concerns, however, there were some notable differences based on whether or not customers have had experience using CFLs. For example, among purchasers the top three concerns were reported to be: poor light quality (20%), bulb size/shape (17%), and cost (12%). While these were also the top three concerns reported by non-purchasers, they were not reported with the same frequency: cost (27%), poor light quality (15%) and bulb size/shape (8%). These findings differ somewhat by location. Most importantly, California purchasers appear to be the least concerned about CFL cost – only 8% reported this as a concern, compared to 18% of US purchasers, 29% of California non-purchasers and 26% of US non-purchasers. Other differences by location are shown in Table 6-4.[2]

CFL retailers felt fairly strongly that residential customers are not very well informed of the benefits and value of CFLs. There were no significant differences between Californians and the rest of the nation. When asked how informed customers are on the benefits of CFLs on a scale of 1 to 10, retailers gave an average rating of 3.22. Almost a third of retailers (31%) said customers are "not at all informed" (giving a rating of 1). Lack of consumer education and awareness was one of the most often cited barriers to selling CFLs. Twenty-six percent of retailers said lack of education and awareness were major barriers.

[2] Additional findings related to the relative importance customers place on light bulb features, such as cost, energy efficiency, light quality, size/appearance, etc., are presented below in Section 6.2.3.

Table 6-4. CFL Concerns

	Percent of CA Purchasers	Percent of US Purchasers	Percent of CA and US Purchasers	Percent of CA Non-Purchasers	Percent of US Non-Purchasers	Percent of CA and US Non-Purchasers
Don't know/none	52%	52%	52%	41%	50%	45%
Light quality	24%	15%	20%	24%	5%	15%
Size/Shape	18%	16%	17%	12%	4%	8%
Cost	8%	18%	12%	29%	26%	27%
Technical	8%	9%	9%	11%	9%	10%
Knowledge	5%	5%	5%	5%	12%	9%
Availability	1%	0%	1%	3%	0%	1%

Note: "Technical" concerns included such concerns as safety, harmonic distortions, buzzing sounds, slow start-up. "Knowledge" concerns included concerns that CFLs would not save enough money/energy, would not last as long as claimed, need more information, etc.

In summary, customers tend to be relatively aware of CFL advantages such as longer bulb life, energy efficiency, and lower operating costs. There do not appear to be any significant differences between California and the rest of the country with respect to knowledge of CFL advantages. Additionally, Californians are no different from other US households in that a significant percentage (about 50%) have no concerns with (or do not know of any concerns with) CFLs. Finally, CFL retailers felt fairly strongly that residential customers – in California and the rest of the country – are not very well informed of the benefits and value of CFLs.

However, Californians are different than other US households in that they are (a) somewhat less concerned about the cost of CFLs and (b) somewhat more concerned about the quality of light produced and size/shape of the bulb itself. Whether or not these observed differences are long-lasting depends on what level of awareness, knowledge and purchase/use continues in the future. That is, the current level of "knowledge" (as measured through awareness of advantages and concerns) might be sustainable if the benefits and value of CFL over incandescent alternatives continue to be communicated and promoted to the purchasing market.

6.2.3 Market Effect: Changes in Customer Interest in CFLs

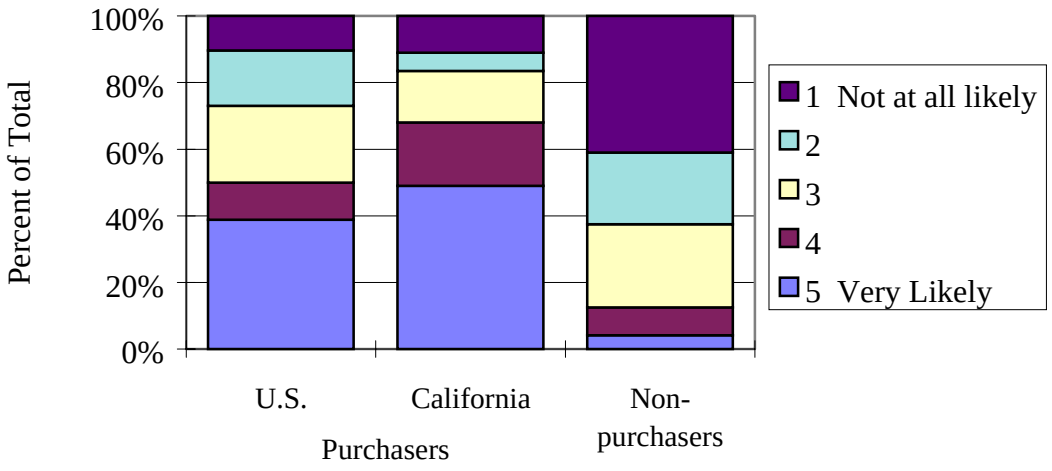
Barrier:	Limited customer interest. Low relative priority.
Findings:	Californians are somewhat more interested in CFLs and less sensitive to the price of bulbs.

Even if people are aware of CFLs and know that they can save electricity, they may not care enough to factor it into their decision making. Increases in the priority buyers assign to energy efficiency is an indication of the removal of this barrier.

CFL purchasers, especially in California, are more likely than non-purchasers to be interested in purchasing CFLs in the future. Our survey asked purchasers and non-purchasers to indicate on a scale of 1 to 5, where 1 is "not at all likely" and 5 is "very likely," how likely they are to buy (additional) CFLs in the future. California purchasers were more likely than US purchasers to buy CFLs again (the average California purchaser reported 3.90 and the average US non-purchaser reported 3.52). Most non-purchasers were not likely to buy CFLs in the future, with a mean score of 2.13 (there was no difference among non-purchasers by location).

As shown in Figure 6-2, nearly half of California purchasers reported that they were "very likely" to purchase CFLs in the future, as compared to 39% of US purchasers, and only about 4% of purchasers. On the other hand, about 41% of non-purchasers reported that they were "not at all likely" to purchase CFLs in the future, which compares to 11% of California purchasers and 10% of US purchasers.

Figure 6-2. Likelihood of Buying Another CFL



Source: Customer Survey

Although people in California and the rest of the country recognize "energy efficiency" as a valuable light bulb feature, because they are more concerned with price than operating cost or the life of the bulb, it appears that they still do not fully appreciate the value of CFLs. People throughout the country tend to rank energy efficiency fairly high in a list of important light bulb features (Table 6-5). However, they are likely to rank the price of the bulb ahead of its operating cost or life. On most measures, there were no statistically significant differences between Californians and the rest of the country. The exceptions were two statistically significant differences by location. First, Californians assigned less importance to the price of the bulb than respondents in the rest of the country, particularly among those who have never heard of CFLs. For Californians, price was less important than energy efficiency. For the rest of the country, it was the opposite. Second, Californians were more concerned about the brightness or wattage of the bulb than the rest of the country, particularly among those who had heard of CFLs but never bought one.

Table 6-5. Rank of Importance of Light Bulb Features

Feature	CFL Buyer	Heard of CFLs, Never Bought One	Never Heard of CFLs	California	U.S.	Total	Total Mean*
Brightness Or Wattage Of Bulb	1	1†	1	1	1	1	4.05
Energy Efficiency	2	4	3	2†	3†	2	3.90
Price Of Bulb	4	2	2†	3†	2†	3	3.86
Operating Cost	3	5	4	4	4	4	3.71
Light Color Or Quality	6	3	5	5	5	5	3.67
Life Of The Bulb	5	7	6	6	6	6	3.53
Size Of Bulb	7	6	7	7	7	7	3.20
Appearance Of The Bulb	8	8	8	8	8	8	2.29

* Respondents were asked how important they thought eight light bulb features were on a scale of 1 to 5 where 1 is "Not at all important" and 5 is "Very important." Ranks were based on the mean score.

† Significant differences between California and the U.S. were found in only two comparisons: Californians were significantly more likely to rank brightness or wattage of the bulb higher than the rest of the country and they thought price was relatively less important.

Source: Customer Survey

Overall, customer interest in purchasing (additional) CFLs is somewhat high and many recognize "energy efficiency" as a valuable light bulb feature. However, because they are more concerned with price than operating cost or the life of the bulb, it appears that they still do not fully appreciate the value of CFLs. These summary results suggest that efforts to educate/inform customers of these benefits need to be reinforced at the point-of-purchase when factors such as price and bulb wattage tend to be "top of the mind" for most customers. Whether or not the observed changes in the market will be long-lasting is dependent on the effectiveness of the messages communicated to customers – both prior to and in anticipation of future lighting purchase decisions, and "on-the-spot" while they are shopping for new/replacement lighting products.

6.2.4 Market Effect: Changes in Retailer Knowledge and Interest

Barrier:	Lack of retailer awareness. Limited retailer knowledge. Low relative priority for retailers.
Findings:	Retailers have limited interest in and knowledge of CFLs because there is low consumer demand. Retailers believe there is low consumer demand because customers are not aware of the product benefits.

It appears that retailers do not believe in energy efficiency and rarely talk to customers about CFLs. They generally do not talk to customers about CFLs and they do not promote CFLs. When asked to rate how often they talked to customers about CFLs on a scale of 1 to 10, the average rating given by retailers was 3.18. Forty-three percent of retailers said they never talked

to customers about CFLs. As mentioned above, few retailers said they implemented CFL promotional campaigns in the past two – either on their own or with funding from other organizations.

The main reason retailers are not promoting CFLs is lack of consumer demand. The single most influential factor affecting consumer demand (cited most often by retailers as influencing the sales of CFLs) was increased consumer education or awareness of product benefit. About one quarter of the CFL retailers (26%) reported that increased consumer education and awareness of CFLs was the single most influential factor on CFL sales, and another 14% reported that "lack of consumer demand" was a key barrier to increased sales.

As mentioned above, CFL retailers (i.e., salespeople) have not been particularly effective in proactively communicating the benefits and values of CFLs. In fact, few "believe" in energy efficiency, indicating that CFL retailers/salespeople are not particular likely to sustain (or grow) the current level of awareness and demand. Absent significant intervention to increase the promotion of CFLs at the retail level (and increased training and incentives designed to encourage CFL retailer participation), it is not likely that CFL retailers will play a major role in the continuing transformation of the CFL market.

6.2.5 Market Effect: Changes in Retailer Views on Utility Programs

Issue:	Attribution of credit for market changes to utility actions.
Findings:	Awareness of utility programs among retailers is low. Retailers in California are slightly more aware of utility programs and are much more likely to attribute the programs with influencing CFL sales.

Overall, retailer awareness of utility programs is low, although California utility programs were attributed with influencing CFL sales to a greater extent than other US utility programs. Less than half of the retailers interviewed (41%) were aware of utility programs that promoted CFLs. California retailers were slightly more aware than national retailers (44% compared to 37%), but even in California the majority of retailers are unaware of utility programs. Thirty-nine percent of California retailers who were aware of utility programs were aware of PG&E programs, 39 percent were aware of SDG&E programs and 15 percent did not know who sponsored the program.

On a scale of 1 to 10 with 1 being no influence and 10 being a great deal of influence, retailers rated the influence of utility programs on CFL sales an average of 5.27. California retailers, however, were much more likely to attribute utility programs as the single most influential factor on sales of CFLs. Thirty-eight percent of retailers in California said that utility programs were the most influential factor compared to only 5 percent of national retailers.

When asked why they did not think utility programs were influential, retailers said there was a lack of assistance in consumer education and awareness (25%) and rebates were too low (17%). Forty-two percent of these retailers did not know why the programs did not have a greater influence.

Lack of rebates or promotional practices by utilities was not considered a major barrier by retailers. Only a very small proportion of retailers said that lack of rebates (6 percent) and the elimination or reduction in promotion by utilities (4 percent) were major barriers to selling CFL products.

In summary, awareness of utility programs among retailers is low – although, California CFL retailers are slightly more aware of utility programs and are much more likely to attribute the programs with influencing CFL sales. Nevertheless, as discussed above, CFL retailers tend to have relatively little influence on customer awareness (i.e., they do not talk to most customers about lighting products, let alone CFLs) and limited influence on customer demand (i.e., they rarely implement or participate in programs to promote CFLs). Again, absent significant intervention targeting retail sales and retail salespeople, it is not likely that CFL retailers will play a major role in the long-lasting transformation of the CFL market.

6.3 CHANGES TO THE STRUCTURE OF INCENTIVES FACING MARKET ACTORS

Lasting changes to the structure of incentives facing market actors will cause changes in the way market actors behave. Positive incentives will reinforce the idea that it is in the market actors' best interests to continue manufacturing, displaying, advertising, or purchasing CFLs. This section primarily discusses price issues, as the most powerful incentive of interest.

6.3.1 Market Effect: Changes in the Price of Electricity

Barrier:	Weak electricity price signal.
Findings:	Electricity prices are beyond the control of any program.

CFL purchasers face two incentive issues, the price of CFLs and the price of the electricity to operate them. As discussed in Chapter 4, consumers have not seen a significant change in electricity prices in the past ten years. In inflation-adjusted terms, retail electricity prices are now about the same as they were ten years ago. The electricity costs for home lighting, as a result, have not changed. Thus there has been no change in this barrier.

6.3.2 Market Effect: Changes in CFL Prices

Barrier:	High CFL prices decrease customer interest in paying higher up-front price for long-term savings.
Findings:	Californians are somewhat less sensitive to the cost of lightbulbs, but cost remains a significant barrier to the purchase of CFLs.

Californians are less concerned with the price of the bulb than those in the rest of the country, a sign that they are more sensitive to the advantages of CFLs. For Californians, price was less important than energy efficiency. For the rest of the country it was the opposite. However, 22% of the CFL purchasers and 41% of the non-purchasers thought CFLs cost too much. This was mentioned by significantly more non-purchasers than any other reason.

According to retailers, the reliability of CFLs is not a problem (see the discussion later for details), which should reduce the risk of the long-term investment implicit in CFLs.

Home builders usually have a large influence on the type of lighting that is installed in new homes. Their primary concerns when making lighting decisions are the price, aesthetics and building codes. Unless the code requires fluorescent lighting, builders are rarely willing to spend the extra money on CFLs.

In summary, the results of this study suggest that the price of CFLs – relative to other lighting alternatives and given fairly high levels of awareness and knowledge – remains a significant barrier to wider adoption and increased sales. Price may be less of a barrier in California than elsewhere and may be less of an issue among purchasers than non-purchasers. These results suggest that there may be some long-lasting effects from efforts in California to educate/inform customers about CFL benefits and value (price is still important, but relatively less important than other factors). In addition, there may be some long-lasting effects among the "purchasing market" in general – that is, as customers gain experience and exposure to the benefits and value of CFLs in their homes, they may be less concerned about price when making future purchasing decisions. However, additional research should be completed to determine the long-term nature of these observed changes given that CFL product qualities could change over time (i.e., in terms of price, features, availability, etc.).

6.4 CHANGES TO THE OPTIONS AVAILABLE TO MARKET ACTORS

The previous sections discussed features that affect the creation of demand for CFLs. This section will address barriers that limit the market's ability to meet that demand and to sustain the development of that demand. We will discuss issues of availability, the timeliness of availability, the permanence of changes seen in the market, and examine evidence of technical barriers.

6.4.1 Market Effect: Changes in the Retail Availability of CFLs

Barrier:	Lack of availability at the retail level.
Findings:	Although few grocery stores sell CFLs, they are available often enough in other stores so that availability does not appear to be a significant barrier. Because Californians are more likely to purchase bulbs in locations that carry CFLs, this barrier should be less significant in California than in the rest of the country.

One of the most important barriers in earlier years was the lack of availability of CFLs. CFLs can now be found in most hardware and discount retail stores. CFLs are usually not sold in grocery or drug stores, and only 25 percent of the lighting stores contacted for this study sold CFLs. But a key issue is whether they are found where customers normally purchase lightbulbs and, if not, does this matter? To examine changes in this barrier, we considered the following issues:

- Availability in all the stores where incandescent bulbs are sold.
- Availability in a broad range of prices.
- Availability with the same range of lumens as incandescent lightbulbs.
- Availability to fit common fixtures.

If people are accustomed to purchasing their lightbulbs in a particular type of store, but that store does not typically carry CFLs, then this would present a barrier to CFL adoption. **It appears that this is not as much of a problem in California as it is in the rest of the country.** One-third of the people in California and the rest of the U.S. buy some of their incandescent bulbs in grocery stores, yet few grocery stores carry CFLs. However, CFL purchasers told us that finding CFLs was not a problem and CFL non-buyers rarely mentioned availability as a problem. In addition, shoppers in California often (but not always) buy their incandescent bulbs at stores that also carry CFLs. More research would have to be done on those who were unaware of CFLs to determine if their bulb purchasing patterns affected their lack of awareness (e.g., perhaps they are more likely to purchase lightbulbs in grocery stores, which rarely carry CFLs).

CFL purchasers in California and in the rest of the country thought it was quite easy to find the type of CFLs they wanted. When asked how easy it was to find CFLs, using a 1 to 5 scale where 1 is very easy, their average response was 1.7. There were no significant differences between California and the rest of the country. Few (3.1%) of those who were aware of CFLs but did not buy them said they had a hard time finding CFLs when asked why they did not buy them. Similarly, few (4.7%) said that CFLs did not fit their fixtures (which could be interpreted as "could not find one to fit my fixtures" – an availability problem).

In general, purchasers did not have to go out of their way to purchase CFLs. Purchasers generally bought CFLs as part of other shopping they were doing. Almost two-thirds (59.9%)

bought CFLs as part of other shopping. Most of the remainder (34.6%) went to a particular store in search of CFLs. There were no significant differences between California and the rest of the country.

A significant percentage of people shop for incandescent lightbulbs at stores that also carry CFLs. The most common places for people in the U.S. to buy their incandescent bulbs are grocery stores, hardware stores, discount department stores, and home centers (Table 6-6). These last three are also the most common places to buy CFLs. In California, a larger percentage of people buy their incandescents in home centers than in the U.S., and a significantly higher percentage buy their CFLs there. On average, people in California and the rest of the country think that somewhere between "some" and "most" of the stores they shop at for incandescent bulbs also carry CFLs. (On a scale where 1 = "all" and 5 = "none", the mean response was 2.25. The difference between the means in California (2.17) and the rest of the country (2.38) was not statistically significant.)

Table 6-6. Type of Stores for CFL and Incandescent Purchases

	CFLs		Incandescents	
Store	U.S.	California	U.S.	California
Home center or discount hardware store	35.9 %	64.9 %	21.3 %	39.0 %
Hardware store	23.9	19.7	31.1	22.6
Discount department store	17.1	5.9	28.7	15.9
Department store	10.3	5.9	9.8	6.7
Warehouse, bulk purchase discounter	7.7	6.4	9.8	12.8
Lighting specialty store	6.8	3.7	2.5	0.5
Other	5.1	4.3	1.6	2.1
Utility sale or promotion	2.6	2.7	0.8	0.5
Grocery store	1.7	1.6	32.0	31.3
Drugstore	0.9	1.1	1.6	4.6

Source: Customer Survey

Few grocery stores sell CFLs in California and the nation in general. Only 7 percent of the grocery stores we contacted sold CFLs. Because they believe that CFLs are more expensive and that there are still some quality issues (aesthetics, quality of light, etc.) retailers are less inclined to promote them. They have a limited amount of shelf space and are not inclined to fill it with CFLs if they have to invest in promotion to sell them and if they may get complaints about the quality. Retailers do not feel that creating demand for CFLs is their responsibility when they have other lighting products they can easily sell. Thus, as expected, we found that few CFL buyers said they bought their CFLs in grocery stores. While almost one-third of the respondents in California and the U.S. in general buy incandescents in grocery stores, only 16 percent of the respondents only buy their incandescent bulbs from grocery stores. However, approximately one-half of all respondents do not buy any of their incandescent bulbs in either home centers or

hardware stores – the two chief locations Californians buy CFLs (51.3% of the total do not, 55.3% U.S., and 48.7% California, which is not significantly different).

Retailers do not devote considerable shelf space to lighting products in general and even less is used to display CFL products. On average, retailers devote 16 percent of their total shelf space to lighting products. Of the space devoted to lighting, an average of 9 percent is currently used to display CFLs. No retailers devoted more than half of their lighting shelf space to CFLs. Lighting products take up an average of 19% of shelf space in hardware stores, 5 percent at discount retail stores, 2 percent at drug stores, and only 1 percent at grocery stores.

Although grocery stores and drug stores devote little space to lighting products, they devote the highest proportion of their lighting shelf space to compact fluorescent bulbs than any other type of store that sells CFLs. Grocery stores (n = 8) devote 12 percent and drug stores (n = 7) devote 11 percent of their lighting shelf space to compact fluorescent bulbs. In comparison, hardware stores (n = 29) and lighting stores (n = 6) selling CFLs devote an average of 8 percent of their lighting space to compact fluorescent bulbs, and discount retail stores (n = 10) devote only 4 percent of their lighting space to compact fluorescent bulbs.

Grocery stores and drug stores selling compact fluorescent bulbs do not devote any shelf space to compact fluorescent fixtures. Hardware stores that sell CFLs devote 8 percent of their lighting space to compact fluorescent fixtures, lighting stores devote 2 percent, and discount retail stores devote only 1 percent to compact fluorescent fixtures.

Since home builders rarely install CFLs, energy efficient lighting is often not available to new home buyers.

In summary, CFL availability does not appear to be a significant barrier at the retail level – especially in California. CFL purchasers reported that it was relatively easy to find the CFLs they wanted, and they did not have to go out of their way to purchase CFLs. In California, households were more likely to purchase bulbs in locations that (a) carry CFLs and (b) devote more shelf space to these products.

CFLs are usually not sold in grocery or drug stores, indicating that at least for some customers availability may be a barrier if they are accustomed to purchasing their lightbulbs in a particular type of store. Again, this does not seem to be as much of a problem in California as it is in the rest of the country, but additional research would be useful. The extent to which these retailers will begin to (and continue to) devote shelf space to these products is dependent on (as mentioned above) efforts to sustain (and grow) consumer awareness, education, and demand.

6.4.2 Market Effect: Changes in the Time Required to Obtain CFL Products

Barrier:	Delays in obtaining product reduce availability.
Findings:	The time required to obtain CFL products ordered from the manufacturers is similar to that required for incandescents.

Delays in obtaining CFL products once a retailer places an order with the manufacturer can be a significant barrier affecting product availability at the retail level. **Product delays do not appear to be a significant issue for CFL retailers.** The vast majority (86%) of retailers said it takes the same time to receive compact fluorescent bulbs as incandescent bulbs and 76% said it takes the same time to receive CFL fixtures. Only 7 percent of retailers said it takes more time to receive compact fluorescent bulbs, and most of those retailers said it takes about a week longer. Ten percent of retailers said it takes longer to receive CFL fixtures, but all said it was only one or two days longer.

Nineteen percent of retailers had experienced delays or backorders for CFL bulbs or fixtures. For most of those it was not a new problem (84 percent of the 19 percent had experienced these delays in the past).

Given the relative "unknowns" related to product availability in the future, it is difficult to determine whether or not the lack of current product delays reported by CFL retailers will be sustainable. Continued study of product availability issues, such as product delays, should be undertaken to determine the long-term nature of this observed market change.

6.4.3 Market Effect: Changes in Product Quality and Reliability

Barrier:	Technical problems limit supply or inhibit demand.
Findings:	Some customers still believe there are quality and reliability problems with CFLs. According to retailers, however, the problems have been solved. There were few differences between California and the rest of the country.

If a product is of inferior quality or perceived to be unreliable, this will negatively affect short- and long-term customer demand. In addition, inferior and unreliable products represent significant product availability barriers that need to be addressed at the manufacturer level.

As mentioned above, few customers have concerns about CFLs that relate to product quality, reliability or other availability issues. In fact, a significant percentage of purchasers (about 52% in both California and the rest of the country) have no quality, reliability or other concerns with (or do not know of any concerns with) CFLs. While California purchasers are somewhat more likely than other US purchasers to be concerned with light quality (24% v. 15%), they do not differ with respect to their concerns regarding bulb size/shape (18% v. 16%), and

other "technical" concerns (8% v. 9%). These "technical" concerns included such concerns as safety, harmonic distortions, buzzing sounds, slow start-up.

Retailers confirm that the quality and reliability of CFLs is not a problem. One-hundred percent of the retailers said they never receive complaints or have compact fluorescent bulbs returned. When asked to rate how often they received complaints or returns of compact fluorescent fixtures on a scale of 1 to 10, with one being never and 10 being always, the highest rating given by retailers was a 3 (20%). Eighty percent of retailers gave a rating of 1 or 2, indicating they never or rarely experienced complaints or returns.

As suggested above, there are significant "unknowns" related to product availability and diversity in the future. It is therefore difficult to determine whether or not the current level of product quality and reliability will be sustainable. Continued study of product availability issues, such as product quality, reliability and diversity, should be undertaken to determine the long-term nature of this observed market change.

6.5 SUMMARY

The high cost of CFLs remains the key barrier in both California and the rest of the country. Californians are somewhat less sensitive to the cost of bulbs, but this still remains the major issue.

Availability does not appear to be a problem for many people, particularly for Californians since they are more likely to buy their incandescent lightbulbs in stores that also carry CFLs. However, many people buy their incandescent bulbs at grocery stores where CFLs are rarely available.

Awareness and knowledge about CFLs remain a problem both in California and in the rest of the country, although Californians are more aware of CFLs than the rest of the country. Some of the credit for that belongs to utilities, since Californians are more likely to have seen information on CFLs from their utility.

Table 6-7 lists the barriers examined in this chapter and the findings. California has made progress relative to the rest of the country in awareness, purchase rates, and CFL promotion. California residents are also more likely to find CFLs in the stores they purchase incandescent bulbs and are less sensitive to the price of bulbs.

The following are only insignificant barriers in California and the U.S.:

- Availability (although it remains to be seen whether availability is an issue for those who do not know what CFLs are).
- Supply problems.

We found inconclusive evidence of change on the following barriers:

- Some customers believe there are still technical problems with CFLs including poor light quality and flickering, but retailers disagree.

We found no change in the following barriers:

- Electricity prices have remained relatively stable over the past 10 years, providing a weak price signal to customers.
- On the whole, customers are not well informed about CFLs.
- Retailers have limited interest in and knowledge of CFLs.
- Retailers and manufacturers have done limited promotions for CFLs.

Table 6-7. Barriers and Results

Market Effect	Barrier	Findings
Changes in What Market Actors Know, Think, or Believe		
Changes in Customer Awareness	Lack of customer awareness	People in California are more aware of CFLs and are more likely to have purchased one than the rest of the country. However, a substantial minority had never heard of CFLs.
Changes in Customer Knowledge	Limited customer knowledge	Customers are not very well informed about CFLs, and California customers are no better informed than those in the rest of the country.
Changes in Customer Interest in CFLs	Limited customer interest. Low relative priority.	Californians are somewhat more interested in CFLs and less sensitive to the price of bulbs.
Changes in Retailer Knowledge and Interest	Lack of retailer awareness. Limited retailer knowledge. Low relative priority for retailers.	Retailers have limited interest in and knowledge of CFLs because there is low consumer demand. Retailers believe there is low consumer demand because customers are not aware of the product benefits.
Changes in Retailer Views on Utility Programs	Issue: Attribution of credit for market changes to utility actions.	Awareness of utility programs among retailers is low. Some retailers think utility financial incentives are very important, but few said the lack of rebates is a barrier.
Changes to the Structure of Incentives Facing Market Actors		
Changes in the Price of Electricity	Weak electricity price signal.	Electricity prices are beyond the control of any program.
Changes in CFL Prices	High CFL prices decreases customer interest in paying higher up-front price for long-term savings.	Californians are somewhat less sensitive to the cost of lightbulbs but cost remains a significant barrier to the purchase of CFLs.
Changes to the Options Available to Market Actors		
Changes in the availability of CFLs	Lack of availability.	Few grocery stores sell CFLs but they are available often enough in other stores so that availability does not appear to be a significant barrier. Because Californians are more likely to purchase bulbs in locations that carry CFLs, this barrier should be less significant in California than in the rest of the country.
Changes in the production limitations	Supply limitations reduce availability	Supply problems do not seem to be a significant barrier in California and in the rest of the country.
Changes in customers' knowledge of CFLs	Lack of awareness, limited understanding	Californians are more likely to be exposed to information on CFLs from their utility, but retailers and manufacturers have not significantly stepped up their promotional efforts.
Changes in technical barriers to production	Technical problems limit supply or inhibit demand.	Some customers still believe there are problems with CFLs. According to retailers, however, the problems have been solved. There were no differences between California and the rest of the country.

CHAPTER 7
COMPACT FLUORESCENT MARKET SHARE

7.1 INTRODUCTION

Chapter Overview. This chapter presents data on CFL market penetration over time. These data are presented first for the individual utility programs, then for California (by which we mean the PG&E and SDG&E territories), and finally for the U.S. as a whole (minus California, which we use as a comparison area). Ultimately, we make comparisons between the utility program achievements and observed changes in the markets for CFLs in California and the rest of the country. In so doing, we have determined the extent of market penetration resulting from utility program efforts – both net of "naturally occurring" market penetration and inclusive of "spillover" market penetration resulting from CFL sales that were made possible in California as an indirect result of the utilities' efforts.

Summary of Findings. We found substantially higher penetration rates for CFLs in California compared to the rest of the country. However, only one-quarter of all California households have a CFL. We also found substantially higher purchase rates in 1996 in California compared to the rest of the country. The survey data show what appears to be substantial increases in CFL purchases in 1996 in both SDG&E and PG&E territories compared to the penetration rates from previous years.

7.2 CFL PENETRATION RATES

7.2.1 CFL Penetration Rates, 1997 Estimate

We analyzed data from our CFL purchaser survey to determine the rate of penetration for CFLs among households in California and the rest of the country (Table 7-1). The current (September 1997) penetration rates for CFLs are as follows:

- About one-quarter (25.3%) of California households currently have at least one CFL. The average number of CFLs (per household having at least one) is 4.08, and the average across all California households is 1.03.

- Current market CFL penetration is slightly higher in SDG&E's service territory than PG&E's:

- About 30.0% of SDG&E households currently have at least one CFL. The average number of CFLs (per household having at least one) was 4.55, and the average across all SDG&E households was 1.35.

- Currently, 21.3% of PG&E households have at least one CFL. The average number of CFLs (per household having at least one) was 3.50, and the average across all PG&E households was 0.75.

- The rate of penetration for CFLs in California is higher than the U.S. as a whole. Only 16.1% of U.S. households currently have at least one CFL (this difference from California is statistically significant at the 95% level). However, the average number of CFLs (per household having at least one) is 4.02, which is in line with California (4.08) (no statistically-significant difference). Across all households, the average number of CFLs used by U.S. households is 0.65, which is slightly lower than in California (1.03).

Table 7-1. Comparison of 1997 CFL Market Penetration

Indicator of 1997 Market Penetration	Market	
Percent of Households With At Least One CFL	PG&E	21%
	SDG&E	30%
	California	25%
	U.S.	16%
Average No. of CFLs (Per Household Having At Least One CFL)	PG&E	3.50
	SDG&E	4.55
	California	4.08
	U.S.	4.02
Average No. of CFLs Across All Households	PG&E	0.75
	SDG&E	1.35
	California	1.03
	U.S.	0.65

Source: Customer Survey

7.2.2 CFL Penetration Rates, Prior Trends

Table 7-2 and Figure 7-1 compare CFL market penetration within the two utility service areas over a 6-year time frame. The penetration of CFLs within SDG&E's service territory has increased over time. In addition, among SDG&E households having CFLs, the average number

of CFLs per household was fairly constant during the 1991-1995 period, although this average has increased significantly in 1997.

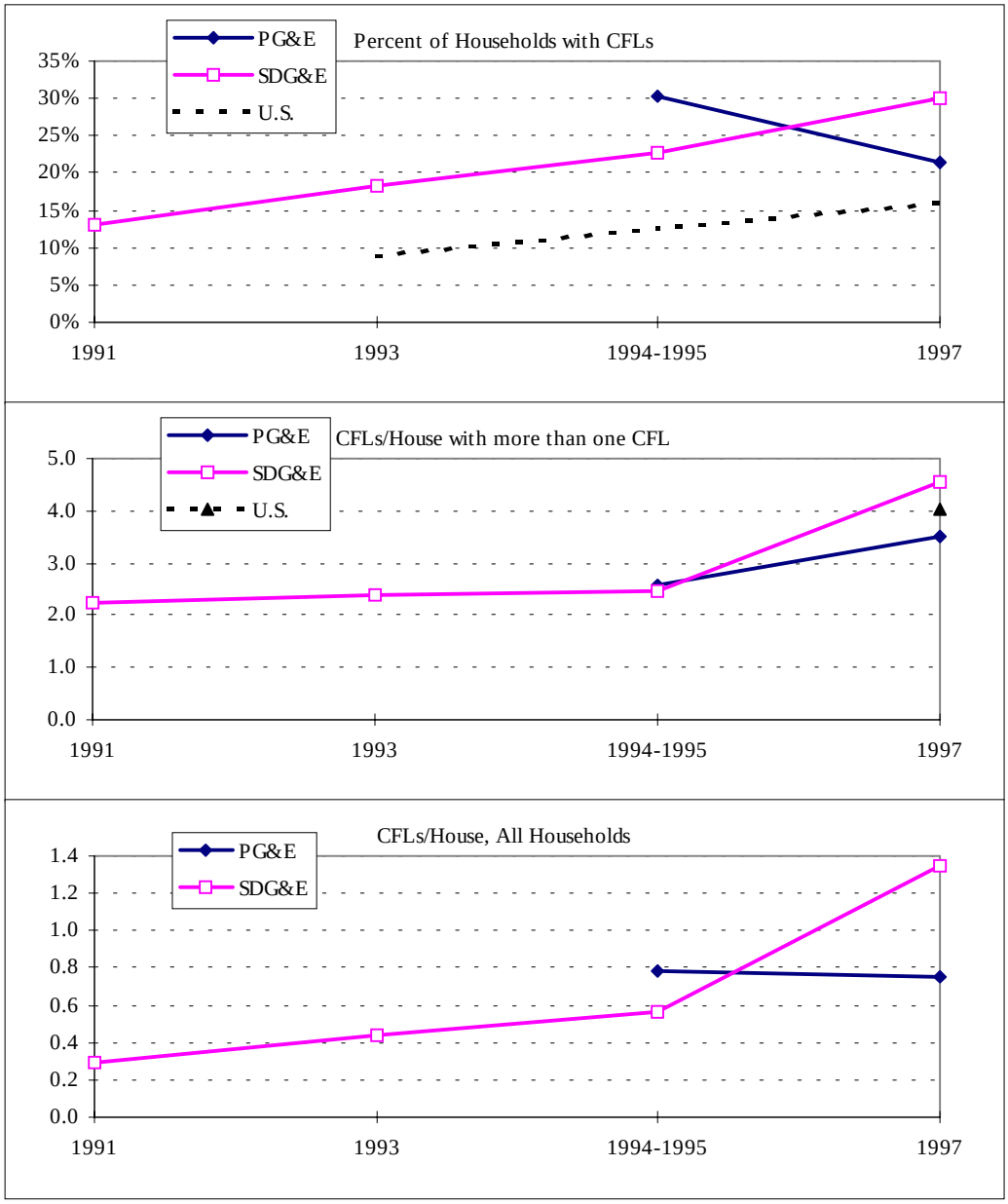
PG&E only began collecting data pertaining to CFL use in 1994 and as a result only has this one data point for comparison purposes. While the penetration of CFLs declined since 1994, the average number of CFLs per PG&E household having at least one CFL has increased.

Table 7-2. Comparison of Historical CFL Penetration Data for PG&E and SDG&E

		1991	1993	1994-1995	1997
Percent of households with at least one CFL	PG&E	na	na	30.3%	21.3%
	SDG&E	13.0%	18.4%	22.8%	30.0%
Average no. of CFLs per household having at least one CFL	PG&E	na	na	2.57	3.50
	SDG&E	2.23	2.37	2.47	4.55
Average no. of CFLs across all households	PG&E	na	na	0.78	0.75
	SDG&E	0.29	0.44	0.56	1.35

Source: Customer survey and program records

Figure 7-1. Graphic Comparison of Historical CFL Data for PG&E and SDG&E



Source: Customer survey and program records

7.3 CFL PROGRAM PENETRATION RATES

The data presented above on 1997 market penetration for CFLs in California can also be compared to utility program sales data to determine the rate of CFL penetration attributable to utility program efforts. As mentioned in Chapter 3, both utilities provided programs which, over

the years, encouraged the purchase and direct installation of CFLs in their respective service territories. A discussion of the individual utilities' programs and the resulting market penetration rates for CFLs as a result of these programs is provided in the following sections.

7.3.1 PG&E Program Penetration Discussion

For PG&E, nearly 1.3 million CFLs were distributed or sold to participants in various programs between 1989 and 1995[1]. The majority of these CFLs were distributed or sold to participants in 1991, 1992, and 1993 when PG&E implemented fairly large-scale direct installation programs and its manufacturer's cost credit program. Prior to 1990, PG&E had achieved only about 1% market penetration with its programs and by the end of 1993, about 1.1 million bulbs had been distributed or sold through the programs.

In 1994, PG&E's RASS data reported that approximately 30% of its residential households had at least one CFL, and approximately 3.1 million CFLs were in use by residential customers in PG&E's service territory. The estimate of PG&E's program market penetration at year-end 1993 was one-third of the total market penetration reported through RASS in 1994.

PG&E cut back its CFL program efforts after 1993 such that only limited direct installations took place in 1994 and 1995. Interestingly, the current market penetration for CFLs in PG&E's service territory is 21% – indicating a slight decline from when PG&E's direct sales and distribution programs were in full swing. However, since the average number of CFLs (used by households having at least one) has increased since 1994, we see a slight increase in the number of CFLs in the market in 1997 over 1994. As mentioned above, PG&E's 1994 RASS data predicted approximately 3.1 million CFLs were in-use by residential customers in PG&E's service territory and in 1997 our survey results suggest that 3.3 million CFLs are being used by PG&E's current customers.

In 1996, PG&E launched its consumer education campaign, and began providing advertising and promotional support to a select group of CFL manufacturers who offered incentives toward the retail purchase of CFLs. PG&E continued to run this type of program in 1997. Our survey results show that, in 1996, nearly 7.8% of all PG&E households purchased at least one CFL. If one assumes a residential household population of 4.5 million customers, this implies that about 350,000 households made CFL purchases in 1996. Since the average household purchased 2.99 CFLs, this equates to over 1 million CFL purchases in 1996 alone.

The data presents us with some contradictions. The newly collected data imply that in 1995 approximately 2.3 million CFLs were in use (3.3 million in 1996 minus the 1 million purchased in 1996). However the RASS survey found 3.1 million in 1994. Breakage, burn-outs, and people

[1] PG&E Annual DSM Summary Reports, 1989-1997.

moving out of the territory will account for some attrition, but it seems unlikely that it would account for 800,000 in one year. However, even allowing for errors in either survey, the current data seem to indicate that there was a substantial increase in buying activity in 1996 when compared to current ownership rates.

If we accept this as true, since PG&E's programs were not particularly active during 1994-1995 and PG&E did not offer direct sales distribution programs during 1996, one might conclude that the 1996 sales estimates are (a) the indirect result of spillover from prior program efforts, and/or (b) the direct result of the educational and advertising support provided by PG&E and financial support provided by participating manufacturers.

7.3.2 SDG&E Program Penetration Discussion

As discussed in Chapter 3, SDG&E first began distributing CFLs to its customers and employees free-of-charge in 1990 through several mechanisms (i.e., in-home energy audits, field offices, other direct install programs). Nearly 225,000 CFLs were distributed through these channels between 1990 and 1992.

In 1992, SDG&E solicited bids from CFL product manufacturers in preparation for its retail program launch. Jointly, Lights of America and SDG&E initiated the retail "buy-down" program in pilot form toward the end of 1992. This pilot program provided useful insight into retail market processes, and a total of 5,000 CFLs were sold through this pilot effort in four weeks.

In 1993, SDG&E's retail program moved forward and served as the primary channel for program delivery through 1997. SDG&E continued to distribute CFLs through its field personnel and other programs as well, although these were considered secondary channels.

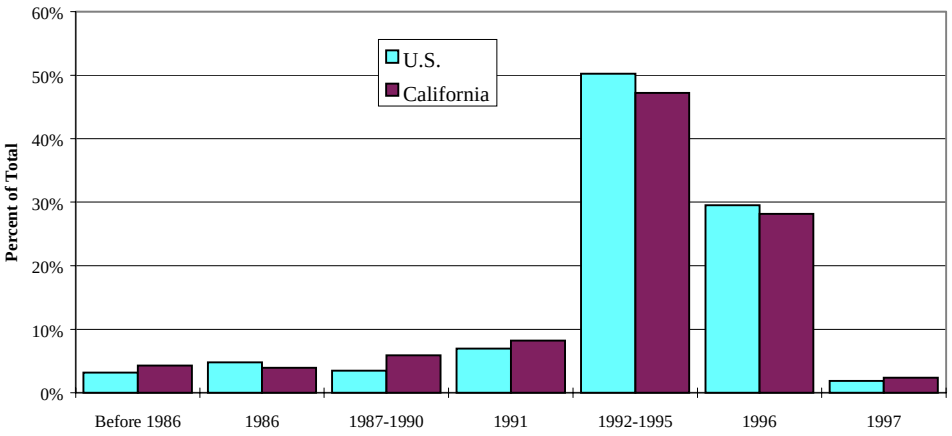
During 1990-1997, nearly 1.6 million CFLs were sold or distributed to SDG&E customers through these programs. Over this period, overall market penetration rates for CFLs have steadily increased in SDG&E's service territory – from 13% in 1991 to 30% in 1997 (see Table 7-2). Based on our survey results, approximately 1.5 million CFLs are currently in-use in SDG&E's service territory which is less than the total number of CFLs sold and distributed through SDG&E's programs since 1990.

In 1993, the first year of SDG&E's full-scale retail pilot, about 9% of the CFLs sold through the program were taken out of SDG&E's service area. Also, in 1993, 7-8% of the CFLs sold through the program were purchased or installed by commercial and industrial customers. This may account for some of the "missing" bulbs in our research.

7.4 PURCHASE RATES OVER TIME

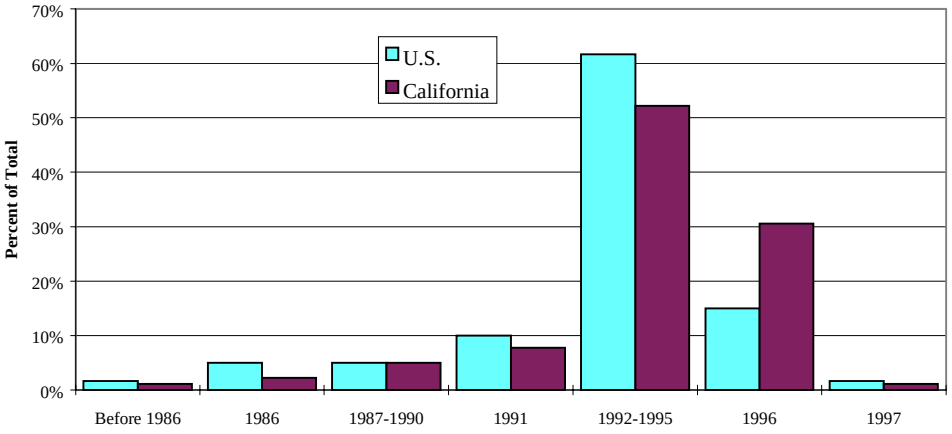
Our CFL purchaser survey was designed to determine how long ago customers began acquiring CFLs. As appropriate, respondents were asked how long ago they first purchased a CFL and how long ago they were first given a CFL (for free) through a utility program. As shown below in Figure 7-2 and Figure 7-3, the majority of households acquired their first CFL within the past five years. That is, the majority of both California and U.S. households acquired their first CFL (i.e., either purchased or received "free" through a utility program) between 1992 and 1997. However, PG&E and SDG&E households were more likely than other U.S. households to have received their first free CFL in the past two years.

Figure 7-2. Year First CFL Purchased



Source: Customer survey

Figure 7-3. When Received First Free CFL



Source: Customer survey

These data also show that PG&E households were more likely than other households to have acquired CFLs prior to 1992. For example, 25% of PG&E households purchased their first CFL before 1992, as compared to 20.0% of SDG&E households and 18.4% of U.S. households. Similarly, 29.8% of PG&E households received their first "free" CFL (i.e., through a utility program) prior to 1992, as compared to 21.7% of U.S. households and 11.3% of SDG&E households. These findings are consistent with PG&E's program history – the utility has provided direct CFL sales and distribution programs for many years, whereas SDG&E and (presumably) other utilities were not as active in this market prior to 1992.

7.5 1996 PURCHASE RATES

In addition, our CFL purchaser survey was designed to determine the rate of CFL purchases in 1996. The survey results show that:

- 9.5% of California households purchased at least one CFL in 1996, the average number of CFLs purchased by households purchasing at least one was 3.01, and the average number of CFLs purchased across all California households was 0.27.
    - 7.8% of PG&E households purchased at least one CFL in 1996. The average number of CFLs purchased by these households was 2.99. The average number of CFLs purchased across all PG&E households was 0.23.
    - 11.6% of SDG&E households purchased at least one CFL in 1996. The average number of CFLs purchased by these households was 3.03. The average number of CFLs purchased across all SDG&E households was 0.32
- 5.9% of the U.S. households purchased at least one CFL in 1996 (this difference from California is statistically significant at the 95% level). The average number of CFLs purchased by these households was 3.28 (no statistically-significant difference). The average number of CFLs purchased across all U.S. households was 0.18.

7.6 CFL MARKET SHARE

A total of 3,707 respondents to the customer survey answered questions regarding the total number of lightbulbs (of any kind) purchased for their household in 1996. On average, each of these respondents purchased approximately 14 bulbs for a total of 50,478 bulb purchases in 1996. Of these, 867 or 1.7% were CFLs (Table 7-3).

In California, 2.4% of the bulbs purchased were CFLs, as compared to 1.2% in the rest of the country. When comparisons by utility are made, it appears that SDG&E's customers have higher

purchasing rates (3.0%), and PG&E's customers have purchased less than the average U.S. household (0.7%).

Table 7-3. CFL Purchases as Percent of Total 1996 Bulb Purchases

	Total Bulb Purchases in 1996 (In the Sample)	Total CFL Purchases in 1996 (In the Sample)	1996 CFL Market Share
California	21,249	506	2.4%
SDG&E	9,393	285	3.0%
PG&E	11,856	221	0.7%
U.S.	29,229	361	1.2%
Total	50,478	867	1.7%

Source: Customer survey

7.7 SPILLOVER ANALYSIS

We completed an analysis of the overall effects observed in 1996 in the targeted California CFL markets when compared to changes in other U.S. markets. There were five analysis steps associated with this comparison:

1. Calculate the **total number of CFLs** purchased in 1996 in the target area (including those purchased and distributed through utility programs and those purchased outside of utility programs).

2. Determine the extent of **naturally occurring conservation** (bulbs purchased) in 1996 in the target area.

3. Calculate **net number of CFLs purchased** in 1996 in the target area by subtracting naturally occurring conservation (Step 2) from total target area purchases (Step 1).

4. Determine the **number of CFLs distributed through utility programs**.

5. Disaggregate total purchases to quantify the level of **"true program purchases"**, **"free rider purchases"** and **"spillover purchases."**

Each of these steps and the associated calculation results are presented in the following sections.

7.7.1 Step 1: Calculate Total CFL Purchases in Target Area

As described earlier, this study implemented a random-digit dial phone survey to determined the purchase rate for CFLs in the SDG&E and PG&E territories and in the rest of the country (as a control group). We asked people if they are aware of and have ever purchased or received a CFL and how many CFLs they purchased in 1996. We calculated the number of CFLs purchased per household by dividing the number of CFLs purchased by the respondents by the total number of households surveyed. These purchase rates were presented above in Section 7.5 as follows: 0.32 for SDG&E, 0.23 for PG&E, and 0.27 for both SDG&E and PG&E.

To calculate the total number of CFLs purchased in the target area in 1996 we multiplied the number of CFLs purchased per household by the number of households in the target area. In both territories, nearly 1.4 million CFLs were purchased in 1996.

7.7.2 Step 2: Calculate Total CFL Purchases "Naturally Occurring" in Target Area

The comparison area (which was the entire country minus California) provides us with an estimate of the level of naturally occurring conservation in California. Using the same method discussed above, we calculated the average per-household number of CFLs purchased in 1996 in the comparison area. (As stated above in Section 7.5, this amounts 0.18.) We then multiplied this average by the total number of households in the target area to get an estimate of the level of naturally occurring conservation in California. Approximately 1 million CFLs represent the level of naturally occurring conservation in the target area in 1996.

7.7.3 Step 3: Calculate Net CFL Purchases in 1996 in the Target Area

Subtracting naturally occurring conservation (Step 2 results) from total CFL purchases in the target areas (Step 1 results) gives us the total "net" number of CFLs purchased in 1996 in the target area – or nearly 473,000 CFLs.

7.7.4 Step 4: Determine Quantity of CFLs Distributed Through Utility Programs in 1996

SDG&E distributed nearly 410,000 CFLs through its programs in 1996. PG&E did not offer a CFL program under the Residential Appliance Efficiency Incentives Program and so no CFLs were included for PG&E in this analysis.

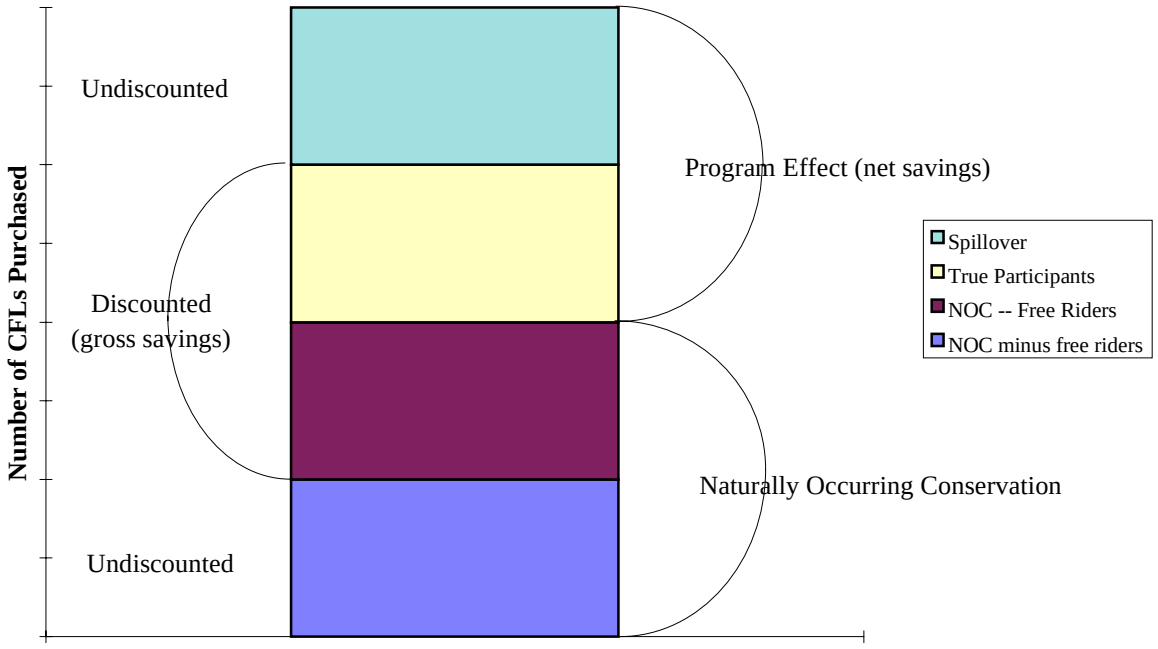
Step 5: Disaggregation of Total CFL Purchases in 1996 in Target Area

Total purchases of CFLs in 1996 in the target areas is composed of four components:

1. CFLs purchased by "true utility program participants"
2. CFLs purchased by utility program "free riders"
3. CFLs purchased as a result of "spillover"
4. Naturally occurring conservation

Figure 7-4 shows these components divided into equal parts. We will present another version of this graph below with the actual results.

Figure 7-4. Components of Total Savings - Theory



(Components divided into equal parts for illustration only.)

In this graph, the entire bar represents the total savings from CFLs purchased in the target area in 1996 and is comprised of two main pieces: 1) total program effects and 2) naturally occurring conservation. As we discussed above (Step 3), total program effects ("net" CFL purchases) are calculated by subtracting naturally occurring conservation (Step 2) from total CFL purchases in

the target area (Step 1). The "Program Effect" semicircle in the graph is comprised of savings from true participant purchases and spillover purchases.[2]

Naturally occurring conservation (the "Naturally Occurring Conservation" semicircle in the graph and calculated in Step 2) is composed of CFLs purchased by free riders and undiscounted naturally occurring conservation (i.e., purchases of CFLs that were not affected by the program and were not discounted).

To further disaggregate total savings and allow us to calculate spillover, additional calculations were applied to the program effect semicircle and the naturally occurring conservation semicircle. For this study, we estimated the free rider component using a self-report survey. The free ridership rate allows us to fix the lower bound of the discounted semicircle, which allows us to calculate the amount of spillover. The math for this calculation is as follows:

1. Total CFLs distributed through utility programs (Step 4) - free riders = true participants
2. Total "net" CFL purchases (Step 3) - true participants = spillover

To measure the free-ridership rate, we implemented a separate survey of participants in SDG&E's 1996 CFL programs[3]. The free ridership rate found to be 14.27%. Multiplying this free ridership rate by the total number of CFLs distributed through utility programs produces 58,504 CFLs purchased by free riders. Subtracting these free rider CFLs from the total distributed through utility programs yields 351,475 CFLs purchased by "true participants" (or purchases that were the result of the program's direct influence – the discounted price).

Subtracting the true participant CFL purchases (351,475) from the total "net" CFL purchases in the target area (Step 3 result, 472,669) results in "spillover CFL purchases" (121,194). These spillover CFL purchases result in energy savings benefits in the target area that have been realized (a) outside of the direct influence of the utility programs (i.e., undiscounted bulb purchases), and (b) over and above what naturally occurred in the market.

The results of these calculations are expressed graphically in Figure 7-5 and in more detail in Table 7-4.

[2] Spillover includes program-created spillover and purchases caused by non-program-related events that were unique to California. To simplify the discussion, we will refer to both together as "spillover".

[3] For more detail on the calculation of free ridership, see *Residential Appliance Efficiency Incentives Program: High Efficiency Lighting; 1996 First Year Statewide Load Impact Study; Net-To-Gross Analysis.* Prepared for San Diego Gas & Electric and Pacific Gas & Electric by Hagler Bailly. February 1998. SDG&E Study ID #: 983.

Figure 7-5. Components of Total Savings

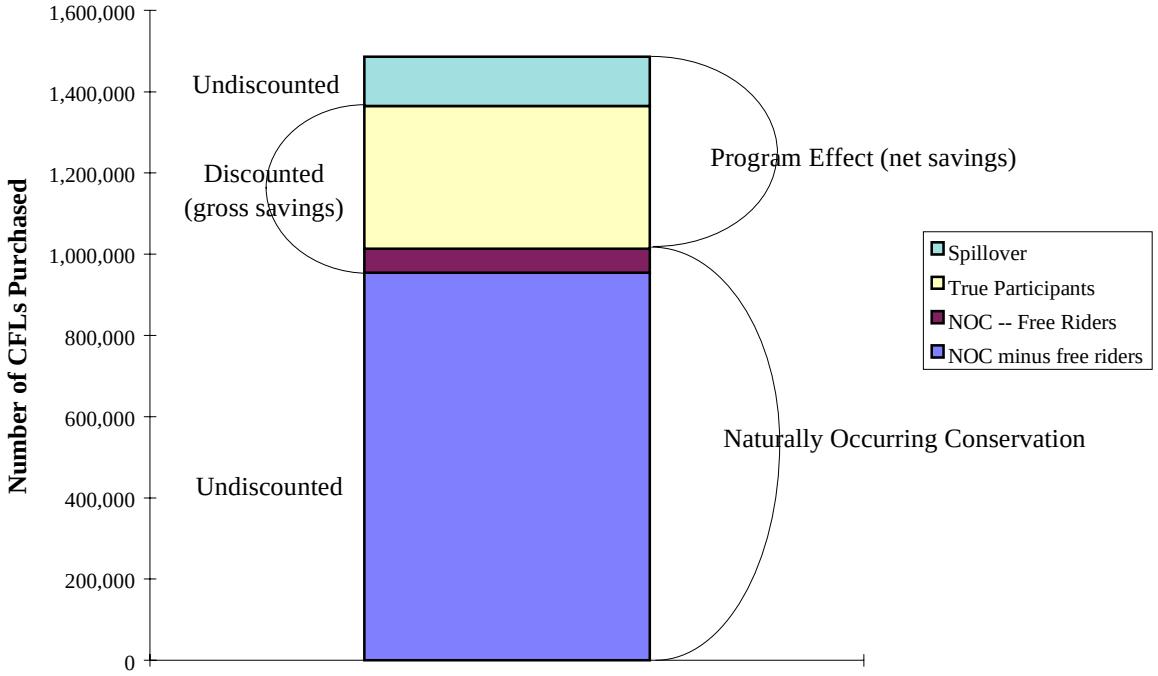


Table 7-4. CFL Spillover Calculation Results

Analysis Step:	Description of Calculation:	Calculation Result:
1	Number of CFLs purchased per household in target area	0.2700
	Households in target area	5,502,918
	Number of CFLs purchased in target area	1,485,644
2	Number of CFLs purchased per household in comparison area	0.1841
	Naturally occurring conservation	1,012,975
3	Net CFLs purchased in 1996	472,669
4	Number of CFLs distributed to customers through utility programs	409,979
5	Free ridership rate	0.1427
	Free rider CFLs distributed through programs	58,504
	CFLs distributed through programs (from true participants, excluding free riders)	351,475
	Spillover CFLs	121,194

7.8 SUMMARY

Our survey data show substantially higher penetration rates for CFLs in California compared to the rest of the country. However, only one-quarter of all California households have a CFL.

The data also show substantially higher purchase rates in 1996 in California compared to the rest of the country. The survey data show what appears to be substantial increases in CFL purchases in 1996 in both SDG&E and PG&E territories compared to the penetration rates from previous years. Extrapolating backwards to calculate saturation rates (subtracting the number purchased in 1996 from the 1996 saturation rate) produces results which conflict with some previous estimates.

CFLs command a higher market share in California than in the rest of the country, yet their saturation is still quite low. CFLs account for 2.4% of all light bulbs purchased in California compared to 1.2% in the rest of the country.

Finally, our results suggest considerable spillover has occurred in the target market in 1996.

CHAPTER 8
CONCLUSIONS

We examined a wealth of data from many different sources to look for evidence that programs offered by PG&E and SDG&E have created lasting market effects in the CFL and refrigerator market. As one would expect with this multifaceted or triangulation approach, some of the evidence points to strong conclusions, some contradicts other evidence, and some evidence was too weak to support conclusions. Our intent was to organize and present the evidence so that the reader could see that, even with its limitations, the evidence is consistent enough to allow us to feel confident about our conclusions.

This kind of approach to measuring the impacts of utility programs is, by its very nature, more complex and difficult to follow than many of the approaches that have been used in the past. However, we attempted to keep the effort focused on the most important aspects of the market so that we would not obscure significant changes in the market because we were lost in a sea of relatively insignificant data.

In the process of implementing this project, we developed conclusions not only on the market effects (including changes in market share), but also on the benefits and drawbacks of this method of measuring the impact of utility programs.

In the following sections we present our conclusions regarding refrigerator market effects and market share, CFL market effects and market share, and finally, the process of measuring market effects from utility programs.

8.1 REFRIGERATOR MARKET

8.1.1 Refrigerator Market Effects

There appear to be at least two critical barriers that face the current market for energy efficient refrigerators: (1) lack of awareness and knowledge of refrigerator energy efficiency issues (although some progress has been made on this barrier in California), and (2) the relatively low value customers place on saving energy relative to other issues including refrigerator features and saving money up-front when paying for a refrigerator.

It appears that progress has been made on the first barrier in California. There seems to be sufficient evidence to conclude that people in the target territories in California are more aware of, interested in, and knowledgeable about refrigerator energy efficiency issues than those in the

rest of the country. However, customers in California and in particular the rest of the country continue to have over-optimistic perceptions regarding the *actual* energy efficiency of the refrigerators they have purchased. Our study concluded that, while this trend has declined over time, customers are likely to indicate during an interview that they believe the refrigerator they purchased is more efficient than it actually is. Despite these technical misperceptions, other indicators of awareness, interest and knowledge have improved over time in California more significantly than the rest of the country.

The second barrier also remains a significant issue both in California and in the rest of the country. While people say they consider energy efficiency when deciding on a refrigerator, their actions indicate that they are much more likely to be swayed by the up-front price differential and the availability of specific features than by operating costs and potential future savings. The importance customers say they place on refrigerator energy consumption or energy efficiency has increased over time and currently ranks third, below size and price in both California and the rest of the country. Nevertheless, we find that ultimately, when faced with a refrigerator purchase decision, these other factors do in fact "out-rank" the importance of energy consumption and energy efficiency.

In neither California nor the U.S. are the following significant barriers at this time:

- Retailers seem knowledgeable about energy efficiency issues and claim to discuss energy with their customers. On the other hand, only half of the customers said that retailers discussed energy efficiency with them. They also felt that the salesperson did not have much influence on their decision.

- Technical issues (such as the quality of energy efficient refrigerators) do not seem to be a problem for retailer and manufacturers.

- Although there are fewer energy efficient models than standard models, retailers can deliver energy efficient refrigerators in approximately the same time frame as standard refrigerators.

- Although manufacturers have requirements and suggested stocking patterns for retailers, these do not limit the availability of energy efficient refrigerators.

We found some evidence that availability is no longer a barrier and some that it remains a problem:

- Clearly, greater numbers of energy efficient refrigerators have been introduced in the market over time. Due to changes in federal standards, utility program influences, and support from manufacturers and retailers, the number of high efficiency models available to consumers in 1997 has increased dramatically in the past ten years.

- Customers told us that they believe that high efficiency refrigerators are available to them. However, we found that in many cases, they may have based their opinions on a low standard of "efficiency".

- Moreover, while some high efficiency models are displayed in virtually all major retail outlets and are available in a timely manner, it still appears that customers may in fact have little choice in efficiency when they have narrowed down their choices to models with exactly the features they want in the price range they can afford. This lack of choice represents one of the most significant availability barriers remaining.

We found no change in the following barriers:

- The price of electricity and the price of refrigerators have remained relatively unchanged over the years, after adjusting for inflation. Together these factors provide a weak price signal to customers.

- The incremental cost of refrigerators more efficient than the standard remains a barrier. While the evidence is not conclusive, we believe that it points to this conclusion.

- Manufacturers and retailers believe that demand for energy efficient refrigerators, except for that created by utility rebate programs, has not changed and remains low.

- The changes manufacturers have made to their products or production practices to produce energy efficient refrigerators can be relatively easily reversed – they can halt production of energy efficient refrigerators easily and at little cost.

8.1.2 Refrigerator Market Share

Utility program participation has declined over the years although the average efficiency of refrigerators sold through these programs and their savings relative to federal standards has steadily increased.

The efficiencies of refrigerators bought in California in 1986 were not significantly different from those bought in the rest of the country. However, by 1991, the average refrigerator purchased in California was 10.2% more efficient than the then current (1990) federal standards. This level of savings was significantly higher than the 5.7% found in the rest of the country (Table 8-1). During that year the average refrigerator rebated through SDG&E and PG&E programs was 14.8% more efficient than the standards. By 1996, the gap between the average refrigerator purchased in California and in the rest of the country had increased even more. California refrigerators purchased in 1996 were 12.8% more efficient than the now current federal standards (saving 108.5 kWh per year on average) compared to 6.9% for the rest of the country (saving 58.8 kWh/year). During 1996, the average refrigerator rebated through SDG&E and PG&E programs was 23.3% more efficient than the 1993 federal standards (saving 200.1

kWh/year). The differences in savings between California purchases and the rest of the country were statistically significant at the 95% level in 1996 and at the 85% level in 1991.

Table 8-1. Average Refrigerator Savings Compared to Federal Standards

	1991 % over Standard	1996 % over Standard	1996 kWh per year
Rebated Utility Sales	14.8%	23.3%	200.1
California Purchases	10.2%	12.8%	108.5
U.S. Purchases	5.7%	6.9%	58.8

Note: 1991 savings compared to 1990 federal standards and 1996 to 1993 standards
Source: Customer surveys and program documents

8.1.3 Spillover Estimates

The SDG&E and PG&E refrigerator programs helped create almost 12 GWh of electricity savings in 1996 and created 8.5 GWh of spillover savings (Table 8-2).

Table 8-2. Net Savings Analysis Results

Component	Result
Net yearly savings	20,483,244 kWh
Composed of:	
Spillover Savings	8,506,414 kWh
True Participant Savings	11,976,830 kWh

Source: *Residential Appliance Efficiency Incentives Program: High Efficiency Refrigeration; 1996 First Year Statewide Load Impact Study; Net-To-Gross Analysis.* Prepared for San Diego Gas & Electric and Pacific Gas & Electric by Hagler Bailly. February 1998. SDG&E Study ID #: 980. PG&E Study ID #: 373-2.

8.1.4 Conclusion

The evidence we have just outlined leads us to conclude that California has achieved some significant changes in its current market for energy efficient refrigerators but we would expect to see that market deteriorate if rebates are eliminated. Had there not been significant drivers influencing market forces (i.e., more stringent federal standards, statewide utility promotional efforts, national manufacturer and retailer promotional efforts), we would not have seen the higher market share that is evident in California.

In the future, federal standards will again increase the efficiency levels of refrigerators in California and the rest of the country. Absent utility efforts, we can probably expect that retailers and manufacturers will provide some level of promotion of energy efficient refrigerators. However, until the new standards take effect, there will continue to be only a small market for energy efficient refrigerators in California and the rest of the country among people who are particularly interested in saving energy but for the vast majority, refrigerator features and the initial cost will continue to govern their purchase decisions and unless rebates reduce or eliminate the cost differential, it appears that their purchase decisions will favor standard efficiency refrigerators.

It is possible that utilities could continue to influence the market to maintain or extend its current efficiency level without resorting to rebates. For example, they could reach agreements with retailers or manufacturers to participate in promotion and education efforts in exchange for agreements to keep the cost of energy efficient refrigerators close to their standard efficiency competitors. However our research cannot predict the outcome of such efforts.

8.2 CFL MARKET

8.2.1 CFL Market Effects

Overall, many of the barriers facing the market for CFLs still remain. Some have been affected more significantly than others over the years. The majority of the evidence leads us to conclude that these market effects are the direct result of utility intervention in the market for CFLs.

Availability. Over the years, much effort has been taken to increase the availability of CFLs in the consumer market. Some of the more targeted efforts appear to have been the most successful in reducing the availability barrier. For example, several of the utilities' programs were focused on specific product lines or manufacturers, others were delivered through specific retail channels, and yet others were made available only in specific socioeconomic segments (i.e., those likely to purchase CFLs). Our study has shown that Californians who are aware of CFLs know where to buy them, regularly buy lightbulbs at these locations and (often) do not have to go out of their way to buy lightbulbs at these locations.

Utilities have been successful in leveraging their influence with manufacturers to encourage them to provide higher quality products in expanded size and style configurations. Customers still have some concerns about compatibility with existing fixtures (fit) and quality (reliability, noise, quality of the light) but these may be more a function of education than of availability – they may be reacting more to past problems than to current issues (although this study did not thoroughly examine the evidence for improvements in the technology). These technical improvements have probably had a real, yet difficult to quantify, effect on the transformation of the current CFL

market and may have influenced the longer-term market by increasing the likelihood of customer acceptance well into the future.

On the other hand, there remains a segment of the population who are unaware of the technology and/or do not shop for lighting products where CFLs are regularly sold. It is possible that some of these consumers have not been affected by utility efforts. Increased efforts to educate and financially stimulate these customers and to ensure that CFLs are available where they shop for lighting products (e.g., grocery stores) might be successful. Additional research is required to determine how serious this barrier is. (e.g., What percent of all bulbs are purchased in stores where CFLs are available? Do people who do not know what CFLs are only shop for lightbulbs at grocery stores and as a result are not exposed to CFLs?)

Price. The high cost of CFLs remains the key barrier in both California and the rest of the country. While Californians are somewhat less sensitive to the cost of bulbs than other US consumers, first cost issues still remain as significant barriers. Over the years, utility programs have been designed – among other things – to reduce the price of CFLs. In fact, nearly every program that the utilities have offered to-date included some type of price incentive (e.g., direct installs/give-aways, discounted retail prices, coupons/rebates). While each program was delivered somewhat differently and with varying levels of success, it seems apparent that these price incentives have had a significant influence on the current market through the temporary reduction or elimination of the first cost barrier. However, the extent to which these programs have produced any lasting change in the price barrier is uncertain. If consumer demand is sustained through the efforts of utilities and other market actors, it is possible that the unrebated price for these products will come down. While prices may never come down far enough to overcome the first cost barrier completely, lower prices combined with reductions in other important barriers may cause consumers to look more closely at other important benefits of CFLs despite their higher price.

Awareness and Knowledge. Our study has shown that Californians are more aware of CFLs than the rest of the country and we believe that most of the credit for that belongs to utilities. In addition to ensuring product availability and providing price signals that catch the customers' eye, California utilities have provided their customers and retailers with information regarding the benefits of CFLs and appropriate applications for CFLs to address brightness and quality of light issues. These efforts have proven successful based on our survey results – in addition to outpacing the rest of the country in terms of purchase rates and market share, California leads other U.S. markets in terms of consumer awareness of CFL products and benefits. Clearly, there is still significant room for improvement in overcoming awareness and knowledge barriers. However, the CFL message has been successful in reaching the targeted California markets beyond that achieved in other markets.

Whether or not these observed differences in customer awareness and knowledge are long-lasting depends on what level of effort is expended to maintain (and expand) awareness, knowledge and purchase/use in the future. That is, the current level of customer awareness and "knowledge" (as

measured through awareness of advantages and concerns) might be sustainable if the benefits and value of CFL over incandescent alternatives continue to be communicated and promoted to the purchasing market. In addition, messages to the purchasing market will be most effective if reinforced at the point-of-purchase when factors such as price and bulb wattage tend to be "top of the mind" for most customers.

Therefore, the long-term nature of observed market changes is dependent on the effectiveness of the overall messages that are communicated to customers in the future – both prior to and in anticipation of future lighting purchase decisions, and "on-the-spot" while they are shopping for new/replacement lighting products. As utility efforts are shifted, reduced and/or eliminated, additional research will be required to assess the long-term nature of the observed changes in the current California market with respect to awareness and purchase/use patterns.

8.2.2 CFL Market Share

There is clear evidence that California markets have outpaced the rest of the country in terms of the rate of purchase for CFLs and indicators of market share. However, there is significant room for improvement in both of these indicators of market change. For example, our study shows substantially higher penetration rates for CFLs in California in 1996 compared to the rest of the country – 25% of California households have at least one CFL compared to 16% in the US. In addition, we found that CFLs command a higher market share in California than in the rest of the country – 2% of all lightbulbs purchased by California households are CFLs compared to 1% in the US.

There is evidence that purchase rates for CFLs have substantially increased over prior years. For example, in 1994, approximately 30% of PG&E's households had at least one CFL. In 1997, this rate of penetration decreased to 21%. However, the average number of CFLs used per household increased substantially during 1994-1997 such that 3.3 million CFLs are currently being used by PG&E households as compared to the 3.1 million CFLs in-use three years ago. A similar trend appears in SDG&E's territory: in 1994, SDG&E households were using nearly 600,000 bulbs and in 1997 approximately 1.5 million bulbs are in-use.

Since each utility offered fairly different programs over different time periods, we examined purchase rates and overall market share separately for each market:

PG&E. Between 1991 and 1993, PG&E implemented fairly large-scale direct installation programs and a manufacturer's cost credit program. By the end of 1993, nearly 1.1 million CFLs had been distributed or sold through PG&E's programs (representing 85% of total program activity since 1989). PG&E cut back its CFL program in 1993 such that only limited direct installations took place in 1994 and 1995. In 1996 and 1997, PG&E launched its consumer education campaign and began providing advertising and promotional support to a select group of CFL manufacturers who offered incentives toward the retail purchase of CFLs.

Our survey results indicate that in 1996 – two full years after PG&E discontinued its large-scale direct sales and distribution programs – over one million CFLs were purchased by PG&E households. This amount is virtually as great as the total number of bulbs distributed or sold through PG&E's programs during a three year, intensive effort. Our study concludes, therefore, that the 1996 sales estimate of over one million CFLs is (a) the indirect result of spillover from prior year program efforts, and/or (b) the direct result of the educational and advertising support provided by PG&E and the financial support provided by participating manufacturers.

SDG&E. During 1990-1997, nearly 1.6 million CFLs were sold or distributed through SDG&E's programs – mainly through retail channels with secondary distribution through other programs. Over this period, overall market penetration rates for CFLs steadily increased in SDG&E's service territory from 13% in 1991 to 30% in 1997. Based on our survey results, approximately 1.5 million CFLs are currently in-use in SDG&E's service territory, which is less than the total number of CFLs sold or distributed through SDG&E's programs since 1990. SDG&E research has shown that a fair portion of CFLs sold and distributed through its programs have not remained in the territory or been installed in residential dwellings. This may account for some of the "missing" CFLs in our research.

8.3 CONCLUSIONS ABOUT THE PROCESS

Collecting market effects data while also collecting market share data proved to be efficient and effective. We still believe that, at least for these two technologies, estimating market share by using data collected from customers is more likely to produce reliable estimates than trying to collect sales data from retailers or manufacturers. The method we used for collecting historical data on refrigerator efficiency and the refrigerator buying process worked quite well. Collecting refrigerator model numbers is a difficult survey task requiring well-trained and persistent survey staff.[1] However we believe that it is actually easier and produces more reliable results than trying to collect enough sales data from retailers or manufacturers to be able to accurately measure changes in market share.

That said, we should offer some caveats. Future efforts of this kind should not underestimate the expense and difficulty in getting customers to find and accurately give interviewers their model numbers. It is also not a simple process to match the model numbers to industry data. Small changes in model numbers can indicate such simple things as different colors or they can indicate major design differences.

While collecting model numbers works for refrigerators, the same method would not work for CFLs. We were able to analyze historical trends for CFL sales and penetration rates by using

[1] Collecting model numbers on refrigerators is probably easier than it would be for many other large household appliances.

utility program documents. Consistent data gathering through time would make similar analyses more persuasive in the future. Since check-out lane scanners are becoming so pervasive, collecting CFL sales data from scanner databases could be an accurate method of calculating market share, but the costs of purchasing the data may be prohibitive.

We believe that our method of collecting historical data was cost-effective and produced valuable and accurate information. However, such backwards-looking analyses will produce less precise answers than could be produced from data collected with a consistent methodology over time. While it is difficult to anticipate future research needs and find resources for data collection for future analyses, there are some steps that can be taken to improve the likelihood of collecting relevant data. When designing new programs or re-examining existing ones, systems for long-term data collection should be considered. Such systems need not be complex. They should be developed by first identifying the key barriers to market success, then defining a small number of indicators that can be easily tracked over time to measure changes in the barriers, and finally by designing methods for collecting data on the indicators.

RESIDENTIAL MARKET EFFECTS STUDY
REFRIGERATORS AND
COMPACT FLUORESCENT LIGHTS

Appendices
Final Report

SDG&E Study ID #: 3902
PG&E Study ID #: 3302

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APPENDIX A
METHODS

This Appendix presents an overview of the methods used to gather and analyze the data on market effects of the SDG&E and PG&E programs. The research and analysis was organized in seven tasks:

Task 1: Finalize Detailed Research Plan
Task 2: Trade Ally Data Collection and Analysis
Task 3: Customer Data Collection and Analysis
Task 4: Utility and Other Data Collection and Analysis
Task 5: Data Analysis
Task 6: Net-To-Gross Analysis
Task 7: Documentation of the Results

Survey completion rates are presented in the relevant sections and an examination of the demographics of the respondents to the customer survey is presented at the end of the discussion of the customer survey.

A.1 TASK 1: FINALIZE DETAILED RESEARCH PLAN

Hagler Bailly staff met with key personnel from SDG&E, PG&E, the CADMAC subcommittee for a project initiation meeting on June 6, 1997. During the meeting, the team discussed and clarified research objectives, sampling plans and options, the need for a comparison area, the net-to-gross analysis methodology, among other things. Following the meeting, Hagler Bailly finalized the research plan.

A.2 TASK 2: TRADE ALLY DATA COLLECTION AND ANALYSIS

Hagler Bailly collected trade ally data from three sources: manufacturers, retailers, and companies involved in designing and building new residences (builders, architects, and designers).

A.2.1 Subtask 2.1: Manufacturer Surveys

Hagler Bailly interviewed by phone the most important refrigerator manufacturers to gather data that address the barriers of product unavailability, organizational practices, inseparability of product features, and product performance uncertainty. The interviews included discussions of the manufacturers' opinions on the impact of the utility programs on their own research, product line changes, and future plans. Representatives from Whirlpool and General Electric were interviewed. Together they account for almost two-thirds of all refrigerators sold in the United States.

A.2.2 Subtask 2.2: Retailer Surveys

Hagler Bailly implemented a phone survey of CFL and refrigerator retailers. The survey addressed the barriers of product unavailability, hassle cost, information cost, organizational practices, and product performance uncertainty. The retailer survey characterized the markets, examined the most important barriers affecting these markets, and assessed the impact of utilities' programs on the market.

Approaches that use specific states or regions for comparison areas often suffer because the comparison areas turn out to be poor matches, either because they have been influenced by related programs or because significant differences exist between them and the target area in terms of population or energy usage. As a result, the project team decided to use the entire country (minus California) as the comparison area. The national trade ally surveys were issued to a random selection of relevant stores from throughout the country.

Hagler Bailly completed interviews with 112 refrigerator retailers 58 CFL retailers (Table A-1).

Table A-1. Trade Ally Surveys

	SDG&E	PG&E	National	Total
Refrigerator Retailers	16	46	50	112
CFL Retailers	14	15	29	58

In addition to the random survey within California and the country as a whole, Hagler Bailly staff completed open-ended interviews with staff at the national headquarters for Sears and Circuit City to investigate trends on the national level.

Table A-2. CFL Retailer Response Rate

	California	National	Total
Starting Sample	441	443	884
No phone number [a]	24	42	66
Ineligible Supplier [b]	5	22	27
Ineligible [c]	220	173	393
Adjusted sample	192	206	398
Language Barrier	5	6	11
Refused	11	7	18
R away for duration	1	0	0
R incapable	0	0	0
Unable to contact after at least 6 attempts	138	49	187
Completed surveys	29	29	58
Response rate [d]	15.1%	14.1%	14.57%
Willing to complete survey [e]	72.5%	80.6%	76.3%

a No phone number
b Ineligible supplier: businesses that did not sell CFL's or lighting fixtures
c Ineligible includes business that do not sell CFL's
d Computed as (completed surveys/adjusted sample)
e Computed as (completed surveys/(completed surveys + Refused))

Table A-3. Refrigerator Retailer Response Rate

	California	National	Total
Starting Sample	273	1,227	1,500
No phone number [a]	14	74	88
Ineligible Quantity[b]	12	63	75
Ineligible Supplier [c]	6	8	14
Ineligible [d]	30	896	926
Adjusted sample	223	249	472
Language Barrier	0	3	3
Refused	25	57	82
R away for duration	2	1	0
R incapable	0	0	0
Unable to contact after at least 7 attempts	109	32	141
Completed surveys	62	48	110
Response rate [e]	27.8%	19.3%	23.31%
Willing to complete survey [f]	71.3%	45.7%	57.3%

a No phone number
b Ineligible Quantity: businesses that sold <200 refrigerators
c Ineligible supplier: businesses that did not sell refrigerators in 1996
d Ineligible includes business that do not sell refrigerators
e Computed as (completed surveys/adjusted sample)
f Computed as (completed surveys/(completed surveys + Refused))

A.2.3 Subtask 2.3: Builder, Architect, Designer Surveys

Hagler Bailly conducted a small phone survey with two key companies in the residential new construction market. This survey gathered data that addressed the barriers of product unavailability, hassle cost, information cost, organizational practices, and product performance uncertainty. The builder and designer survey gathered data that helped characterize and describe the markets for refrigerators and CFLs and understand the most important barriers affecting these markets. Hagler Bailly staff concentrated on those who had the broadest knowledge of the market or were the most active and completed phone interviews with the following types of individuals:

A.3 TASK 3: CUSTOMER DATA COLLECTION AND ANALYSIS

Hagler Bailly implemented a survey of customers to address two distinct needs: to (1) calculate a reliable indicator of the market share of efficient refrigerators and CFLs, and (2) measure indicators of market effects that provide evidence of changes in the barriers to adopting efficient refrigerators and CFLs.

Hagler Bailly implemented a random-digit dialing (RDD) phone survey of residential households in SDG&E and PG&E service territories and in the country as a whole for the comparison area.

A single, multi-part survey with extensive screening questions was used to gather data from the following groups of people:

1. People who bought CFLs in 1996
2. People who are familiar with CFLs but have never bought them.
3. People who bought new refrigerators in 1996
4. People who bought new refrigerators in 1991 (5 years ago)
5. People who bought new refrigerators in 1986 (10 years ago)

The screener portion of the survey included questions regarding purchase rates for refrigerators and CFLs and a limited set of demographic questions. People falling in one of the categories listed above were asked additional questions to examine the purchasing experience, knowledge, and attitudes.

In the CFL portion of the survey, we asked people if they are aware of and have ever purchased or received a CFL. For those who purchased CFLs in 1996, we asked questions about where they purchased their CFL, how they reached their purchase decision, where they got their information, and what factors they considered in making their decision. For those who are familiar with CFLs but have never bought them, we asked where they buy incandescent bulbs, where they got their information on CFLs, and why they have not bought CFLs. For all respondents, including those who do not know what CFLs are, we asked what factors they consider when buying a lightbulb.

In the refrigerator portion of the survey, we asked similar questions about the purchase process and information sources. In addition, we asked the refrigerator purchasers to locate and read over the phone the brand name and model information from their refrigerators. By matching that data with data from the Association of Home Appliance Manufacturers (AHAM) we assigned the exact size, type, efficiency, and electricity use per year to each refrigerator. Using formulas established by the federal standards that refer to size and type of refrigerator, we calculated for each refrigerator the electricity it would have consumed if it were only as efficient as the federal standards in force in the year it was purchased. Comparing numbers from these calculations gives an estimate of the amount of electricity a given refrigerator saves compared to the relevant federal standard. With this method we were able to analyze historical efficiency information on refrigerators bought in 1996, 5 years ago, and 10 years ago.

Hagler Bailly completed 244 CFL market effects surveys with 1996 CFL purchasers and 150 with nonpurchasers (who were aware of CFLs), 717 refrigerator market effects surveys, and gathered 460 valid serial numbers on refrigerators (Table A-4).

Table A-4. Customer Surveys

	SDG&E	PG&E	National	Total
Total Screening Surveys	897	1,022	2,011	3,930
CFL Surveys				
1996 CFL Purchasers	117	91	129	337
CFL Non-Purchasers	34	42	74	150
Completed Refrigerator Surveys†				
1996	49	77	147	273
1991	59	59	122	240
1986	55	54	95	204
Total	163	190	364	717
Valid Refrigerator Model Numbers ‡				
1996	42	60	117	219
1991	49	40	77	166
1986	21	28	42	91
Total	112	128	236	476

† Fully completed surveys used in the market effects analysis, some additional partially-completed surveys were included in the market share analysis.
‡ Used in the market share analysis.

Table A-5. Customer Survey Response Rate

	SDG&E	PG&E	National	Total
Starting Sample	3588	3650	6749	13987
No phone number [a]	353	373	855	1581
Ineligible Supplier [b]	54	98	15	167
Ineligible [c]	98	105	206	409
Adjusted sample	3083	3074	5673	11830
Language Barrier	147	180	112	439
Refused	1120	1000	1907	4027
R away for duration	85	62	137	284
R incapable	0	0	0	0
Unable to reach after at least 6 attempts	834	810	1506	3150
Completed surveys	897	1022	2011	3930
Response rate [d]	29.1%	33.3%	35.5%	33.23%
Willing to complete survey [e]	44.5%	50.5%	51.3%	49.4%

a No phone number
b Ineligible supplier: electricity supplied by California utilities that are not in SDG&E and PG&E territories
c Ineligible includes business numbers and ineligible housing (e.g. Nursing homes, group homes, dorms, etc.)
d Computed as (completed surveys/adjusted sample)
e Computed as (completed surveys/(completed surveys + Refused))

A.3.1 Demographics

California respondents were similar to the rest of the country in the type and size of home they live in. They differed somewhat from respondents in the country as a whole on other variables. California respondents had lived in their residence somewhat longer (a mean of 14.9 years compared to 13.0), had slightly fewer rooms in their houses (a mean of 5.8 compared to 6.3), had fewer people in the household (a mean of 2.5 compared to 2.7), and were less likely than those in the rest of the country to have children under 18 living at home. There was a higher proportion of California respondents with higher education levels (at least some college or more). California respondents were more likely to be 65 years or older and have household income levels of $50,000 or more.

Table A-6. Type of Residence

	U.S.	California	Total
Single Family	79%	76%	77%
Mobile home or trailer	5%	5%	5%
2 - 4 unit multi-family	8%	10%	9%
5+ unit multi-family	9%	9%	9%
Occupied year round	98%	99%	99%
Occupied part of the year	2%	1%	1%
Own or buying	82%	80%	81%
Rent or lease	18%	20%	19%
Housing paid by employer/relative owns	1%	<1%	1%
Number of Rooms	6.32	5.75	6.05
Number of Years Lived	13.04	14.90	13.95
Number of people living in residence	2.69	2.53	2.62
Number of people under 18 years old	.71	.52	.61

Table A-7. Approximate Square Footage of Living Space

	U.S.	California	Total
Less than 600 sq. ft.	4%	4%	4%
600 -999 sq. ft.	12%	9%	11%
1,000 to 1,499 sq. ft.	22%	27%	25%
2,000 to 2,499 sq. ft.	19%	18%	19%
2,500 to 2,999 sq. ft.	7%	6%	6%
3,000 sq. ft. or more	10%	7%	8%

Table A-8. Highest Education Level of Respondent or Other Adult Living in Household

	U.S.	California	Total
Grade School or less	2%	1%	1%
Some high school	4%	3%	4%
High School graduate	27%	17%	22%
Some business or technical school	3%	2%	2%
Business or tech school graduate	4%	3%	4%
Some college	20%	23%	22%
College graduate	25%	29%	27%
Some graduate work	3%	4%	4%
Graduate degree	13%	18%	16%

Table A-9. Age

	U.S.	California	Total
Less than 25 years old	4%	3%	3%
25 to 34 years old	17%	12%	14%
35 to 44 years old	25%	17%	21%
45 to 54 years old	20%	22%	21%
55 to 59 years old	9%	9%	9%
60 to 64 years old	7%	7%	7%
65 years or older	19%	30%	25%

Table A-10. Household Income

	U.S.	California	Total
Less than $10,000	6%	6%	6%
$10,000 to $14,999	7%	7%	7%
$15,000 to $19,999	8%	8%	8%
$20,000 to $29,999	17%	13%	15%
$30,000 to $39,999	18%	14%	16%
$40,000 to $49,999	14%	14%	14%
$50,000 to $74,999	18%	21%	19%
$75,000 to $99,999	7%	9%	8%
$100,000 or more	6%	10%	8%

A.4 TASK 4: UTILITY AND OTHER DATA COLLECTION AND ANALYSIS

Hagler Bailly collected and analyzed data from SDG&E and PG&E to examine historical data in relation to the new data collected through the other tasks. The utility data collection process started with the information request submitted prior to the project initiation meeting. Subsequent discussions were held to revise the request and ensure that we had all the data needed to complete the analysis. The results of this task were used to support the analysis discussed in Task 5.

A.5 TASK 5: DATA ANALYSIS

Under this task, the Hagler Bailly team combined the data collected and analysis performed in the preceding tasks to finalize the analysis for two main activities: 1. To characterize the market and analyze the indicators of market effects, and 2. To estimate changes in market share.

A.5.1 Subtask 5.1: Market Characteristics, Barriers, and Market Effects

Under this subtask, the Hagler Bailly team pulled together information from the previous tasks to analyze the hypothesized market effects and draw conclusions about the impact of SDG&E and PG&E programs on the market for CFLs and energy efficient refrigerators in California. Hagler Bailly characterized and described the market for CFLs and energy efficient refrigerators, described the key barriers affecting that market, described the SDG&E and PG&E programs that sought to reduce the barriers, described the market effects that will give evidence of the success of those programs in reducing the barriers, and drew conclusions about the success of the SDG&E and PG&E programs in achieving the sought-after market effects.

A.5.2 Subtask 5.2: Ultimate Indicators – Changes in Market Share

As with our study of market effects, we collected data from several different sources to look for trends that would provide evidence of changes in market share that could be correlated to SDG&E and PG&E programs. We compared new evidence collected in Tasks 2 and 3 with data collected in previous evaluation and market research efforts (Task 4) to assess changes in the market share of energy efficient refrigerators and CFLs.

A.6 TASK 6: NET-TO-GROSS ANALYSIS

Hagler Bailly implemented a telephone survey of 200 refrigerator participants and 200 CFL participants to prepare a single estimate of the level of free-ridership for each technology based on customer self-reports, which SDG&E and PG&E will use in their net-to-gross calculations. The net-to-gross analysis is presented in a separate report.

A.7 TASK 7: DOCUMENT RESULTS

Hagler Bailly submitted written monthly reports to SDG&E and PG&E and prepared this document as the final report for the project. The net-to-gross analysis is presented in a separate document.

APPENDIX B
SURVEY INSTRUMENTS

This appendix contains the following survey or interview guides:

CUSTOMER SURVEY

CUSTOMER SURVEY

CASEID **Unique Identification Number**

A. SCREENER INFORMATION

A1a Before I start, can you tell me who you currently receive your electric service from?

1	Pacific Gas & Electric (PG&E)	
2	San Diego Gas & Electric (SDG&E)	
3	Southern California Edison Company (SCE or Edison)	[THANK AND TERMINATE]
4	Sacramento Municipal Utility District (SMUD)	[THANK AND TERMINATE]
5	PacificCorp	[THANK AND TERMINATE]
6	Sierra Pacific Resources	[THANK AND TERMINATE]
7	Other	[SPECIFY]
8	NA/rent and electricity is included in rent	
-8	Don't know	
-9	Refused	

CFL Screening

NbrBulbs-A2Both (combines a2 and a2a)

A2 First, I'd like to ask you some questions about light bulbs. Approximately how many light bulbs did you or anyone in your household purchase for this residence in 1996?

_____ light bulbs purchased in 1996
-8 Don't know
-9 Refused

A2a Can you give me an approximate number? _____

A3Both (combines a3 and a3a)

A3 Compact fluorescent light bulbs screw into a regular light bulb socket. Before any discount or rebate, compact fluorescent light bulbs cost between $7 and $20, where regular light bulbs cost between 75 cents and a dollar. Before today, had you ever heard of compact fluorescent light bulbs?

1	Yes	
3	No	[SKIP TO A19]
-8	Don't know/not sure	[PROMPT WITH DESCRIPTION]
-9	Refused	

A3a Compact fluorescent bulbs are energy-efficient, long-lasting substitutes for incandescent lamps. These lamps use about one-half to one-tenth the energy to produce the same light output and last up to thirteen times longer than the incandescent lamps they replace. They screw into regular lamp sockets but look different from incandescent bulbs [they are often made of thin tubes of glass bent into loops and can be slightly bigger than incandescent bulbs]. Have you ever heard of them? [IF STILL DON'T KNOW, SKIP TO A19]

1	Yes	
3	No	[SKIP TO A19]
-8	Don't know/not sure	
-9	Refused	
●	NA	

A4 Have you or anyone else in your household ever purchased a compact fluorescent light bulb for your home?

1	Yes	
3	No	[SKIP TO A10]
-8	Don't know/not sure	[SKIP TO A10]
-9	Refused	
●	NA	

A5Combo (combines a5-a9)

A5a Approximately when did you buy your first compact fluorescent light bulb? [DO NOT READ]

1	Less than 5 years ago	[SKIP TO A6]
2	5 years ago	[SKIP TO A10]
3	10 years ago	[SKIP TO A10]
4	More than 10 years ago	[SKIP TO A10]
5	Exact number of years	[SKIP TO A5b]
6	Exact year bought	[SKIP TO A5c]
7	It is at least __ years ago	[SKIP TO A5d]
-8	Don't recall/unsure	[SKIP TO A7]
-9	Refused	
●	NA	

A5b Exact number of years. _____

-8 Don't know
-9 Refused

[SKIP TO A10]

A5c Exact year bought. _____

-8 Don't know
-9 Refused

[SKIP TO A10]

A5d It is at least __ years ago. _____

-8 Don't know
-9 Refused

[SKIP TO A10]

A6 Did you buy it in 1996?

1 Yes
3 No
-8 Don't recall
-9 Refused
● NA

[SKIP TO A10]

A7 We only need to know an approximate date, would you say you purchased it before 1996?

1	Yes	
3	No	[SKIP TO A10]
-8	Don't know	[SKIP TO A10]
-9	Refused	
●	NA	

A8 Did you purchase it 5 or more years ago? That is, before 1992?

1	Yes	
3	No	[SKIP TO A10]
-8	Don't know	[SKIP TO A10]
-9	Refused	
●	NA	

A9 Did you purchase it 10 or more years ago? That is, before 1987?

1 Yes
3 No
-8 Don't know/not sure
-9 Refused
● NA

A10 Have you or anyone in your household <u>ever received</u> a free compact fluorescent light bulb for your home from your electric utility company?

1	Yes	
3	No	[IF NO TO A4, SKIP TO A19, OTHERWISE SKIP TO A16]
-8	Don't know/not sure	[IF NO TO A4, SKIP TO A19, OTHERWISE SKIP TO A16]
-9	Refused	
●	NA	

A11Combo (combines A11 - A15)

A11a Approximately when did you receive your <u>first free</u> compact fluorescent light bulb? [DO NOT READ]

1	Less than 5 years ago	[SKIP TO A12]
2	5 years ago	[IF NEVER PURCHASED IN A4, SKIP TO A19, OTHERWISE SKIP TO A16]
3	10 years ago	[IF NEVER PURCHASED IN A4, SKIP TO A19, OTHERWISE SKIP TO A16]
4	More than 10 years ago	[IF NEVER PURCHASED IN A4, SKIP TO A19, OTHERWISE SKIP TO A16]
5	Exact number of years	[SKIP TO A11b]
6	Exact year bought	[SKIP TO A11c]
7	It is at least __ years ago	[SKIP TO A11d]
-8	Don't recall/unsure	[SKIP TO A13]
-9	Refused	
●	NA	

A11b Exact number of years. _____

-8 Don't know
-9 Refused

IF NEVER PURCHASED IN A4, SKIP TO A19, OTHERWISE SKIP TO A16]

A11c Exact year bought. _____

-8 Don't know
-9 Refused

[IF NEVER PURCHASED IN A4, SKIP TO A19, OTHERWISE SKIP TO A16]

A11d It is at least __ years ago. _____

-8 Don't know
-9 Refused

[IF NEVER PURCHASED IN A4, SKIP TO A19, OTHERWISE SKIP TO A16]

A12 Did you receive it in 1996?

1 Yes
3 No
-8 Don't recall
-9 Refused
● NA

[IF NEVER PURCHASED IN A4, SKIP TO A19, OTHERWISE SKIP TO A16]

A13 We only need to know an approximate date, would you say you received it before 1996?

1 Yes
3 No [SKIP TO A16]
-8 Don't know [SKIP TO A16]
-9 Refused
● NA

A14 Did you receive it 5 or more years ago? That is, before 1992?

1 Yes
3 No [SKIP TO A16]
-8 Don't know [SKIP TO A16]
-9 Refused
● NA

A15 Did you receive it 10 or more years ago? That is, before 1987?

1 Yes
3 No
-8 Don't know
-9 Refused
● NA

[IF NEVER PURCHASED IN A4, SKIP TO A19]

A16 How many compact fluorescent light bulbs do you currently have installed either inside or outside of your home?

_____compact fluorescent light bulbs
-8 Don't know
-9 Refused
● NA

[IF A5c OR A6 IS 1996, SKIP TO A18]

A17 Have you purchased any compact fluorescent light bulbs in 1996?

1 Yes
3 No [SKIP TO A19]
-8 Don't know/not sure [SKIP TO A19]
-9 Refused
● NA

A18 How many compact fluorescent light bulbs did you purchase in 1996?

_____compact fluorescent light bulbs
-8 Don't know
-9 Refused
● NA

Refrigerator Screening

A19 Next I'd like to talk about refrigerators. How many refrigerators do you use in this residence? (Only include refrigerators that are plugged in and used regularly.)

_____refrigerators
-8 Don't know
-9 Refused

DECISION LOGIC
[IF A5C = 1996 OR A6 = 1 OR A17 = 1 SKIP TO C1]
[IF A4 = 3 OR A4 = -8 OR A4 = -9 SKIP TO D1A for first 150 cases then SKIP TO F1A]
[IF A3 = 3 OR A3 = -8 OR A3 = -9 SKIP TO E1]
[IF A3A = 3 OR A3A = -8 OR A3A = -9 SKIP TO E1]

A20Both combines a20 and a21

A20 Have you or someone else ever purchased a brand new refrigerator for this residence?

1	Yes	[SKIP TO A22a]
3	No	
-8	Don't know/not sure	[SKIP TO DECISION LOGIC]
-9	Refused	[SKIP TO DECISION LOGIC]
●	NA	

A21 Prior to moving to this residence, did you purchase a brand new refrigerator and bring it along when you moved here?

1	Yes	
3	No	[SKIP TO DECISION LOGIC]
-8	Don't know/not sure	[SKIP TO DECISION LOGIC]
-9	Refused	[SKIP TO DECISION LOGIC]
●	NA	

A22Combo combines a22-a23

A22a Approximately how old is this refrigerator? [DO NOT READ]

1	Less than 5 years old	[ASK A23]
2	5 years old	[SKIP TO B1a]
3	6 to 9 years old	[SKIP TO DECISION LOGIC]
4	10 years old	[SKIP TO B1a]
5	More than 10 years old	[SKIP TO DECISION LOGIC]
A22b 6	Exact number of years: _____	[IF 1 OR 2 ASK A23, IF 5 OR 10 SKIP TO B1a, OTHEWISE SKIP TO DECISION LOGIC]
A22c 7	Exact year bought: _____	[IF 1996, 1991, 1986 SKIP TO B1a, OTHEWISE SKIP TO DECISION LOGIC]
A22d 8	It is at least __ years old: _____	[IF 1 OR 2 ASK A23, IF 5 OR 10 SKIP TO B1a, OTHEWISE SKIP TO DECISION LOGIC]
-8	Don't recall/unsure	[SKIP TO DECISION LOGIC]
-9	Refused	[SKIP TO DECISION LOGIC]

A23 Was it bought in 1996?

1	Yes	[SKIP TO B1a]
3	No	[SKIP TO DECISION LOGIC]
-8	Don't recall	[SKIP TO DECISION LOGIC]
-9	Refused	[SKIP TO DECISION LOGIC]
●	NA	

B. REFRIGERATOR PURCHASERS

B1a Did you purchase this new refrigerator because you . . . ? (READ LIST)

1 Decided to replace an existing refrigerator
2 Purchased or built a brand new residence (new construction)
3 Moved to a different residence and there was no refrigerator
4 Didn't have a refrigerator
7 Good price
8 Purchased by building owner
9 Gift
10 Wanted a second refrigerator
-8 Don't know/recall
-9 Refused

B2a Who purchased this refrigerator? Was it someone in your household, your building owner, or someone else?

1	Someone in household	
2	Building owner	[SKIP TO B22]
3	Someone else	[SPECIFY AND SKIP TO B22]
4	Builder/contractor	
5	Family member (parents, children)	
6	Friend	
7	Community organization	
8	Utility	
9	Previous owner	
-8	Don't know	[SKIP TO B22]
-9	Refused	

B3 How many stores did you visit while looking for a new refrigerator? _____ stores

98 Specified refrigerator to builder without visiting a store
-8 Don't know/recall
-9 Refused
● NA

B4 During the process of shopping for this new refrigerator did you notice any difference in the energy efficiency level of the refrigerators that were available?

1 Yes
3 No
-8 Don't recall
-9 Refused
● NA

B5 Did you consider energy consumption or the efficiency of the refrigerators when choosing your new refrigerator?

1 Yes [SKIP TO B7]
3 No
-8 Don't recall [SKIP TO B7]
-9 Refused
● NA

B6 Why didn't you consider a high efficiency refrigerator? (DO NOT READ; INDICATE ALL THAT APPLY. PROBE FOR ALL REASONS)

For B6a to B6d:

1 Didn't have features I wanted
2 Not the size I wanted
3 Too expensive, more that I wanted to pay
4 EE does not save enough energy or money
5 Not available at store I purchased from
6 Not available as quickly as I needed
7 Did not know enough about them
8 Did not know that the energy efficiency levels varied
9 Too hard to learn about them
10 Don't pay the electricity bill
11 Payback on EE too long
12 Not as reliable
14 Didn't think about efficiency when choosing new refrigerator
-8 Don't know
-9 Refused
● NA

B6a **1st Response**
B6b **2nd Response**
B6c **3rd Response**
B6d **4th Response**

[SKIP TO B12]

B7 On a scale of 1 to 5 with 1 being very easy and 5 very difficult, how easy was it to find the type of refrigerator you wanted in a high-efficiency model? (RECORD ONE NUMBER)

1	**2**	**3**	**4**	**5**	**-8**	**-9**
Very easy				Very difficult	Don't know	Refused
[SKIP TO B9]	[SKIP TO B9]	[SKIP TO B9]			[SKIP TO B9]	

- NA

B8 Why was it difficult? (DO NOT READ; INDICATE ALL THAT APPLY. PROBE FOR ALL REASONS)

For B8a to B8d:

1 Energy efficient models didn't have features I wanted
2 Energy efficient models were not the size I wanted
3 Energy efficient models were too expensive, more that I wanted to pay
4 Few energy efficient units available in the stores I looked in
5 Stores with energy efficient units were too far away.
6 Energy efficient models were not available as quickly as I needed
7 Did not know enough about them
8 Too hard to learn about them
9 Other [SPECIFY]
-8 Don't know
-9 Refused
- NA

B8a **1st Response**
B8b **2nd Response**
B8c **3rd Response**
B8d **4th Response**

B9 On a scale of 1 to 5 with 1 being very easy and 5 very difficult, how easy was it to find a refrigerator in your price range in a high-efficiency model? (RECORD ONE NUMBER)

1	2	3	4	5	-8	-9
Very easy				Very difficult	Don't know	Refused

- NA

B10 Is the refrigerator you bought a high efficiency unit?

1 Yes
2 "Yes, but not the highest I saw" OR "Fairly efficient" OR ANY OTHER "sort of" RESPONSES
3 No [SKIP TO B12]
-8 Don't know [SKIP TO B12]
-9 Refused
- NA

B11 Why did you purchase a high efficiency refrigerator? (DO NOT READ; INDICATE ALL THAT APPLY)

For B11a to B11d:

1 EE was all that was available. It was the only choice.
2 EE did not cost more
3 EE a good value
4 EE cost less to operate
5 EE good for environment
6 Contractors pushed EE
7 Salesperson pushed EE
8 Had the features I wanted
9 Was the size I wanted
10 Rebate
12 Suggested by friend/family
-8 Don't recall
-9 Refused
- NA

B11a 1st Response
B11b 2nd Response
B11c 3rd Response
B11d 4th Response

B12 When you were shopping for this new refrigerator, did the salesperson talk about energy efficiency?

1 Yes
3 No [SKIP TO B16]
-8 Don't know [SKIP TO B16]
-9 Refused
- NA

B13 What did the salesperson say? (DO NOT READ; INDICATE ALL THAT APPLY)

1 Encouraged purchase of high efficiency
2 Discouraged purchase of high efficiency
3 Said that everything on the market is high efficiency
4 Said unit he/she was recommending for other reasons was also high efficiency
6 Said to compare all models
7 Explained energy efficient label
-8 Don't know
-9 Refused
- NA

B13a 1st Response
B13b 2nd Response
B13c 3rd Response
B13d 4th Response

B14 Did the salesperson encourage you to buy a high efficiency model?

1 Yes
3 No [SKIP TO B16]
-8 Don't know/recall [SKIP TO B16]
-9 Refused
● NA

B15 How much influence would you say the salesperson had on your decision to purchase that particular model? Did they have . . . .(READ LIST)

1 No influence
2 Very little influence
3 Some influence
4 Very much of an influence
5 A great deal of influence
-8 Don't know
-9 Refused
● NA

B16 When you were looking at new refrigerators, did you notice a price difference between high efficiency refrigerators and other refrigerators?

1 Yes
3 No [SKIP TO B19]
-8 Don't know [SKIP TO B19]
-9 Refused
● NA

B17 Which was more expensive?

1 High efficiency unit more expensive
3 Lower efficiency unit more expensive
-8 Don't know [SKIP TO B19]
-9 Refused
● NA

B18 By how much?

$_____
-8 Don't know/recall
-9 Refused
● NA

B19 When you purchased this refrigerator, were you aware of any rebates for the purchase of high efficiency refrigerators?

1 Yes
3 No [SKIP TO B22]
-8 Don't know/recall [SKIP TO B22]
-9 Refused
● NA

B20 Who offered the rebate? [MARK ALL THAT APPLY]

For B20a to B20d:

1 Utility
2 Retailer
3 Manufacturer
4 Other [SPECIFY]
-8 Don't know/recall
-9 Refused
● NA

B20a **1st Response**
B20b **2nd Response**
B20c **3rd Response**
B20d **4th Response**

B21 Did you receive a rebate for this refrigerator?

1 Yes
3 No
-8 Don't know/recall
-9 Refused
● NA

B22 The most important piece of information we need for this study is the brand name, model number and size in cubic feet of the refrigerator that you purchased. This information will allow us to look up the unit's energy efficiency information in industry directories. Would you be willing to look for this information if I tell you where to find it?

1 Yes
3 No (PROBE: this information can usually be easily found on the inside door of the freezer compartment, or the inside wall of the refrigerator. It might also be on a sales slip or owner's manual) [IF REFUSES, SKIP TO INTERVIEWER NOTE]
-8 Don't know
-9 Refused

B23a Brand Name:

_____

- NA

B23b Model Number: _____

- NA

B23c Cubic Feet Including Freezer Compartment: _____

- NA

B24a Where did you find this information?

1 Label on the refrigerator
2 Yellow energy guide label
3 Owner's manual
4 Sales receipt
5 Warranty
7 Can't find
8 From memory
-8 Don't know
-9 Refused
- NA

[SKIP TO CFL PURCHASERS, NON-CFL PURCHASERS, OR PURCHASE PLANS]

B25a INTERVIEWER NOTE: If brand and model number is not provided, indicate why:

1 Refused to look
2 Looked but could not find it
4 Incapable
-8 Don't know
-9 Refused

B26 Is the freezer compartment on this refrigerator on the top, bottom, or side?

1 Top
2 Bottom
3 Side
-8 Don't know
-9 Refused

B27a Does this refrigerator have automatic defrost, partial defrost, or manual defrost?

1 Automatic defrost or frost-free
2 Partial defrost
3 Manual defrost
4 Other [SPECIFY]
-8 Don't know
-9 Refused

B28 Does this refrigerator have through-the-door ice or through-the-door water?

1 Yes, through-the-door ice
2 Yes, through-the-door water
3 Yes, both through-the-door ice and water
4 No
-8 Don't know
-9 Refused

[SKIP TO NON-CFL PURCHASERS OR PURCHASE PLANS FOR NON-CFL PURCHASERS]

C. CFL PURCHASERS

C1 Now I'd like to talk about the compact fluorescent light bulb(s) you purchased since January 1, 1996. Did you consider energy consumption when deciding to purchase compact fluorescent bulbs rather than regular incandescent bulbs?

1 Yes
3 No
-8 Don't recall
-9 Refused

C2 Have you ever talked with a salesperson about compact fluorescent light bulbs?

1 Yes
3 No [SKIP TO C4]
-8 Don't know
-9 Refused

C3 How much influence would you say the salesperson had on your decision to purchase compact fluorescent light bulbs? Did they have . . . .(READ LIST)

1 No influence
2 Very little influence
3 Some influence
4 Very much of an influence
5 A great deal of influence
-8 Don't know
-9 Refused
● NA

C4 When shopping for light bulbs, do you recall seeing any literature, promotions or displays in any store that provided information about the advantages or features of compact fluorescent light bulbs?

1 Yes
3 No
-8 Don't know
-9 Refused

C5 Do you recall receiving any information from your electric utility company about compact fluorescent light bulbs?

1 Yes
3 No
-8 Don't know
-9 Refused

C6 Do you recall seeing, reading or hearing information from any other sources about compact fluorescent light bulbs?

1 Yes
3 No [SKIP TO C8a]
-8 Don't know [SKIP TO C8a]
-9 Refused

C7 From what other sources have your received information about compact fluorescent light bulbs? (DO NOT READ; INDICATE ALL THAT APPLY)

For C7a to C7b:

1	TV	12	Utility
2	Newspaper article	13	Environmental groups
3	Magazine article	14	Relative/friend
5	Catalogs	15	Direct mail
6	Church	16	Radio
7	Consumer reports	17	Telemarketers
8	Contractor	18	Internet
9	Council on Aging	-8	Don't know
10	Displays/brochures	-9	Refused
11	Employer	*	NA

C7a **1st Response**
C7b **2nd Response**
C7c **3rd Response**
C7d **4th Response**

C8 Based on what you know about compact fluorescent light bulbs, what do you see as some of the advantages of these types of bulbs? (DO NOT READ; INDICATE ALL THAT APPLY)

For C8a to C8d:

1 Longer life of bulbs
2 Energy efficient
3 Lower operating costs
5 Give off better light
6 Cooler
7 Better for the environment
8 Smaller
9 Liked shape
10 Does not see a difference
-8 Don't know
-9 Refused

C8a 1st Response
C8b 2nd Response
C8c 3rd Response
C8d 4th Response

C9 Based on what you know about compact fluorescent light bulbs, what concerns do you have about these types of bulbs? (DO NOT READ; INDICATE ALL THAT APPLY)

For C9a to C9d:

1 Cost too much
2 Don't fit my fixtures
3 Poor light quality – too dim, flicker, too cool
4 Unappealing light color (e.g., "It makes me look green.")
5 Not convince they save money
6 Slow start-up
8 Availability
9 Safety concerns/breakage
10 Do not work as well as claim to
11 Make noise
12 No concerns
13 Too heavy
-8 Don't know
-9 Refused

C9a 1st Response
C9b 2nd Response
C9c 3rd Response
C9d 4th Response

C10a When purchasing compact fluorescent light bulbs, did you go to a particular store looking for compact fluorescent light bulbs or did you purchase the bulbs as part of other shopping you were doing? (RECORD ONE NUMBER)

1 Went to particular store
2 Part of other shopping
4 Went to a particular store and purchased bulbs as part of other shopping
5 Catalog
6 Received free
-8 Don't recall
-9 Refused

C11 Where did you purchase your compact fluorescent light bulbs? (READ LIST IF NECESSARY, RECORD ALL THAT APPLY)

For C11a to C11d:

1 Lighting specialty store
2 Department store
3 Discount department store
4 Warehouse, bulk purchase discounter (e.g., Costco, Price Club)
5 Hardware store
6 Home center or discount hardware store
7 Grocery store
8 Utility sale or promotion
9 Mail order
10 Home Depot
11 Dixieline
12 Home Base
13 Longs Drugs
15 A number of different places
16 Contractor
17 Received free
18 Drugstore
19 Flea market
20 Military store
-8 Don't recall
-9 Refused

C11a 1st Response
C11b 2nd Response
C11c 3rd Response
C11d 4th Response

C12 On a scale of 1 to 5 with 1 being very easy and 5 very difficult, how easy was it to find the type of compact fluorescent light bulbs you wanted? (RECORD ONE NUMBER)

1	2	3	4	5	-8	-9
Very easy				Very difficult	Don't know	Refused

C13 What type of stores do you generally purchase regular (incandescent) light bulbs from? (READ LIST IF NECESSARY, RECORD ALL THAT APPLY)

For C13a to C13d:

1 Lighting specialty store
2 Department store
3 Discount department store
4 Warehouse, bulk purchase discounter (e.g., Costco, Price Club)
5 Hardware store
6 Home center or discount hardware store
7 Grocery store
8 Utility sale or promotion
9 Mail order
10 Home Depot
11 Dixieline
12 Home Base
13 Longs Drugs
15 Amway
16 A variety of stores
17 Commissary, military store
18 Don't purchase
19 Drugstore
20 Mall
21 Appliance store
-8 Don't recall
-9 Refused

C13a **1st Response**
C13b **2nd Response**
C13c **3rd Response**
C13d **4th Response**

C14 Would you say that all, most, some, or a few of these stores regularly have compact fluorescent light bulbs available? (RECORD ONE NUMBER)

1 All
2 Most
3 Some
4 A few
-8 Don't know
-9 Refused

C15 On a scale of 1 to 5, with 1 meaning "not at all likely" and 5 meaning "very likely", how likely are you to purchase compact fluorescent light bulbs in the future?

1	2	3	4	5	-8	-9
Not at all Likely				Very Likely	Don't know	Refused

SKIP TO PURCHASE PLANS

D. NON-CFL PURCHASERS

(Asked of the first 150 households who are aware of, but have never purchased a CFL)

D1 Why didn't you purchase any compact fluorescent light bulbs in 1996? (DO NOT READ; INDICATE ALL THAT APPLY)

For D1a to D1d:

1 No specific reason
2 Cost too much
3 Don't fit my fixtures
4 Poor light quality – too dim, flicker, too cool
5 Not convince they save money
6 Slow start-up
7 Have read or heard negative things about CFLs
9 Was not aware of them
10 Did not need any
11 Dislike CFLs
12 Hard to find
13 Satisfied with regular bulbs
14 Interfere with other electronics
-8 Don't know
-9 Refused

D1a **1st Response**
D1b **2nd Response**
D1c **3rd Response**
D1d **4th Response**

D2 Have you ever talked with a salesperson about compact fluorescent light bulbs?

1 Yes
3 No
-8 Don't know
-9 Refused

D3 When shopping for light bulbs, do you recall seeing any literature, promotions or displays in any store that provided information about the advantages or features of compact fluorescent light bulbs?

1 Yes
3 No
-8 Don't know
-9 Refused

D4 Do recall receiving any information from your electric utility company about compact fluorescent light bulbs?

1 Yes
3 No
-8 Don't know
-9 Refused

D5 Do you recall seeing, reading or hearing information from any other sources about compact fluorescent light bulbs?

1 Yes
3 No [SKIP TO D7]
-8 Don't know [SKIP TO D7]
-9 Refused

D6 From what other sources have your received information about compact fluorescent light bulbs? (DO NOT READ; INDICATE ALL THAT APPLY)

For D6a to D6d:

1 TV
2 Newspaper article
3 Magazine article
5 Catalog
6 Employer
7 Relative/friend
8 Display at store
9 Direct mail
-8 Don't know
-9 Refused
NA

D6a **1st Response**
D6b **2nd Response**
D6c **3rd Response**
D6d **4th Response**

D7 Based on what you know about compact fluorescent light bulbs, what do you see as some of the advantages of these types of bulbs? (DO NOT READ; INDICATE ALL THAT APPLY)

For D7a to D7d:

1 Longer life of bulbs
2 Energy efficient
3 Lower operating costs
5 Brighter
6 Cooler
7 Don't know about CFLs
8 Easier on the eyes
9 No advantages
-8 Don't know
-9 Refused

D7a 1st Response
D7b 2nd Response
D7c 3rd Response
D7d 4th Response

D8 Based on what you know about compact fluorescent light bulbs, what concerns do you have about these types of bulbs? (DO NOT READ; INDICATE ALL THAT APPLY)

For D8a to D8d:

1 Cost too much
2 Don't fit my fixtures
3 Poor light quality – too dim, flicker, too cool
4 Not convince they save money
5 Slow start-up
7 Safety concerns
8 Doesn't know enough about CFLs
9 Bothers eyes
10 Interferes with other electronics
11 Concerned if they last longer
12 No concerns
13 Availability is poor
14 Too heavy
15 Used to regular/standard bulbs
16 Makes buzzing sound
-8 Don't know
-9 Refused

D8a 1st Response
D8b 2nd Response
D8c 3rd Response
D8d 4th Response

D9 As far as you know, does your electric utility company offer any rebates or other promotions for the purchase of compact fluorescent light bulbs?

1 Yes
3 No
-8 Don't know
-9 Refused

D10 On a scale of 1 to 5, with 1 meaning "do not know enough" and 5 meaning "know all I need to know", do you feel you know as much as you need to know about compact fluorescent light bulbs to decide whether to buy them or not?

1	2	3	4	5	-8	-9
Do not know enough				Know all I need to know	Don't know	Refused

D11 On a scale of 1 to 5, with 1 meaning "not at all likely" and 5 meaning "very likely", how likely are you to purchase compact fluorescent light bulbs in the future?

1	2	3	4	5	-8	-9
Not at all likely				Very likely	Don't know	Refused

E. PURCHASE PLANS AND PREFERENCES

ASK ALL Refrigerator or CFL Purchasers and 1st 150 Nonpurchasers

E1 When people buy new appliances, a number of factors may enter into their final decision . Are you considering purchasing a new refrigerator in the next two years?

1	Yes	
3	No	[SKIP TO E2]
-8	Don't know	[SKIP TO E2]
-9	Refused	

E2 In this next question, I would like you to assume that you were going to be purchasing a new refrigerator. I will read you a number of factors, and for each one, I'd like you to tell me how important that factor would be in your decision of what refrigerator to buy. Using a scale of 1 to 5, with 1 meaning not at all important and 5 being very important, how important would the . . . . be in your decision? (READ LIST)

1	2	3	4	5	-8	-9
Not at all important				Very important	Don't know	Refused

E2a ____size of the refrigerator in cubic feet

E2b ____appearance of the refrigerator

E2c ____manufacturer or brand name

E2d ____operating cost

E2e ____purchase price

E2f ____special features, such as ice-maker, water dispenser, and so forth

E2g ____recommendation of dealer or contractor

E2h ____recommendation of friend, neighbor, or relative

E2i ____warranty

E2j ____availability of rebate or discount

E2k ____energy efficiency rating

E2l ____recommendation of a consumer magazine

E2m ____dealer's reputation for repairing equipment

E3 The next question refers to light bulbs. Using the same scale of 1 to 5, with 1 meaning "not at all important" and 5 meaning "very important", how important is the . . . . in your decision of what type of light bulb to purchase? (READ LIST)

1	2	3	4	5	-8	-9
Not at all important				Very important	Don't know	Refused

E3a ____life of the bulb

E3b ____brightness or wattage of bulb

E3c ____size of bulb

E3d ____light color or quality

E3e ____appearance of the bulb

E3f ____operating cost

E3g ____energy efficiency

E3h ____price of bulb

F. DEMOGRAPHICS

[ASK ALL RESPONDENTS]

Finally, I need to ask you a few questions about your household. I want to assure you that all your answers are confidential. This information is only used for classification purposes.

F1a In what type of residence do you live?

1 Single family detached house
2 Mobile home or house trailer
3 2-4 unit multifamily building
4 5+ unit multifamily building
6 Independent living center
7 Military housing
-8 Don't know
-9 Refused

F2 Is this residence occupied year-round, or is it occupied only part of the year?

1 Year-round
2 Part of the year
-8 Don't know
-9 Refused

F3a Do you own or rent this residence?

1 Own or buying
2 Rent or lease
4 Housing paid by employer
5 Relative owns
-8 Don't know
-9 Refused

F4 How many rooms are in this residence? Do not count bathrooms, halls, unheated basements or unfinished attics.

_____rooms
-8 Don't know
-9 Refused

F5 What is the approximate square footage of living space in this residence? Do not include garage, attic, or unfinished basement space. Is it . . . . ? (READ LIST)

1 Less than 600 square feet
2 600 to 999 square feet
3 1,000 to 1,499 square feet
4 1,500 to 1,999 square feet
5 2,000 to 2,499 square feet
6 2,500 to 2,999 square feet
7 3,000 square feet or more
-8 Don't know
-9 Refused

F6 How many years have you lived at this residence? (NOTE: IF ONLY OCCUPIED PART-TIME, HOW LONG HAVE THEY OCCUPIED IT PART-TIME)

_____years
-8 Don't know
-9 Refused

F7 Including yourself, how many people live in this residence? (NOTE: IF ONLY OCCUPIED PART-TIME, HOW MANY PEOPLE LIVE HERE WHEN IT IS OCCUPIED)

_____people
-8 Don't know
-9 Refused

F8 How many of these people are <u>under</u> the age of 18?

_____children
-8 Don't know
-9 Refused

F9 Do you know how much you currently pay for each kilowatt hour of electricity you purchase from your electric utility company?

_____cents/kWh
-8 Don't know
-9 Refused

F10 What is the highest grade of schooling completed by you or another adult in your household who is involved in household decision making?

1 Grade school or less
2 Some high school
3 High school graduate
4 Some business or technical school
5 Business or technical school graduate
6 Some college
7 College graduate (4-year degree)
8 Some graduate work
9 Graduate degree
-8 Don't know
-9 Refused

F11 Which of the following age categories best describes your age? Are you . . . ?

1 Less than 25 years old
2 25 to 34 years old
3 35 to 44 years old
4 45 to 54 years old
5 55 to 59 years old
6 60 to 64 years old
7 65 years old or older
-8 Don't know
-9 Refused

F12 Finally, which of the following broad categories best describes your total household income in 1996 before taxes? Was it . . . ?

1 Less than $10,000
2 $10,000 to $14,999
3 $15,000 to $19,999
4 $20,000 to $29,999
5 $30,000 to $39,999
6 $40,000 to $49,999
7 $50,000 to $74,999
8 $75,000 to $99,999
9 $100,000 or more
-8 Don't know
-9 Refused

REFRIGERATOR RETAILER SURVEY

REFRIGERATOR RETAILER SURVEY

CASEID **Unique Identification Number**

A. SCREENER AND GENERAL INFORMATION

A1 First, did you sell refrigerators in 1996?

1 Yes
3 No [THANK AND TERMINATE]
-8 Don't know [THANK AND TERMINATE]
-9 Refused [THANK AND TERMINATE]

A2 We would like you to answer our questions for all the stores you are responsible for. Are you knowledgeable about refrigerator stocking and sales trends for … [READ OPTIONS.]

1 This store at this site only
2 A number of stores at various sites in your state.
A2@a How many stores? _____
3 A number of stores at various sites around the country.
A2@b How many stores? _____
4 Other [SPECIFY]

A3 Are you part of a local, state, or national chain?
[INTERVIEWER NOTE: If they have branches outside the state, they are "national", even if they do not have branches all over the United States.]

1 Yes, local chain
2 Yes, state chain
3 Yes, national chain
4 No
-8 Don't know
-9 Refused

A4 Are you primarily an appliance store?

1 Yes SKIP NEXT QUESTION]
3 No
-8 Don't know
-9 Refused

A5a What kind of a store are you? [DO NOT PROMPT]

1 Appliances
2 Department store (e.g., Sears, Wards, Woolworths)
3 Home improvement (e.g., Home Depot)
4 Appliance, electronics, and computers store (e.g., Circuit City)
5 General retailer
6 Discount retailer [SKIP NEXT QUESTION]
7 Hardware
8 Other [SPECIFY]
-8 Don't know
-9 Refused
● NA

A6 Are you considered a discount retail store?

1 Yes
3 No
-8 Don't know
-9 Refused
● NA

A7 Can you tell me approximately how many refrigerators you sold in 1996
[IF A0 = 1] in this store?
[IF A0 = 2 OR 3] in total in all the stores within your jurisdiction?

_____ Annual estimate of units sold [IF BELOW 200, THANK and TERMINATE]

A8 [IF "DON'T KNOW" or "REFUSED" ASK:] We just need an approximate number, was it …

1 Below 200, [THANK and TERMINATE]
2 Less than 500 [CONTINUE]
3 500 to 1000 [CONTINUE]
4 1000-2000 [CONTINUE]
5 2000 or more? [CONTINUE]
6 More than 200
8 Unwilling [Your answers will be kept strictly confidential. Was it more than 200?]
-8 Don't know
-9 Refused

A8a [Was it more than 200? IF NO OR DON'T KNOW, THANK AND TERMINATE]

A9 What is your title?

1 Store manager
2 Sales manager
3 Owner or president
4 Supervisor
5 Salesperson
7 Department manager
8 Vice president

A10 How long have you worked for [RETAILER NAME]?

_____ Number of years employed by retailer

B. PRODUCT AVAILABILITY

[IF A0 = 1] Now I'd like to talk about your store's refrigerator display and stocking practices in 1996.
[IF A0 = 2 OR 3] Now I'd like to talk about the refrigerator display and stocking practices in 1996 in all the stores within your jurisdiction.

B1a In 1996, what percent of the refrigerators you sold were delivered from stock in your own warehouse, as opposed to ordered from another distributor or the manufacturer?
[Analysis note: This will help us understand if stocking questions and patterns are relevant for this retailer.]

B1b _____ percent sold from own warehouse
-8 Don't know
-9 Refused

B2 In what percent of your 1996 sales did customers buy refrigerators that were identical to models you had on display (other than choosing a different color or adding or subtracting an icemaker)?

_____ percent
-8 Don't know
-9 Refused

[Analysis note: This will help us understand how important it is that customers can see and touch the exact model they buy.]

B3 Do you have refrigerators on your display floor that are quite similar in features but differ in energy efficiency?

1 Yes
3 No [SKIP NEXT QUESTION]
-8 Don't know [SKIP NEXT QUESTION]
-9 Refused [SKIP NEXT QUESTION]

B4 On a scale of 1 to 5 where 1 is "never" and 5 is "always", once a customer has decided on the features they want in a refrigerator (such as size and ice-maker options) how often do they have choices on your display floor for different energy efficiency levels in refrigerators that fit their criteria?

1	2	3	4	5
Never				Always

-8 Don't know
-9 Refused
● NA

[Analysis note: Check this series early in implementation. If B0 is consistently small, consider modifying this question to say "give customers a choice of different energy efficiency levels in refrigerators that fit their criteria" rather than "on your display floor".]

[INTERVIEWER NOTE: The next few questions ask about energy efficiency as compared to the standard efficient unit. If the respondent does not know what the "standard" efficiency level is, explain as follows:

Standard efficiency level is defined as a refrigerator just meets the 1993 Federal energy efficiency standards. (These would be your lowest-efficiency refrigerators such as an automatic defrost with top-mounted freezer)

B5 What percent of your refrigerators ON DISPLAY in **1996** were ...

B5a At least 10% more efficient than the current federal standard ____
B5b At least 20% more efficient ____
B5c At least 30% more efficient ____
-8 Don't know [Explain what standard efficiency means and PROBE, an approximate number is OK]
-9 Refused

B6a What percent of your refrigerators ON DISPLAY in **1991** were ...

1 At least 10% more efficient than the 1990 federal standards [GO TO B6b]
2 At least 20% more efficient [GO TO B6c]
3 At least 30% more efficient [GO TO B6d]
4 Did not sell refrigerators in 1991 [GO TO B8a]
-8 Don't know
-9 Refused

B6b At least 10% more efficient than the 1990 federal standards. _____
-8 Don't know
-9 Refused

B6c At least 20% more efficient. _____
-8 Don't know
-9 Refused

B6d At least 30% more efficient. _____
-8 Don't know
-9 Refused

B7a What percent of your refrigerators ON DISPLAY in **1986** were ...

1 At least 10% more efficient than standard units [GO TO B7b]
2 At least 20% more efficient [GO TO B7c]
3 At least 30% more efficient [GO TO B7d]
4 Did not sell refrigerators in 1986 [GO TO B8a]
-8 Don't know
-9 Refused
● NA

B7b At least 10% more efficient than standard units. _____
-8 Don't know
-9 Refused

B7c At least 20% more efficient. _____
-8 Don't know
-9 Refused

B7d At least 30% more efficient. _____
-8 Don't know
-9 Refused

B8 What percent of your refrigerator SALES in 1996 were ...

B8a At least 10% more efficient than the current federal standard _____
B8b At least 20% more efficient _____
B8c At least 30% more efficient _____
-8 Don't know
-9 Refused

B9 Once you have placed an order, what is the lead time required to receive a standard efficiency refrigerator?

1 1-2 days
2 About a week
3 About two weeks
4 About three weeks
5 About one month
6 More than one month
-8 Don't know
-9 Refused

B10 What is the lead time required to receive an energy efficient refrigerator?

1 1-2 days
2 About a week
3 About two weeks
4 About three weeks
5 About one month
6 More than one month
-8 Don't know
-9 Refused

B11 In the last two years, have you experienced any delays or backorders for energy efficient refrigerators that were more severe than what you experienced for standard efficiency refrigerators?

1 Yes
2 No
3 Less severe [unlikely]
-8 Don't know [GO TO SECTION C]
-9 Refused [GO TO SECTION C]

B12 Was this a change from previous years?

1	Yes	
3	No	[SKIP NEXT QUESTION]
-8	Don't know	[SKIP NEXT QUESTION]
-9	Refused	[SKIP NEXT QUESTION]

B13a How? [OPEN ENDED. DO NOT READ]

1 Previously we had delays or backorders
2 Previously we had no delays or backorders
4 Demand was greater than supply
5 Less refrigerators qualified
6 Stocking practices of manufacturer
- NA

C. INFLUENCES ON DEMAND

For this study, it is very important that we understand the possible factors that may have influenced the sale of energy-efficient refrigerators over the last two years. I would like to read you a list of possible factors. For each one, please rate the influence you think it has had on sales of energy-efficient refrigerators using a scale of 1 to 5, with 1 being "No Influence" and 5 being "a great deal of influence."
[READ EACH CATEGORY; CIRCLE ONE NUMBER FOR EACH]

		No Influence				Great Deal of Influence
C1a	The creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	1	2	3	4	5
C2b	Changes in appliance codes and regulations	1	2	3	4	5
C3c	Changes in energy prices	1	2	3	4	5
C4d	Environmental concerns	1	2	3	4	5
C5e	Improvements made in energy-efficient refrigerators	1	2	3	4	5
C6f	Reductions in the price of energy-efficient refrigerators	1	2	3	4	5
C7g	Your own efforts to market energy-efficient refrigerators	1	2	3	4	5
C8h	Utility educational programs	1	2	3	4	5

D. LEVEL OF AWARENESS

D1 On a scale of 1 to 10, with 1 being "not at all informed" and 10 being "very informed", how informed would you say your customers are about the benefits of energy efficient refrigerators?

Not at all Informed									Very Informed
1	2	3	4	5	6	7	8	9	10

-8 Don't know
-9 Refused

D2 Has this level of awareness among consumers of the benefits of energy efficient refrigerators increased, stayed the same, or decreased in the past two years?

1 Increased
2 Decreased
3 Stayed the same
-8 Don't know
-9 Refused

D3 What, in your opinion, have been the principal barriers to selling energy efficient refrigerators over the past few years? [DO NOT READ. MARK ALL THAT APPLY.]

For D3a to D3d:

1 Elimination of utility rebates
2 Reduction in utility rebate levels
3 Elimination or reduction in utility promotional, advertising support
4 Elimination or reduction in manufacturer rebates or promotion
5 Elimination or reduction in retailer rebates or promotion
6 Decreased salesperson or retailer sales "push"
7 Lack of consumer education or awareness of product benefits
8 Higher prices for energy efficient models
9 Lack of product supply or availability
10 Reductions in product supply or availability
11 Lack of floor space given to energy efficient models
12 Reductions in floor space given to energy efficient models
14 No barriers [GO TO NEXT SECTION]
15 Lack of features consumers want
16 Operational characteristics of units (run continuously larger size)
-8 Don't know [GO TO NEXT SECTION]
-9 Refused [GO TO NEXT SECTION]

D3a **1st Response**
D3b **2nd Response**
D3c **3rd Response**
D3d **4th Response**

D4 Have manufacturers done anything to remove or change these barriers?

1 Yes
3 No [SKIP NEXT QUESTION]
-8 Don't know [SKIP NEXT QUESTION]
-9 Refused [SKIP NEXT QUESTION]

D5 What? **See Id List #1**

D6 Have utilities done anything to remove or change these barriers?

1 Yes
3 No [SKIP NEXT QUESTION]
-8 Don't know [SKIP NEXT QUESTION]
-9 Refused [SKIP NEXT QUESTION]

D7 What? **See Id List #2**

D8 Have you (or other retail stores) done anything to remove or change these barriers?

1 Yes
3 No [SKIP NEXT QUESTION]
-8 Don't know [SKIP NEXT QUESTION]
-9 Refused [SKIP NEXT QUESTION]

D9 What? **See Id List #3**

E. PROMOTIONAL PRACTICES

E1 On a scale where 1 is never and 10 is always, how often does your sales staff discuss refrigerator energy use with customers looking to buy a new refrigerator?

Never									Always
1	2	3	4	5	6	7	8	9	10
GO TO E3									

-8 Don't know
-9 Refused

E2 When energy use or efficiency is discussed with customers, what percent of the time has the customer brought it up first?

_____%
- NA

E3 What does your store do to promote or advertise energy efficient refrigerators? [DO NOT PROMPT, RECORD ALL ANSWERS]

For E3a to E3d:

1 Nothing
2 Labeling
3 Brochures
4 Displays
5 Talk to customers
10 Advertise
11 Advertise in newspaper
12 Mailings and media ads
13 Advertise in newspaper and radio
14 Put up rebate stickers
15 Advertise in apartment owners' magazines
16 Help consumer with rebate paperwork
17 Work with local utility to educate consumer
18 Ads on TV
-8 Don't know
-9 Refused

E3a 1st Response
E3b 2nd Response
E3c 3rd Response
E3d 4th Response

E4 Under the Federal Department of Energy Energy Star Program, refrigerators that meet their efficiency requirements display an Energy Star logo. Are you aware of this program?

1	Yes	[GO TO E5]
3	No	[SKIP NEXT 2 QUESTIONS]
-8	Don't know	[DESCRIBE THE PROGRAM (BELOW) AND PROBE, IF STILL DO NOT KNOW, SKIP NEXT QUESTION]
-9	Refused	[SKIP NEXT QUESTION]

E4a [INTERVIEWER NOTE: DESCRIPTION OF THE ENERGY STAR PROGRAM:
The Energy Star program is a voluntary program sponsored by the Department of Energy and the Environmental Protection Agency. Participating manufacturers and retailers agree to promote high efficiency products, including refrigerators, and put Energy Star logos on appliances that meet the program's efficiency standards.]

1 Yes
3 No [SKIP NEXT QUESTION]
-8 Don't know [SKIP NEXT QUESTION]
-9 Refused [SKIP NEXT QUESTION]
● NA

E5 Are you currently participating, or do you plan on participating, in this program?

1 Yes, participating
2 Yes, plan to participate
3 No
-8 Don't know
-9 Refused
● NA

E6 Have you participated in any utility-sponsored refrigerator rebate programs?

1 Yes [SKIP NEXT QUESTION]
3 No
-8 Don't know [GO TO E10]
-9 Refused [GO TO E10]

E7a Why not?

1 Unaware of programs' existence
2 Program participation process is too complicated
3 Utility takes too long to reimburse retailers or customers
4 Don't sell enough energy efficient refrigerators to make it worthwhile
5 Rebate levels are too low
6 Rebate levels keep changing, decreasing
7 Rebates have been eliminated
10 Store doesn't allow participation
11 Company has not encouraged participation
-8 Don't know
-9 Refused
● NA

[GO TO E10]

E8 On a scale of 1 to 10, with 1 being "not at all influential" and 10 being "very influential", how influential have these programs been on your sales of energy efficient refrigerators?

Not at all Influential									Very Influential
1	2	3	4	5	6	7	8	9	10

-8 Don't know [GO TO E10]
-9 Refused [GO TO E10]

E9 Did these programs cause you to display more high efficiency refrigerators than you normally would have?

1 Yes
3 No
-8 Don't know
-9 Refused

E10 Were any of your sales staff eligible to receive incentive payments from PG&E/SDG&E/your utility in 1996 for selling high-efficiency refrigerators?
[INTERVIEWER NOTES: Incentive payments are made to sales staff for each high-efficiency refrigerator that they sell that meets the utility's efficiency criteria.]

1	Yes	
2	Not in 1996 but in some other time period	[SPECIFY DETAILS. GO TO E15] **See Id List #4**
3	Not from utility but from some other entity	[SPECIFY DETAILS. GO TO E15]
4	No	[GO TO E15]
-8	Don't know	[GO TO E15]
-9	Refused	[GO TO E15]

E11 Did any of them receive incentive payments in 1996?

1	Yes	[SKIP NEXT QUESTION]
3	No	
-8	Don't know	[GO TO E15]
-9	Refused	[GO TO E15]

E12 Why not? **See Id List #5** [GO TO E15]

E13 On a scale of 1 to five with 1 being "no influence" and 5 being "a great deal of influence", how much influence did these payments have on the sales practices of your sales staff?

1	2	3	4	5
No influence				Great deal of influence
		SKIP	NEXT	QUESTION

-8 Don't know [SKIP NEXT QUESTION]
-9 Refused [SKIP NEXT QUESTION]

E14 Why did it not have much influence? **See Id List #6**

E15 Have you participated in the SERP (Super Efficiency Refrigerator) Program?

1 Yes [SKIP NEXT QUESTION]
3 No
4 Don't know what the program is
-8 Don't know if participated
-9 Refused

E16 Do you sell Whirlpool refrigerators?
[INTERVIEWER NOTE: Whirlpool was the only distributor of refrigerators that qualified for the rebate in the SERP program. This tells us who might have been able to sell SERP refrigerators.]

1 Yes
3 No
-8 Don't know
-9 Refused
● NA

F. SALES DATA

Earlier we talked about your sales of efficient refrigerators in 1996. [INTERVIEWER NOTE: IF THEY WANT TO BE REMINDED, READ THE ANSWERS TO B0] We now want you to think about sales of energy efficient refrigerators further back in time. I'm not looking for exact figures, just your best guess.

F1 Would you be able to answer questions about refrigerator sales at this location in 1991 and 1986?

1 Yes for 1991 and 1986 [SKIP NEXT QUESTION]
2 Yes for 1991 not for 1986 [SKIP NEXT QUESTION]
3 No
-8 Don't know [GO TO END]
-9 Refused [GO TO END]

F2a Why not? [OPEN ENDED, DO NOT PROMPT]

1 Didn't work at this location then
2 Worked at this location but can't recall
4 Store didn't sell refrigerators before 1991
-8 Don't know
-9 Refused
● NA

[GO TO END]

F3 Great! First of all, approximately how many refrigerators did you sell in 1991 [IF F1=1:] and in 1986?

Number of refrigerators:

F3a 1991 _____
F3b 1986 _____
-8 Don't know
-9 Refused
● NA

F4 Approximately what percent of your refrigerator sales in 1991 were energy efficient refrigerators compared to the 1990 federal standards?
[IF F1=1] And in 1986 compared to standard efficiency refrigerators?
[INTERVIEWER NOTE: We want percent of the number of refrigerators, not percent of the dollar value of the refrigerators.]

Energy efficient

F4a 1991 _____
F4b 1986 _____
-8 Don't know
-9 Refused
● NA

[IF "DON"T KNOW" OR "REFUSED" FOR 1986 ONLY, RECORD 1991 DATA AND CONTINUE. IF "DON'T KNOW" or "REFUSED" BOTH TIME PERIODS, SKIP TO END]

F5 Would you be able to further breakdown the percent of energy efficient units by the categories we discussed earlier, e.g., 10% more efficient than standard, 20% more efficient than standard, etc.?

1 Yes
3 No [SKIP NEXT QUESTION]
-8 Don' t know [SKIP NEXT QUESTION]
-9 Refused [SKIP NEXT QUESTION]

Earlier we asked you about your stocking patterns in 1991 and 1986. Now we want to ask you about refrigerator sales in those years.

F6 What percent of your efficient refrigerators sold in 1991 were … [Repeat for each efficiency bin]? [ASK IF 1986 DATA GIVEN IN F0] And in 1986, what percent of your efficient refrigerators sold were … [Repeat for each efficiency bin]?
[INTERVIEWER NOTE: We want percent of the number of refrigerators, not percent of the dollar value of the refrigerators.]

		1991
F6a	At least 10% more efficient compared to the 1990 federal standards	a
F6b	At least 20% more efficient compared to the 1990 federal standards	b
F6c	At least 30% more efficient compared to the 1990 federal standards	c
		1986
F6aa	At least 10% more efficient than standard efficiency refrigerators	d
F6ab	At least 20% more efficient than standard efficiency refrigerators	e
F6ac	At least 30% more efficient than standard efficiency refrigerators	f

- NA

[INTERVIEWER NOTE: Responses to earlier questions may tell you the answer to the following question. If so, you may want to introduce this question with "I want to confirm what you have told me to earlier questions."]

F7@ID Have your sales of efficient refrigerators increased or decreased over time?

1 Increased
2 Decreased
-8 Don't know
-9 Refused

[IF PREVIOUS QUESTION = 1 OR 2]

F7 To what do you attribute this [INCREASE/DECREASE]? [DO NOT READ. MARK ALL THAT APPLY.]

For Fia to F7id:

(Old number)

Increased Sales

1 Availability of utility rebates
2 Availability of manufacturer rebates
3 Availability of retailer rebates
4 **Promotion** or advertising – Utilities
5 **Promotion** or advertising – Manufacturers
6 **Promotion** or advertising – Retailers
7 Improved or enhanced salesperson or retailer sales "push" (active promotion)
8 Increased customer **knowledge** of efficiency issues
9 Lower **prices** for energy efficient models
10 More efficient refrigerators **available**
11 More efficient refrigerators on the **display floor**
13 Increased **demand**
-8 Don't know
-9 Refused
● NA

F7ia 1st Response
F7ib 2nd Response
F7ic 3rd Response
F7id 4th Response

For F7da to F7dd:

Decreased Sales

1 Elimination of utility rebates
2 Reduction in utility rebate levels
3 Changes in utility rebate levels over time
4 **Promotion** or advertising reduced – Utilities
5 **Promotion** or advertising reduced – Manufacturers
6 **Promotion** or advertising reduced – Retailers
7 Decreased salesperson or retailer sales "push"
8 Lack of consumer education or awareness of product benefits
9 **Higher prices** for energy efficient models (combined with old 10)
10 Increased prices for energy efficient models
11 Efficient refrigerators no longer **available** (combined with old 12)
12 Reductions in product supply or availability
13 Fewer efficient refrigerators on the **display floor** (combined with old 14)
14 Reductions in floor space given to energy efficient models
16 Lack of **demand**
17 **Rebates** dropped or reduced (combined old 1-3)
18 Less difference in energy use between standard and energy efficient models
-8 Don't know
-9 Refused
- NA

F7da **1st Response**
F7db **2nd Response**
F7dc **3rd Response**
F7dd **4th Response**

GENDER
1 Male
3 Female

TERRITORY Sample area of complete
N National
P PG&E
S SDG&E

ID LIST #1
D 5 - What have manufacturers done to remove or change these barriers?

1043 Design.

1597 Labeling.

1713 Provided more energy efficient refrigerator models.

2124 Increased stock.

2330 Made more energy efficient and cost same.

3001 Advertised and literature.

3006 Manufactured lower cost "stripped down" refrigerators.

3010 Sale prices.

3032 Offering a larger supply.

3045 Tried to quiet them down.

3048 Lowered prices.

3065 Some rebates price promotions.

3083 Frigidaire is offering consumer rebates.

3088 Advertise.

3098 Sales.

3121 Offering rebates--and combining companies so I can get different "makes" on my display floor.

3148 Lowered prices.

3168 Producing better-more efficient box.

3175 Financing.

3197 Brought down prices.

3205 Tried to give customer ideas regarding Freon.

3242 Choice of models going down.

ID LIST #1, Contd.
D 5 - What have manufacturers done to remove or change these barriers?

3248 They have changed barriers by increasing them.

3295 Advertising.

3316 Rebates.

3341 Created new designs, better labels.

4192 Made it worse in raise of prices; then lowered with sales promotions later.

4425 Focus on conservation-European model and standards.

4437 More competitive.

4895 Prices -rebates.

5002 Don't know.

5011 Actually they have raised base prices, but offered a few rebates...oddly enough.

5017 Made things worse by not having as clear energy labels as they could so shopper could read easier before sales help.

5077 Lowered prices/changed design a little and added colors.

5522 Making them more available.

5547 Choices in models.

5580 Rebates.

5591 Low.

5607 Handout guides made available.

5698 Making new models that are cfc free and advertising this.

5729 Try to cost.

ID LIST #2
D7 - What have utilities done to remove or change these barriers?

1597 Labeling showing savings.

2330 Had program in past to give customer refund.

3001 Offered rebates.

3005 Rebates, provided handout information.

3006 Sent notices in billing about energy efficiency and rebates.

3019 Ad.

3032 Rebates.

3048 Advertised benefits, rebates.

3054 Offer rebate.

3073 Rebates were good....now eliminated.

3083 PG&E gave away refrigerators.

3090 Market bills.

3098 Rebates.

3100 Education/rebates.

3122 Rebates, education efforts.

3181 Less rebates.

3197 Ads and promotional POP.

3205 Good job promoting energy efficient purchases--done a better job than the manufacturer regarding public information.

3242 Rebates.

3243 Rebates.

3248 Rebates, information packets.

3295 Used to offer rebates.

ID LIST #2, Contd.
D7 - What have utilities done to remove or change these barriers?

3316 Put information in billings.

3341 Provide literature, rebates offered.

4192 Raised energy prices; therefore, people are more aware of the value of saving.

4425 Information pamphlet.

4638 They've attempted through newsletters.

5522 Rebates, but they are not large enough to be effective.

5559 The local utilities no longer have the type of program that makes a difference in sales.

5591 Pro.

5698 Shown their concern for the Freon issue.

5729 Rebates.

5738 Energy guide.

ID LIST #3
D9 - What have you (or other retail stores) done to remove or change these barriers?

2330 Sponsor program.

3001 Been more informed and knowledgeable for customer.

3005 Better marketing signage.

3006 Advertised rebates.

3045 Inform customer that running continuously was normal.

3048 Informed customers/EGIA member.

3054 Offer rebates or sales.

3065 Special deals.

3066 Try to influence manufacturers to lower prices.

3083 Take a slimmer margin on profit.

3088 Education.

3090 Sell what we can.

3098 Benefits advertising.

3100 Display better on floor.

3122 Advertise.

3168 Advertising.

3181 Did double rebates.

3205 We try to tell customer pro to reclaim Freon, etc.

3248 Having aggressive low prices.

3295 Advertising.

3316 Ads about energy savings.

3341 Educate our customers.

ID LIST #3, Contd.
D9 - What have you (or other retail stores) done to remove or change these barriers?

4249 We get the most energy efficient appliances possible.

4425 Staff training, stay up to date.

4761 Sales pitch.

5591 Display.

5698 Have equipment to remove Freon in service department.

5729 Promote maybe mark down.

ID LIST #4
E10 - Not in 1996 but in some other time period details.

3074 95.

3091 95.

3168 In '95.

3171 95.

ID LIST #5
E12 - Why didn't any of them receive incentive payments in 1996?

3045 Don't know--don't think had a program last year.

3211 No sales made of qualified refrigeratorss.

3230 Had office drawing for these instead.

ID LIST #6
E14 - Why did it not have much influence?

3015 Not as many models available that qualified.

3032 No tracking of payments done on my part.

3054 Not that great.

3065 Money to make a difference.

3105 We got in on program late.

3121 Public is thrifty, energy efficient not necessarily what they want.

3234 Very few models qualified and incentive was extremely low.

3242 Staff on commission; therefore, do not pressure customer.

5762 Don't know.

CFL RETAILER SURVEY

CFL RETAILER SURVEY

CASEID **Unique Identification Number**

A. SCREENER AND DECISION-MAKING

A1 First, can you tell me if your store sells compact fluorescent light bulbs?

[INTERVIEWER NOTE: If necessary, define CFLs:]
Compact fluorescent bulbs are energy-efficient, long-lasting substitutes for incandescent lamps. These lamps use about one-half to one-tenth the energy to produce the same light output and last up to thirteen times longer than the incandescent lamps they replace. They screw into regular lamp sockets but look different from incandescent bulbs.

1	Yes	
3	No	
5	Don't know what CFLs are	[Explain what CFLs are; if still don't know, ask if there might be someone else we could talk to; if not, THANK and TERMINATE]
-8	Don't know if sell CFLs	[Ask if there might be someone else we could talk to; if not, THANK and TERMINATE]
-9	Refused	[THANK and TERMINATE]

A2 Do you sell compact fluorescent light fixtures?

1	Yes	[SKIP NEXT QUESTION]
3	No	
-8	Don't know	[DEFINE (BELOW) AND RE-ASK]
-9	Refused	

[INTERVIEWER NOTE: DEFINITION OF CFL FIXTURE: Fixtures that are designed specifically for compact fluorescent light bulbs as compared to fixtures that take only incandescent bulbs (for example chandeliers with small candle-shaped bulbs), and fixtures that can take any regular screw-in bulb.]

[IF NO TO BOTH A1 AND A2]

A3 Why don't you currently sell compact fluorescent lighting products?

1 Sell no lighting products
2 Do not have **shelf space** for CFL products
3 **No demand**
4 **Rebates** or discounts no longer available – from Utility
5 – from Manufacturer
6 **Rebate** levels or discounts are too low – from Utility
7 – from Manufacturer
8 **Promotional** or advertising support no longer available – from Utility
9 – from Manufacturer
10 Higher **prices** for CFL products vs. incandescent or other lighting products
11 Cannot get CFLs (**supply** problems)
12 Cannot get **high-quality** CFLs (quality of supply problems)
13 Other [SPECIFY]
-8 Don't know
-9 Refused
● NA

[THANK and TERMINATE]

A4a What is your title?

1 Store manager
2 Sales manager
3 Owner or president
4 Supervisor
5 Salesperson
6 National store manager
8 Cashier
-8 Don't know
-9 Refused

A5 How long have you worked for [RETAILER NAME]?

_____ Number of years employed by retailer
-8 Don't know
-9 Refused

A6a Which of the following categories best describes your company? [CHOOSE ONE]

1 Hardware store
2 Discount retail store
3 Grocery store
4 Drug store
5 Department store
7 ½ drugstore ½ grocery store
8 Lighting store
-8 Don't know
-9 Refused

A7 Are you part of a local, CALIFORNIA/STATE, or national chain?
[INTERVIEWER NOTE: If they have branches outside the state, they are "national", even if they do not have branches all over the United States.]

1 Yes, local chain
2 Yes, California/State chain
3 Yes, national chain
4 No
-8 Don't know
-9 Refused

[IF CALIFORNIA/STATE OR NATIONAL CHAIN]

A8a Do you or someone else in your store make decisions about what lighting products are sold in your store or are decisions made at another level – such as at the regional or national headquarters?

1 Respondent makes all decisions locally (at this store)
2 Someone else in this store makes all decisions locally (at this store)
3 Regional HQ makes decisions about this store [ASK FOR APPROPRIATE REGIONAL-LEVEL CONTACT]
4 National HQ makes decisions about this store [ASK FOR APPROPRIATE NATIONAL-LEVEL CONTACT]
5 Other [SPECIFY]
-8 Don't know
-9 Refused

[IF CALIFORNIA/STATE OR NATIONAL CHAIN]

A9@a We would like you to answer our questions for all stores that fall within your jurisdiction or knowledge. Are you knowledgeable about lighting stocking and sales trends for … [READ OPTIONS.]

1 This store at this site only
2 A number of stores at various sites in your state
A9a How many stores? ____
3 A number of stores at various sites around the country
A9b How many stores? ____
4 Other [SPECIFY]
-8 Don't know
-9 Refused

B. RELATIVE AND HISTORIC CFL SALES DATA

[IF NO TO A1, SKIP TO B5a]

B1a@a We are interested in gathering data regarding the sale of compact fluorescent light bulbs or CFLs over time relative to the sale of other types of **lightbulbs**. So far this year, what percent of all bulbs you sold were compact fluorescent light bulbs?

_____%
997 Did not sell any kind of light bulbs in that year [SKIP TO B1_1a]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused

B1ab What percent were incandescent bulbs? _____%

997 Did not sell any kind of light bulbs in that year [SKIP TO B1_1a]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused
● NA

[IF B1a@a PLUS B1ab = 100%, SKIP TO B1_1a]

B1aa OK, I will assume that the remaining [CALCULATE PERCENT] percent were other types of bulbs. Is this right? [ALLOW RESPONDENT TO BACK UP AND CHANGE PERCENTAGES]

1 Yes
3 No [SKIP TO B1a@a]
-8 Don't know
-9 Refused
● NA

B1ad [IF B1aa > 40% IN ANY YEAR] What types of bulbs were you including in the "other" category? [OPEN ENDED]

B1_1a We are interested in gathering data regarding the sale of compact fluorescent light bulbs or CFLs over time relative to the sale of other types of **lightbulbs**. In **1996**, what percent of all bulbs you sold were compact fluorescent light bulbs?

_____%
997 Did not sell any kind of light bulbs in that year [SKIP TO B1_2a]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused

B1_1b What percent were incandescent bulbs? _____%

997 Did not sell any kind of light bulbs in that year [SKIP TO B1_2a]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused
● NA

[IF B1_1a PLUS B1_1b = 100%, SKIP TO B1_2a]

B1a_1 OK, I will assume that the remaining [CALCULATE PERCENT] percent were other types of bulbs. Is this right? [ALLOW RESPONDENT TO BACK UP AND CHANGE PERCENTAGES]

1 Yes
3 No [SKIP TO B1_1a]
-8 Don't know
-9 Refused
● NA

B1d_1 [IF B1a_1 > 40% IN ANY YEAR] What types of bulbs were you including in the "other" category? [OPEN ENDED]

[IF A5 ≤ 5, SKIP TO B1_3a]

B1_2a We are interested in gathering data regarding the sale of compact fluorescent light bulbs or CFLs over time relative to the sale of other types of **lightbulbs**. In **1991**, what percent of all bulbs you sold were compact fluorescent light bulbs?

_____%
997 Did not sell any kind of light bulbs in that year [SKIP TO B1_3a]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused

B1_2b What percent were incandescent bulbs? _____%

997 Did not sell any kind of light bulbs in that year [SKIP TO B1_3a]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused
● NA

[IF B1_2a PLUS B1_2b = 100%, SKIP TO B1_3a]

B1a_2 OK, I will assume that the remaining [CALCULATE PERCENT] percent were other types of bulbs. Is this right? [ALLOW RESPONDENT TO BACK UP AND CHANGE PERCENTAGES]

1 Yes
3 No [SKIP TO B1_2a]
-8 Don't know
-9 Refused
● NA

B1d_2 [IF B1a_2 > 40% IN ANY YEAR] What types of bulbs were you including in the "other" category? [OPEN ENDED]

[IF A5 ≤ 10, SKIP TO NEXT SECTION]

B1_3a We are interested in gathering data regarding the sale of compact fluorescent light bulbs or CFLs over time relative to the sale of other types of **lightbulbs**. In **1986**, what percent of all bulbs you sold were compact fluorescent light bulbs?

_____%
997 Did not sell any kind of light bulbs in that year [SKIP TO NEXT SECTION]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused

B1_3b What percent were incandescent bulbs? _____%

997 Did not sell any kind of light bulbs in that year [SKIP TO NEXT SECTION]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused
● NA

[IF B1_3a plus B1_3b = 100%, SKIP TO NEXT SECTION]

B1a_3 OK, I will assume that the remaining [CALCULATE PERCENT] percent were other types of bulbs. Is this right? [ALLOW RESPONDENT TO BACK UP AND CHANGE PERCENTAGES]

1 Yes
3 No [SKIP TO B1_3a]
-8 Don't know
-9 Refused
● NA

B1d_3 [IF B1a_3 > 40% IN ANY YEAR] What types of bulbs were you including in the "other" category? [OPEN ENDED]

[IF NO TO A2, SKIP TO C1]

B5a Now I would like to ask the same type of questions regarding **lighting fixtures**. So far this year, what percent of all fixtures you sold were designed to use compact fluorescent light bulbs only?

_____%
997 Did not sell any kind of fixtures in that year [SKIP TO B5_5a]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused

B5b What percent would take only incandescent bulbs, such as small candle bulbs? _____%

997 Did not sell any kind of fixtures in that year [SKIP TO B5_5a]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused
● NA

B5c What percent would take any regular screw-in bulb with a regular-size base? _____%

997 Did not sell any kind of fixtures in that year [SKIP TO B5_5a]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused
● NA

[IF B5a PLUS B5b PLUS B5c = 100%, SKIP TO B5_5a]

B5d OK, I will assume that the remaining [CALCULATE PERCENT] percent were other types of bulbs. Is this right? [ALLOW RESPONDENT TO BACK UP AND CHANGE PERCENTAGES]

1 Yes
3 No [SKIP TO B5a]
-8 Don't know
-9 Refused
● NA

B5e [IF B5d > 40% IN ANY YEAR] What types of fixtures or bulbs were you including in the "other" category? [OPEN ENDED]

B5_5a Now I would like to ask the same type of questions regarding **lighting fixtures**. In **1996**, what percent of all fixtures you sold were designed to use compact fluorescent light bulbs only? _____%

997 Did not sell any kind of fixtures in that year [SKIP TO B5_6a]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused

B5_5b What percent would take only incandescent bulbs, such as small candle bulbs? _____%

997 Did not sell any kind of fixtures in that year [SKIP TO B5_6a]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused
● NA

B5_5c What percent would take any regular screw-in bulb with a regular-size base? _____%

997 Did not sell any kind of fixtures in that year [SKIP TO B5_6a]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused
● NA

[IF B5_5a PLUS B5_5b PLUS B5_5c = 100%, SKIP TO B5_6a]

B5d_5 OK, I will assume that the remaining [CALCULATE PERCENT] percent were other types of bulbs. Is this right? [ALLOW RESPONDENT TO BACK UP AND CHANGE PERCENTAGES]

1 Yes
3 No [SKIP TO B5_5a]
-8 Don't know
-9 Refused
● NA

B5e_5 [IF B5d_5 > 40% IN ANY YEAR] What types of fixtures or bulbs were you including in the "other" category? [OPEN ENDED]

[IF A5 ≤ 5, SKIP TO NEXT YEAR]

B5_6a Now I would like to ask the same type of questions regarding **lighting fixtures**. In **1991**, what percent of all fixtures you sold were designed to use compact fluorescent light bulbs only? _____%

997 Did not sell any kind of fixtures in that year [SKIP TO B5_7a]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused
● NA

B5_6b What percent would take only incandescent bulbs, such as small candle bulbs? _____%

997 Did not sell any kind of fixtures in that year [SKIP TO B5_7a]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused
● NA

B5_6c What percent would take any regular screw-in bulb with a regular-size base? _____%

997 Did not sell any kind of fixtures in that year [SKIP TO B5_7a]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused
● NA

[IF B5_6a PLUS B5_6b PLUS B5_6c = 100%, SKIP TO B5_7a]

B5d_6 OK, I will assume that the remaining [CALCULATE PERCENT] percent were other types of bulbs. Is this right? [ALLOW RESPONDENT TO BACK UP AND CHANGE PERCENTAGES]

1 Yes
3 No [SKIP TO B5_6a]
-8 Don't know
-9 Refused
● NA

B5e_6 [IF B5d_6 > 40% IN ANY YEAR] What types of fixtures or bulbs were you including in the "other" category? [OPEN ENDED]

[IF A5 ≤ 10, SKIP TO NEXT SECTION]

B5_7a Now I would like to ask the same type of questions regarding **lighting fixtures**. 1986, what percent of all fixtures you sold were designed to use compact fluorescent light bulbs only? _____%

997 Did not sell any kind of fixtures in that year [SKIP TO NEXT SECTION]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused
● NA

B5_7b What percent would take only incandescent bulbs, such as small candle bulbs? _____%

997 Did not sell any kind of fixtures in that year [SKIP TO NEXT SECTION]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused
● NA

B5_7c What percent would take any regular screw-in bulb with a regular-size base? _____%

997 Did not sell any kind of fixtures in that year [SKIP TO NEXT SECTION]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused
● NA

[IF B5_7a PLUS B5_7b PLUS B5_7c = 100%, SKIP TO NEXT SECTION]

B5d_7 OK, I will assume that the remaining [CALCULATE PERCENT] percent were other types of bulbs. Is this right? [ALLOW RESPONDENT TO BACK UP AND CHANGE PERCENTAGES]

1 Yes
3 No [SKIP TO B5_7a]
-8 Don't know
-9 Refused
● NA

B5e_7 [IF B5d_7 > 40% IN ANY YEAR] What types of fixtures or bulbs were you including in the "other" category? [OPEN ENDED]

C. SHELF SPACE AND SALES VOLUME

Now, we'd like to get an idea of the amount of shelf space devoted to different types of lighting products.

[FOR THE NEXT 5 QUESTIONS]
-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused

C1 What percent of your total display space is devoted to lighting products?

C2 Of the space devoted to lighting products, what percent is currently being used to display compact fluorescent light bulbs?

C3 What percent is currently being used to display incandescent or other types of light bulbs?

C4 How about compact fluorescent light fixtures?

C5 And other types of fixtures?

[IF THE PREVIOUS 4 QUESTIONS DO NOT ADD TO 100%] That totals ___ percent of your shelf space for lighting products. What makes up the remaining shelf space? [OPEN ENDED. ALLOW CHANGING PREVIOUS ANSWERS SO TOTAL COMES TO 100%]

We would like to get a general idea of how many light bulbs your store sold over time so we can calculate a weighted average for the industry as a whole.

C7 Approximately how many light bulbs, of any type, did you sell in 1996?

-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused

[SKIP IF B1_2a or B1_2b = 997 – Did not sell bulbs in 1991]
C8 How many in 1991?

-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused

[SKIP IF B1_3a or B1_3b = 997 – Did not sell bulbs in 1986]
C9 How many in 1986?

-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused

[IF A2 DOES NOT = 1 SKIP NEXT 3 QUESTIONS – Do not sell fixtures]
C10 Approximately how many light fixtures, of any type, did you sell in 1996?

-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused
- NA

[SKIP IF B5_6a or B5_6b or B5_6c = 997]

C11 How many in 1991?

-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused
- NA

[SKIP IF B5_7a or B5_7b or B5_7c = 997]

C12 How many in 1986?

-8 Don't know [PROBE: Can you give me an approximate number?]
-9 Refused
- NA

D. PRODUCT AVAILABILITY

D1a What percent of the compact fluorescent lighting products sold in your stores are delivered from stock in your own warehouse as opposed to ordered from distributors or manufacturers?

D1b _____ percent sold from own warehouse
-8 Don't know
-9 Refused

[IF A1=YES]

D2 Does it take more time, less time, or about the same time to receive orders for compact fluorescent **light bulbs** as compared to regular, incandescent bulbs?

1 More time
2 Less time [SKIP NEXT QUESTION]
3 Same time [SKIP NEXT QUESTION]
-8 Don't know [SKIP NEXT QUESTION]
-9 Refused [SKIP NEXT QUESTION]

D3 How much longer does it take to receive compact fluorescent light bulbs than incandescent bulbs?

1 1-2 days
2 One week
3 Two weeks
4 Three weeks
5 One month
6 More than one month
-8 Don't know
-9 Refused
- NA

[IF A2=YES, OTHERWISE SKIP NEXT TWO QUESTIONS]

D4 Does it take more time, less time, or about the same time to receive orders for compact fluorescent **fixtures** as compared to regular fixtures?

1	More time	
2	Less time	[SKIP NEXT QUESTION]
3	Same time	[SKIP NEXT QUESTION]
-8	Don't know	[SKIP NEXT QUESTION]
-9	Refused	[SKIP NEXT QUESTION]

D5 How much longer does it take to receive compact fluorescent light bulbs than incandescent bulbs?

1	1-2 days
2	One week
3	Two weeks
4	Three weeks
5	One month
6	More than one month
-8	Don't know
-9	Refused
●	NA

[IF A1=YES, OTHERWISE SKIP TO NEXT SECTION]

D6 In the last two years, have you experienced any delays or backorders for compact fluorescent light bulbs that were more severe than you experience for incandescent bulbs?

1	Yes	
3	No	
5	Less severe [unlikely]	[SKIP TO NEXT SECTION]
-8	Don't know	[SKIP TO NEXT SECTION]
-9	Refused	[SKIP TO NEXT SECTION]
●	NA	

D7 Was this a change from previous years?

1	Yes	
3	No	[SKIP NEXT QUESTION]
-8	Don't know	[SKIP NEXT QUESTION]
-9	Refused	[SKIP NEXT QUESTION]
●	NA	

D8 How? [OPEN ENDED. DO NOT READ]

1	Previously we had delays or backorders
2	Previously we had no delays or backorders

[IF D0 NOT = 1, SKIP TO NEXT SECTION]

D9a How frequently have these recent shortages occurred?
[INTERVIEWER NOTE: This is referring to shortages experienced in the last 2 years.]

1 Once a year
2 Twice a year
3 Three times a year
4 Four times a year
5 Five times a year or more
6 Other [SPECIFY]
-8 Don't know
-9 Refused
● NA

D10a What was the impact of these shortages on your business decisions?

1 Nothing, no impact
2 Stopped displaying brands for which shortages had occurred
3 Stopped ordering or stocking brands for which shortages had occurred
4 Changed ordering or stocking patterns to account for or accommodate shortages
5 Other [SPECIFY]
-8 Don't know
-9 Refused
● NA

E. PROMOTIONAL PRACTICES

E1 On a scale where 1 is "never" and 10 is "always", how often does your sales staff talk with customers about compact fluorescent light bulbs or fixtures?

Never									Always
1	2	3	4	5	6	7	8	9	10
SKIP NEXT QUESTION									

-8 Don't know
-9 Refused

E2 On a scale where 1 is "always the customer" and 10 is "always your sales staff", who initiates discussions about compact fluorescent light products most often?

Always the Customer									Always the sales staff
1	2	3	4	5	6	7	8	9	10

-8 Don't know
-9 Refused

E3 Approximately what percent of your customers' questions about lighting products are about CFLs?

-8 Don't know
-9 Refused

[IF A1=YES]

E4 On a scale where 1 is Never and 5 is Very often, how often do you receive complaints or returns of compact fluorescent light **bulbs**?

1	2	3	4	5
Never				Very often

-8 Don't know
-9 Refused

[IF A2=YES]

E5 On a scale where 1 is Never and 5 is Very often, how often do you receive complaints or returns of compact fluorescent light **fixtures**?

1	2	3	4	5
Never				Very often

-8 Don't know
-9 Refused

E6 Has your store had promotion campaigns for CFLs in the past 2 years that you funded with your own resources?

1 Yes
2 Yes, but only partially funded internally: (a) Who provided the rest of the funding?
3 No
-8 Don't know
-9 Refused

E7 Has your store had promotion campaigns for CFLs in the past 2 years that were funded by someone else?

1 Yes (a) Who?
3 No
-8 Don't know
-9 Refused

[IF YES TO EITHER OF THE PREVIOUS TWO QUESTIONS]

E8 How did you promote CFLs in these campaigns? [DO NOT PROMPT, ACCEPT ALL ANSWERS]

For E8a to E8d:

1 Nothing
2 Offer rebates
3 Offer price discounts
4 Point-of-purchase displays or advertising
5 Salesperson promotion, active sales techniques
6 Newspaper advertisements
7 TV advertisements
9 Radio ads
10 Mail ads
-8 Don't know
-9 Refused

E8a **1st Response**
E8b **2nd Response**
E8c **3rd Response**
E8d **4th Response**

It is very important that we discuss all of the possible factors that may have influenced the promotion and sales of CFLs over the past few years. I would like to read you a list of possible factors. For each, please rate the influence you think it has had upon the promotion and sales of CFLs on a scale of 1 to 5, with 1 being "no Influence" and 5 being "a great deal of influence."
[READ EACH CATEGORY; RANDOMIZE LIST; CIRCLE ONE NUMBER FOR EACH]

For E9 to E16:

-8 Don't know
-9 Refused

		No Influence				Great Deal of Influence
E9	Utility programs offering rebates or price discounts for CFL products	1	2	3	4	5
E10	Manufacturer rebate or incentive programs	1	2	3	4	5
E11	Changes in energy prices	1	2	3	4	5
E12	Environmental concerns	1	2	3	4	5
E13	Changes in CFL product quality or performance standards	1	2	3	4	5
E14	Reductions in the prices of CFL products	1	2	3	4	5
E15	Your own efforts to promote CFL products	1	2	3	4	5
E16	Utility educational programs	1	2	3	4	5

E17a Now I'd like you to think of all the possible factors that could have influenced the sale of CFL products over the past few years. If you had to name the single most influential factor, what would that be? [OPEN ENDED. DO NOT READ]

1 **Rebates** or incentives or price discounts – from Utility
2 – from Manufacturer
3 – from Retailer
4 **Promotion** or advertising support – from Utility
5 – from Manufacturer
6 – from Retailer
7 Increased consumer education or **awareness** of product benefits
8 **Price** of CFL products over time has decreased
9 Increased availability or **supply** of CFL products
10 Increased availability or supply of higher **quality** CFL products
11 Increased **shelf space** given to CFL products
13 Change in construction
14 Increased demand
15 Rebates from all sources
-8 Don't know
-9 Refused

E18 What, in your opinion, have been the principal barriers to selling CFL products over the past few years? [OPEN ENDED. DO NOT READ]

For E18a to E18d:

1 Lack of demand
2 Lack of **rebates**
3 Elimination or reduction in **Promotion** or advertising – Utilities
4 Elimination or reduction in **Promotion** or advertising – Manufacturers
5 Elimination or reduction in **Promotion** or advertising – Retailers
6 Lack of consumer education or **awareness** of product benefits
7 Higher **prices** for CFL products v. incandescent products
8 CFLs were not **available**
9 Fewer CFLs on the **display shelves**
10 Problems with product **quality**
12 CFLs too large
-8 Don't know
-9 Refused

E18a **1st Response**
E18b **2nd Response**
E18c **3rd Response**
E18d **4th Response**

F. CONSUMER AWARENESS

F1 On a scale of 1 to 10, with 1 being "not at all informed" and 10 being "very informed", how informed would you say your customers are about the benefits of CFL products?

Not at all Informed									Very Informed
1	2	3	4	5	6	7	8	9	10

-8 Don't know [SKIP NEXT QUESTION]
-9 Refused [SKIP NEXT QUESTION]

F2 Has this level of awareness among consumers increased, stayed the same, or decreased in the past few years?

1 Increased
2 Stayed the same
3 Decreased
-8 Don't know
-9 Refused
● NA

G. INFLUENCE OF UTILITY AND MANUFACTURER INITIATIVES

G1 Over time, utilities have initiated a number of programs designed to encourage the sale of CFL products. Are you aware of any such initiatives?

1 Yes
3 No [GO TO END]
-8 Don't know [GO TO END]
-9 Refused [GO TO END]

G2a Which utilities sponsored these initiatives?

1 PG&E
2 SDG&E
3 Other California utility [SPECIFY]
5 PG&L
6 AEP
7 Haywood & Duke
8 Local Con Edison
9 NFP
10 Niagra
11 NSP
12 PSE
-8 Don't know
-9 Refused
● NA

G3 On a scale of 1 to 10, with 1 being "not at all influential" and 10 being "very influential", how influential have these initiatives been in increasing CFL sales in your store?

Not at all Influential									Very Influential
1	2	3	4	5	6	7	8	9	10

-8 Don't know
-9 Refused
● NA

G4a [ASK IF 1-5 IN PREVIOUS QUESTION] Why do you say that?

1 Rebate or incentive levels are too low
2 Rebate or incentive levels keep changing, decreasing
3 Rebates or incentives have been eliminated
4 Lack of promotion or advertising support
5 Lack of assistance in retailer or salesperson education and sales training
6 Lack of assistance in raising consumer education or awareness
8 Lack of assistance in retailer and consumer education
9 Program too much of a burden
-8 Don't know
-9 Refused
● NA

G5 Are any of your CFL products currently eligible for rebates?

1 Yes
3 No
-8 Don't know
-9 Refused
● NA

G6 Were any of your CFL products eligible for rebates in 1996?

1 Yes
3 No
-8 Don't know
-9 Refused
● NA

GEND

1 Male
3 Female

TERRITRY

N National
P PG&E
S SDG&E

COMPTYPE

1 Hardware
2 Grocery
3 Drugstore
4 Variety
5 Lighting

BUILDER AND DESIGNER SURVEY

BUILDER AND DESIGNER SURVEY

Hello, my name is _____ from Hagler Bailly. I am working with SDG&E and PG&E on a study of the efficient refrigerator and lighting market. May I speak with someone who can talk about the housing market and decision-making about the types of appliances and fixtures that are put in new single-family homes?

Are you the right person to talk to?
This should take about 10 minutes. Is this a good time to talk?

IF NECESSARY: I am not selling anything; we are simply interested in talking with people in the new home construction market about the market for energy efficient refrigerators and compact fluorescent lights.

1	No one appropriate in this office	[ASK FOR APPROPRIATE CONTACTS]
2	Contact available	[CONTINUE]
3	Requests a callback	[SCHEDULE CALLBACK]
4	Refuses	[THANK AND TERMINATE]
5	Other	[SPECIFY]

[GENERAL NOTE: Substitute “design” for “build” as appropriate for architects.]

SCREENER AND GENERAL INFORMATION

First, do you design or build single-family homes in California?

1	Yes, design	
2	Yes, build	
3	Yes, both	
4	No	[THANK AND TERMINATE]
9	Don’t know	[THANK AND TERMINATE]
8	Refused	[THANK AND TERMINATE]

Approximately how many [single-family] homes a year does your company design or build?

What is your title?

1 Architect
2 Owner or president
3 Supervisor
4 Salesperson
5 Other [SPECIFY]

Probe for responsibilities if title is not self explanatory.

How long have you worked for this company?

PURCHASE DECISION-MAKING

How often do you make the decision of which **refrigerator** to install and how often does the customer? [Probe to understand what determines when customers make the decision and how they make the decision.]

How often do you make the decision of which **light fixtures** to install and how often does the customer? [Probe to understand what determines when customers make the decision and how they make the decision.]

[IF BUILDER MAKES DECISION]
What criteria do you take into account when deciding what refrigerator to install? [Probe to see where energy efficient criteria fit in.]

What criteria do you take into account when deciding what kinds of fixtures to install? [Probe to see where energy efficiency criteria and CFLs fit in.]

[IF CUSTOMER MAKES THE DECISION]
Do you give the customer choices of refrigerators and lighting fixtures? [Probe for options available. E.g., do they specify stores they can shop at, brands they can buy, etc. If they do not provide energy efficient options, ask why not.]

What kind of advice or help do you provide to your customers to assist them in choosing a refrigerator? [Probe for what they say about efficiency.]

What kind of advice or help do you provide to your customers to assist them in choosing light fixtures? [Probe for what they say about efficiency and CFLs.]

[EITHER MAKES DECISION]
What effect have utility rebates had on the decision-making process over the past few years?

What effect have information programs had?

On a scale of 1 to 10, with 1 being "not at all influential" and 10 being "very influential", how much influence have these programs had on the percent of your homes that have energy efficient refrigerators? And compact fluorescent fixtures?

Not at all Influential									Very Influential
Frig 1	2	3	4	5	6	7	8	9	10
CFL 1	2	3	4	5	6	7	8	9	10

98 Refused
99 Don't know

INSTALLATION ESTIMATES

Approximately what percent of the homes you build have a refrigerator that is at least 10% more efficient than the current federal standards? [Probe for higher efficiencies if appropriate.]

How has this number changed over time?

What percent of the homes you build have at least some fixtures designed to use compact fluorescent lights only?

Where in the house are these put and when (in what situations) do you install them?

How has this number changed over time?

PRODUCT AVAILABILITY

Do you have any difficulty getting energy efficient refrigerators or compact fluorescent fixtures?

Once you have placed an order, what is the lead time required to receive a standard efficiency refrigerator?

1 1-2 days
2 About a week
3 About two weeks
4 About three weeks
5 About one month
6 More than one month
9 Don't know
8 Refused

What is the lead time required to receive an energy efficient refrigerator?

1 1-2 days
2 About a week
3 About two weeks
4 About three weeks
5 About one month
6 More than one month
9 Don't know
8 Refused

DEMAND

How often do your customers bring up, unprompted, issues of the efficiency of any of their appliances? How about their lights and refrigerator? How has this changed over time?

What is the market like for houses that are labeled “energy efficient” in some way? How has this changed over time?

I want to understand the possible factors that may have influenced the sale of energy-efficient refrigerators and CFLs over the last two years. I would like to read you a list of possible factors. For each one, please rate the influence you think it has had on sales of energy-efficient refrigerators and CFLs using a scale of 1 to 5, with 1 being "No Influence" and 5 being "a great deal of influence."
[READ EACH CATEGORY; CIRCLE ONE NUMBER FOR EACH]

		No Influence				Great Deal of Influence
The creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	Frig 1	2	3	4	5
	CFL 1	2	3	4	5
Changes in codes and regulations	Frig 1	2	3	4	5
	CFL 1	2	3	4	5
Changes in energy prices	Frig 1	2	3	4	5
	CFL 1	2	3	4	5
Environmental concerns	Frig 1	2	3	4	5
	CFL 1	2	3	4	5
Improvements made in energy-efficient refrigerators; in compact fluorescent fixtures	Frig 1	2	3	4	5
	CFL 1	2	3	4	5
Reductions in the price of energy-efficient refrigerators, in compact fluorescent fixtures	Frig 1	2	3	4	5
	CFL 1	2	3	4	5
Your own efforts to market energy-efficient refrigerators; compact fluorescent fixtures	Frig 1	2	3	4	5
	CFL 1	2	3	4	5
Utility educational programs	Frig 1	2	3	4	5
	CFL 1	2	3	4	5

LEVEL OF AWARENESS

On a scale of 1 to 10, with 1 being “not at all informed” and 10 being “very informed”, how informed would you say your customers are about the benefits of energy efficient refrigerators and compact fluorescent fixtures?

	Not at all Informed									Very Informed
Frig 1	2	3	4	5	6	7	8	9	10
CFL 1	2	3	4	5	6	7	8	9	10

98 Refused
99 Don’t know

Has this level of awareness increased, stayed the same, or decreased in the past two years?

1 Increased
2 Decreased
3 Stayed the same
9 Don't
8 Refused

What, in your opinion, have been the principal barriers to selling energy efficient refrigerators and compact fluorescent fixtures over the past few years? [DO NOT READ. MARK ALL THAT APPLY.]

1 Lack of demand
2 Lack of **rebates**
3 Elimination or reduction in **Promotion** or advertising – Utilities
4 Elimination or reduction in **Promotion** or advertising – Manufacturers
5 Elimination or reduction in **Promotion** or advertising – Retailers
6 Lack of consumer education or **awareness** of product benefits
7 Higher **prices** for efficient products
8 CFLs or energy efficient refrigerators were not **available**
9 Fewer CFLs on the **display shelves**; refrigerators on display floors
10 Problems with product **quality**
11 Other [SPECIFY]
99 Don't know
98 Refused

END

That's all of the questions I have for you. Once again, I appreciate your input to our research and thank you for taking the time to talk with me today.

CFL MANUFACTURER INTERVIEW GUIDE

CFL MANUFACTURER INTERVIEW GUIDE

Hello, my name is _____ from Hagler Bailly. I am doing research for PG&E and SDG&E on the changes in the market over time for compact fluorescent light bulbs and fixtures. I have been given your name as someone who could answer my questions about the lighting market and your company's products. Are you the right person to talk to?

This should take about 20 minutes. Is this a good time to talk?

IF NECESSARY: I am not selling anything; and I am not seeking confidential product information. I am simply interested in talking with manufacturers to learn more about the production, promotion, and sales of CFL bulbs and fixtures over time.

IF NECESSARY: May I speak with someone within your company who knows the most about the history of your company's CFL production decisions and promotion practices?

1	Contact at another location-----> _____ NAME AND PHONE	[THANK AND TERMINATE]
2	Contact at this location	[CONTINUE]
3	Requests a callback	[SCHEDULE CALLBACK]
4	Refuses	[THANK AND TERMINATE]
8	Other	[SPECIFY]

SCREENER INFORMATION

First of all, do you currently produce compact fluorescent bulbs and fixtures? [probe for bulbs, fixtures, or both]

1	Yes, bulbs	[GO TO SECTION B]
2	Yes, fixtures	[GO TO SECTION B]
3	Yes, both	[GO TO SECTION B]
4	No	[GO TO A.2]
5	Don't know	[Ask if someone else would complete survey]
6	Refused	[Thank and terminate]

Have you ever had compact fluorescent bulbs or fixtures in your product line?

1	Yes, bulbs	
2	Yes, fixtures	
3	Yes, both	
4	No	[GO TO A.5]
5	Don't know	[Ask if someone else would complete survey]
6	Refused	[Thank and terminate]

When did you stop producing them?

Why did you stop producing them?

[GO TO B]

Do you make any lightbulbs?
1 Yes 2 No 8 Refused 9 Don't know

[IF YES]
Why don't you make CFLs?

[IF MANUFACTURER HAS NEVER PRODUCED CFL PRODUCTS OR NOT PRODUCED THEM IN THE LAST 5 YEARS, THANK and TERMINATE.]

RE-TOOLING ISSUES

When did you sell your first CFL?

[THE NEXT FEW QUESTIONS ARE INTER-RELATED, SKIP AS NECESSARY.]
I would like to get a general feeling for CFL manufacturing issues, particularly to understand what changes need to be made to produce CFL bulbs and fixtures.
[Analysis note: Purpose is to understand how permanent are the changes they have made. Presumably they would not answer a question like "Do you plan to continue making CFLs for the foreseeable future."]

Have you built a separate production line to make CFLs?
1 Yes 2 No 8 Refused 9 Don't know

How about CFL fixtures?

Do you produce CFLs on the same production line as incandescent lights or full-sized fluorescent tubes?
1 Yes 2 No 8 Refused 9 Don't know

[IF NO]
Do you produce them in the same manufacturing facility?
1 Yes 2 No 8 Refused 9 Don't know

How long does it take to build a new CFL production line (or convert a line to make CFLs)?

If you changed your plans, could the CFL production line be easily converted to making another product? (How hard would that be?)

Are you demand-constrained or supply-constrained? If demand for CFLs grew quickly, could you meet the demand? Do you have spare CFL capacity? Could you produce significantly more bulbs if the demand were there? Or could you build new capacity quickly?

If not, what stands in your way?

How does this (supply constraint) differ compared to the past few years?

PRODUCTION PLANNING

Now I want to understand how your production planning process works.

Do you build CFLs

1 At a relatively constant rate throughout the year or do you
2 Build what you expect to sell in a small number of batches?

Do you

1 Build CFLs in response to orders from distributors and retailers, or do you
2 Estimate how many you will sell and build that number?

[IF BUILD IN RESPONSE TO ORDERS]

Is there a longer lead time required to deliver a CFL as compared to an incandescent bulb once an order is received from a distributor or retailer?

1 Yes 2 No 8 Refused 9 Don't know

[IF CFL LEAD TIME IS LONGER THAN INCANDESCENT LEAD TIME]
Why?

Has this always been the case?

1 Yes
2 No, used to be longer lead time for CFLs
3 No, used to be shorter or same lead time for CFLs
9 Don't know
8 Refused

[IF ESTIMATE HOW MANY YOU WILL SELL AND BUILD THAT NUMBER]

So I presume that near the end of the production cycle you occasionally run out of specific bulbs. Is that right?

1 Yes 2 No 8 Refused 9 Don't know

[IF YES]
Do you run out of CFLs more or less often than incandescent bulbs?

1 More often
2 Less often
3 Same

Right now, do you produce CFL bulbs that have the same light output as the standard incandescent bulbs in the most common sizes? (40, 60, 75, 100 watts)

1 Yes 2 No 8 Refused 9 Don't know

Has this always been the case? [IF NOT] How has this changed over time?

RETAILER PATTERNS

Do you impose any requirements on retailers that would affect what they stock or how they display or promote it? [IF SO] What? Do any of your requirements affect your CFL products?
[e.g., Do you require them to take specific products if they are going to carry your products? Which products? Do they include CFLs? OR: If they are going to carry product X (high volume or high profit) then they also have to carry product Y (low volume or profit).]

BARRIERS

What, in your opinion, are the principal barriers to selling CFL products?

1 Lack of **demand**
2 Lack of **rebates**
3 Elimination or reduction in **Promotion** or advertising – Utilities
4 – Manufacturers
5 – Retailers
6 Lack of consumer education or **awareness** of product benefits
7 Higher **prices** for CFL products v. other lighting products
8 CFLs were not **available** (technology had to be advanced)
9 Available CFLs were of **low quality**
10 Lack of **shelf space** available for CFL products
11 Other [SPECIFY]
99 Don't know
98 Refused

Have these barriers been coming down over the past few years?

Are there any barriers that used to be significant but have been largely solved by now?

[Check during implementation: this may be redundant with the next section.]
Do you believe the education and rebate programs of SDG&E and PG&E have had any affect on some of these barriers?

What have manufacturers done to remove or affect these barriers?

What have distributors or retailers done to remove or affect these barriers?

INFLUENTIAL FACTORS

It is very important that I understand the influence of all of the factors that may have influenced the market for CFLs. I would like to read you a list of possible factors. For each, please rate the influence you think it has had upon your decisions to produce CFL products on a scale of 1 to 5, with 1 being "No Influence" and 5 being "a great deal of influence."

	No Influence				Great Deal of Influence
Utility rebate programs	1	2	3	4	5
Rising energy prices	1	2	3	4	5
Environmental concerns	1	2	3	4	5
Competition from rival manufacturers to add CFL products	1	2	3	4	5
Declining costs of producing CFLs	1	2	3	4	5
Increased consumer demand for CFL products	1	2	3	4	5
Utility efforts to educate consumers	1	2	3	4	5

Were there any other factors that we haven't touched on that have affected your current production plans or decisions for CFLs?

Are those any different from those of a few years ago?

I now want to try to understand how much credit the California utilities, particularly PG&E and SDG&E, deserve for helping to bring about changes in the market for CFLs.

- How much influence would you say the rebate and information programs sponsored by California utilities have had on your **research and development** for CFLs? Would you say they have had no influence, a little, some, or a lot?
- How much influence have they had on the **number of CFL products** you offer?
- Your **sales volume** for CFL products?
- Your **future production plans**?

	1	2	3	4	8/9
	No influence			A lot of influence	Refused/ Don't know
R&D					
Number of CFL products offered					
Sales volume for CFLs					
Future production plans					

Have the utility programs in California been more or less influential than those in other states or were they about the same?

[IF NOT THE SAME]
What made them more/less influential?

Have California utility rebate programs influenced the distribution of your company's CFLs in other states?

Were you aware that PG&E and SDG&E dropped rebates in 1997?

What influence, if any, have these changes had on your company's production decisions?

What influence, if any, have these changes had on your company's distribution decisions? (e.g., for the state of California, for northern v. southern California, for other states, etc.?)

If California utility programs were eliminated altogether in 1998 would that affect your production or distribution decisions?

Are you aware of the Energy Star Program?

1	Yes	
2	No	[GO TO NEXT SECTION]
9	Don't know	[GO TO NEXT SECTION]
8	Refused	[GO TO NEXT SECTION]

How did you become aware of the Energy Star Program?

1	PG&E	
2	SDG&E	
3	Other California utility	[SPECIFY]
4	EPA or DOE	
5	Distributor or Retailer	
6	Other Manufacturer	[SPECIFY]
7	Other	[SPECIFY]
99	Don't know	
88	Refused	

END

That's all of the questions I have for you. Once again, I appreciate your input to our research and thank you for taking the time to talk with me today.

REFRIGERATOR MANUFACTURER INTERVIEW GUIDE

REFRIGERATOR MANUFACTURER INTERVIEW GUIDE

Hello, this is _____ from Hagler Bailly. I am doing research for two California utilities, PG&E and SDG&E, on the market for energy efficient refrigerators.

> May I speak with someone who can talk to me about the energy efficiency of your refrigerators and production and marketing decisions for your refrigerators?
>
> I have been given your name as someone who could answer my questions about the refrigerator market and your company's products.

Are you the right person to talk to?

This should take about 20 minutes. Is this a good time to talk?

IF NECESSARY: I am not selling anything; and I am not seeking confidential product information. I am simply interested in talking with manufacturers to learn more about the production, promotion, and sales of energy efficient refrigerators over time.

IF NECESSARY: May I speak with someone within your company who knows the most about the history of your company's energy efficient refrigerator production decisions and promotion practices?

1	Contact at another location----->	_____ NAME AND PHONE [THANK AND TERMINATE]
2	Contact at this location	[CONTINUE]
3	Requests a callback	[SCHEDULE CALLBACK]
4	Refuses	[THANK AND TERMINATE]
5	Other	[SPECIFY]

I will be asking you a bit about your manufacturing and product delivery process so I can put everything in context. I also need to understand what impact utility refrigerator rebate and incentive programs have had on your model designs and sales. Finally, and most importantly, I need to understand the barriers to production and sales of energy efficient refrigerators and how they have changed over time.

SETTING

First, will you confirm for me the brand names that your refrigerators are sold under?

Manufacturer	Model names
Amana (Raytheon)	Amana
Frigidaire (Electrolux)	Frigidaire White-Westinghouse Tappan Kelvinator Gibson
General Electric (GE)	GE Hotpoint RCA
Maytag (Admiral)	Magic Chef Jenair Admiral
Whirlpool	Whirlpool Kitchenaide Kenmore (Sears) Roper Estate (High volume through warehouse clubs) Inglis (Canada)
Crosley	Crosley
Unknown	Montgomery Wards

Who makes refrigerators that are sold under the Montgomery Wards name?

For Whirlpool and GE:
Appliance Magazine lists "Roper Corp" under General Electric Appliances but other sources show it as a Whirlpool product. Which is it?

For Whirlpool (and others?):
Do you make all of the refrigerators sold under Sears' name? (Are they all Kenmore?)

Who specifies the design details and efficiencies of the models you sell through Sears?

FEATURES, PRICE, AND SALES

I want to understand what differences there are between your energy efficient refrigerators, meaning those that are significantly more efficient than the federal standard, and standard efficiency refrigerators.

Can you summarize for me the **differences between the features** of the energy efficient models and the standard efficiency models you produce? (For example, are your energy efficient models all side-by-side, large refrigerators with ice through the door?)

How has this changed over time?

How would you describe the **prices** of your energy efficient models **relative** to your standard models? (e.g., How much more expensive is an energy efficient refrigerator than a comparable standard efficiency one?)

Do you produce energy efficient refrigerators in all **price ranges**? I.e., if someone wants to buy a relatively inexpensive refrigerator will they have a choice of an energy efficient one?

Model	(a) Low Price	(b) Medium	(c) High	(d) Overall
1 Top mount no TTDF				
2 Top mount with TTDF				
3 Bottom mount				
4 Side-by-side no TTDF				
5 Side-by-side with TTDF				
6 Compact				
7 Other				
8 Overall				

TTDF = Through The Door Features (e.g., ice)

Is it becoming more expensive or cheaper to manufacture energy efficient refrigerators compared to standard refrigerators? How has that trend affected your plans?

What percent of the refrigerator you sell:

1 Just meet or only slightly exceed the 1993 **efficiency standards**?
2 What percent are at least 10% more efficient
3 At least 20% more efficient
4 At least 30% more efficient
5 40% or more efficient

Have these percentages changed over time? In what way?

Have you seen any change in **consumer demand** for energy efficient refrigerators over time?

Has there been a trend toward more **feature-laden** refrigerators over the past 10 years? I.e., has the average refrigerator changed from a simple, **no-frills** model to one with lots of bells and whistles?

RETAILER PATTERNS

How often (what percent of the time) would you say your **retailers display** both standard and energy efficient models when you offer both for a given size and style of refrigerator?

Do you **impose any requirements on retailers** that would affect what they stock or how they display or promote it? [IF SO] What? Do any of your requirements affect your energy efficient refrigerators? [e.g., Do you require them to take specific models if they are going to carry your products? Which models? Do they include energy efficient models? OR: If they are going to carry model X (high volume or high profit) then they also have to carry model Y (low volume or profit).]

BARRIERS

What, in your opinion, are the principal **barriers** to selling energy efficient refrigerators?

1 Lack of **demand**
2 Lack of **rebates**
3 Elimination or reduction in **Promotion** or advertising – Utilities
4 – Manufacturers
5 – Retailers
6 Lack of consumer education or **awareness** of product benefits
7 Higher **prices** for energy efficient refrigerators
8 Energy efficient refrigerators were not **available**
9 Fewer energy efficient refrigerators on the **display floor**
10 Other [SPECIFY]
99 Don't know
98 Refused

Have these barriers been **coming down** over the past few years?

Are there any barriers that **used to be** significant but have been largely solved by now?

Do you believe the education and rebate **programs** of SDG&E and PG&E have had any **affect** on some of these barriers?

What have **manufacturers** done to remove or affect these barriers?

What have **retailers** done to remove or affect these barriers?

HISTORY OF EFFICIENCY AND MARKET FORCES

I want to understand the forces that influenced the efficiency of the refrigerators you manufacture.

General questions

Issue: Impact of California programs on manufacturer decision-making.
General: Can you talk to me about the relative importance of **federal standards, utility programs, and consumer demand** in your design and marketing decisions (over time)? How important were utility energy efficiency and rebate programs? How important were California's programs relative to the others? How important were they relative to the federal standards?
Specific: How much influence did the California refrigerator programs have on your decisions about how efficient to make your refrigerators and how to market them?

Detailed questions (If I need to press for details)

How much influence did utility programs have on your _____?

Influence of Utility rebate or educational programs on:

Production decisions, including the number of efficient models you offer
R&D
Current **sales** of energy efficient refrigerators
Future production plans

Have the utility **programs** in California been more or less influential than those **in other states** or about the same? Why? How?

Have California utility programs influenced the **distribution** of your company's energy efficient refrigerators **in other states**?

Many utilities, including PG&E and SDG&E are **cutting back** on their refrigerator rebate programs. What influence, if any, have these changes had on your company's plans.

If California utility programs were **eliminated** altogether in 1998 would that affect your production or distribution decisions?

How much influence did _____ have on your energy efficient refrigerator production decisions?

Federal **standards** have? (1990, 1993, 2001)

Customer concern over the **price** of energy

Customer concerns about the **environment**?

Competition from **rival manufacturers** to add energy efficient product line

Were there any **other factors** that we haven't touched on that have affected your production plans or decisions for both standard and energy efficient models?

RE-TOOLING ISSUES

What **changes** did you have to make to your refrigerators or production line **to produce** refrigerators that are more efficient than standard refrigerators?

Design changes	Change in Production line	Change in Procurement	Changes for 2001 Standards
1 Add insulation to walls			
2 Add insulation to the doors			
3 Reduce gasket heat leak			
4 More efficient compressor			
5 Reduce condenser motor power			
6 Reduce evaporator motor power			
7 Improve evaporator fan efficiency			
8 Increase condenser area			
9 Increase evaporator area			
10 Adaptive defrost			
11 Vacuum panels			
12 Other			

Which of those changes involved changing your own manufacturing processes and which changed the specifications of **parts you purchase** from other companies?

[Analysis note: The implication here is that changes in ordering practices are less permanent than changes in manufacturing processes.]

Were those changes to your manufacturing process **permanent** or can you easily **revert** the line back?

Approximately **how long did it take** you to make these changes? How hard or expensive was it? [Probe for duration of specific phases in retooling – from design to line modification, from line modification to shipment, etc.]

What will you have to change to meet the **2001 standards**?

PRODUCTION PLANNING

I want to understand how your production process works.

Do you build refrigerators

1 at a relatively **constant rate** throughout the year or do you
2 build what you expect to sell in a small number of **batches** then shut down your production lines?

Do you

1 build refrigerators in response to **orders** from distributors and retailers, or do you
2 **estimate** how many you will sell and build that number?

[IF BUILD IN RESPONSE TO ORDERS]

Once you have received an order, does it take any **longer to deliver** an energy **efficient** refrigerator as compared to a standard efficiency model?
1 Yes 2 No 9 Don't know 8 Refused

[IF ENERGY EFFICIENT LEAD TIME IS LONGER THAN STANDARD LEAD TIME]

Why?

Has this always been the case?

[IF ESTIMATE HOW MANY YOU WILL SELL AND BUILD THAT NUMBER]

So I presume that as the model year comes to a close (or near the end of the production cycle) you occasionally **run out** of specific models. Is that right?
1 Yes 2 No 9 Don't know 8 Refused

[IF YES]

Do you run out of energy **efficient** refrigerators **more or less** often than standard efficiency refrigerators? More often Less often Same

FEDERAL STANDARDS

How much influence do you think the **California** refrigerator **programs** had on the design and timing of the **federal standards** in 1990?

In 1993?

And those that will come into effect in 2001?

Were you in favor of **delaying** the federal standards from 1998 to 2001 (or 2003)?

Do you have any **position papers** or press releases that present your company's position on the federal standards? Could I get a copy?

END

That's all of the questions I have for you now. Once again, I appreciate your input to our research and thank you for taking the time to talk with me today.

FREE RIDER SURVEY

FREE RIDER SURVEY

CASEID **Unique Identification Number**

REFRIGERATOR PARTICIPANTS

IDENTIFYING CORRECT RESPONDENT—REFRIGERATOR PARTICIPANTS

I2a Who in your household was involved in the decision of what type of refrigerator to purchase?

1 Respondent
2 Respondent and someone else
3 Someone else in household [ASK TO SPEAK WITH THAT PERSON]
4 Other [SPECIFY WHO; ASK TO SPEAK WITH THAT PERSON]
-8 Don't know
-9 Refused

ESTABLISHING BENCHMARK FOR DECISION PROCESS—REFRIGERATOR PARTICIPANTS

B1 What were your main reasons for purchasing a new refrigerator? (DO NOT READ; INDICATE ALL THAT APPLY)

For B1a to B1d:

1 Didn't have a refrigerator and needed on
2 Wanted a second refrigerator
3 Old refrigerator quit working
4 Old refrigerator still worked, but was not working properly
5 Old refrigerator cost too much too run; wanted energy-efficient refrigerator
6 Remodeled kitchen and wanted new refrigerator
7 Moved to a new residence
9 Need one for a rental unit
10 Need a bigger one
11 Wanted different type of refrigerator (one with more options)
-8 Don't know/recall
-9 Refused

B1a **1st Response**
B1b **2nd Response**
B1c **3rd Response**
B1d **4th Response**

B2 Did you hear about [SDG&E's/PG&E's] refrigerator rebate program BEFORE you started to shop for a new refrigerator?

1 Yes, heard about the program BEFORE started shopping
3 No, became aware while shopping
-8 Don't know/recall
-9 Refused

B3a When and how did you first learn about [SDG&E's/PG&E's] rebates for refrigerators?

1 Few years ago when replacing refrigerators for apartments
2 Through a flyer sent with bill
3 Ad in newspaper
4 Ad in newspaper and flyer in bill
5 After purchased refrigerator
6 At the store/displays in store (Sears)
7 From park manager
8 From salesman/employee of store
9 Word of mouth (friends, colleagues, etc.)
10 Ad on TV
11 Not sure when heard of it
-8 Don't know
-9 Refused

B4 How many stores did you visit while looking for a new refrigerator?

_____ stores
0 None [SPECIFY HOW SHOPPED FOR REFRIGERATOR]
-8 Don't know/recall
-9 Refused

B5 On a scale of 1 to 5 with 1 being "very easy" and 5 "very difficult", how easy was it to find the type of refrigerator you wanted in a high-efficiency model?

1	2	3	4	5	-8	-9
Very easy				Very difficult	Don't know	Refused

B6 Did the salesperson encourage you to buy a high efficiency model of refrigerator?

1 Yes
3 No
-8 Don't know/recall
-9 Refused

B7 When you were looking at new refrigerators, did you compare the energy efficiency level or efficiency ratings of different refrigerators?

1 Yes
3 No [SKIP TO F1]
-8 Don't know/recall [SKIP TO F1]
-9 Refused

B8 Did you compare efficiency levels of refrigerators BEFORE you heard about the rebate?

1 Yes
3 No [SKIP TO F1]
-8 Don't know/recall [SKIP TO F1]
-9 Refused
● NA

B9 Did you compare the prices of alternative refrigerators BEFORE you heard about the rebate?

1 Yes
3 No
-8 Don't know/recall
-9 Refused
● NA

FREE RIDER QUESTIONS—REFRIGERATOR PARTICIPANTS

F1 Had you planned to buy a model of the same high efficiency level BEFORE you heard of the rebate?

1 Yes
3 No [SKIP TO DEMOGRAPHICS]
-8 Don't know/recall
-9 Refused

F2 Would you most likely have paid the full price for the same high efficiency model of refrigerator if the rebate had <u>not</u> been available?

1 Yes [SKIP TO F4a]
3 No [SKIP TO DEMOGRAPHICS]
-8 Don't know/recall
-9 Refused
● NA

F3 So you are saying the rebate had no impact on your decision to purchase this high efficiency model of refrigerator?

1 Yes [SKIP TO DEMOGRAPHICS]
3 No
-8 Don't know/recall
● NA

(CATI CONSISTENCY CHECK: If the respondent answers "don't recall" to F2, or "no" or "don't recall" to F3, ask F4a)

F4a Can you clarify for me in your own words what impact, if any, the rebate had on your decision to purchase that high efficiency model of refrigerator?

1 Would not have purchased without the rebate
2 Confirmed decision of which model to purchase
3 The rebate had not impact
4 Rebate allowed me to get a little bigger model of the same efficiency level
5 Rebate influenced decision on when to buy
6 Would have purchased refrigerator anyway, the rebate was a nice bonus
7 It was like a reimbursement to validate the purchase
8 Had not heard about rebate until the survey
9 Impacted by a combination of rebates from the utility and the store
10 Rebate had a little impact
11 Rebate allowed us to purchase a higher efficiency model
-8 Don't know
-9 Refused
● NA

[SKIP TO DEMOGRAPHICS]

CFL PARTICIPANTS

IDENTIFYING CORRECT RESPONDENT—CFL PARTICIPANTS

CI1a Your household completed and returned to SDG&E a registration form for some compact fluorescent light bulbs that you purchased in 1996. Is this correct?

1 Yes
3 No [ASK TO SPEAK WITH ANOTHER PERSON; IF NO ONE ELSE FAMILIAR, THANK AND TERMINATE]
-8 Don't know [ASK TO SPEAK WITH ANOTHER PERSON; IF NO ONE ELSE FAMILIAR, THANK AND TERMINATE]
-9 Refused
● NA

CI1b How many compact fluorescent light bulbs did you purchase in 1996 and return a form for?

_____

CI2a Who in your household was involved in the decision to purchase these/the compact fluorescent light bulb(s)?

1 Respondent
2 Respondent and someone else
3 Someone else in household [ASK TO SPEAK WITH THAT PERSON]
4 Other [SPECIFY WHO; ASK TO SPEAK WITH THAT PERSON]
-8 Don't know
-9 Refused
● NA

ESTABLISHING BENCHMARK FOR DECISION PROCESS—CFL PARTICIPANTS

CB1 Prior to purchasing this/these [NUMBER] compact fluorescent bulb(s) in 1996, do you recall seeing or hearing any ads or information on TV, radio, or from a newspaper about compact fluorescent bulbs? (INDICATE ALL THAT APPLY)

For CB1a to CB1d:

1 Yes, TV
2 Yes, Radio
3 Yes, Newspaper
4 Yes, but don't recall where
5 No
-8 Don't know
-9 Refused
● NA

CB1a 1st Response
CB1b 2nd Response
CB1c 3rd Response
CB1d 4th Response

CB2 Prior to purchasing this/these compact fluorescent bulb(s), do you recall receiving any information from your electric utility company about compact fluorescent light bulbs?

1 Yes
3 No
-8 Don't know
-9 Refused
● NA

CB3 When shopping for the compact fluorescent light bulbs, do you recall seeing any literature, promotions, or displays in any store that provided information about the advantages or features of compact fluorescent light bulbs?

1 Yes
3 No
-8 Don't know
-9 Refused
● NA

FREE RIDER QUESTIONS—CFL PARTICIPANTS

CF1 Through their compact fluorescent lighting program, SDG&E buys down the cost of compact fluorescent light bulbs. The compact fluorescent light bulb(s) you purchased in 1996 had been marked down by 75%. Thus, the price you paid for each bulb was only one-fourth of what it would have been if SDG&E had not bought down the cost of the bulb(s). Before today, were you aware that SDG&E had bought down the cost of the bulb(s) you purchased?

1 Yes
3 No [SKIP TO CF4a]
-8 Don't recall [SKIP TO CF4a]
-9 Refused
● NA

CF2a When and how did you first learn about this discounted price?

1 A flyer sent in the bill
2 Displays in store (Home Depot)
3 Ad in newspaper and display in store
4 Ad in newspaper
5 At utility information booth
6 Not sure when heard of it
7 Through an energy audit
8 Word of mouth (friends, family, etc.)
9 A flyer sent by a hardware store (Dixieline, Home Depot)
10 Radio ads
11 TV ads
-8 Don't know
-9 Refused
● NA

CF3 Had you planned to buy any compact fluorescent light bulbs BEFORE you heard of this discounted price?

1 Yes
3 No [SKIP TO DEMOGRAPHICS]
-8 Don't recall
-9 Refused
● NA

CF4a As I mentioned earlier, the price you paid for the compact fluorescent light bulbs was discounted by 75%. If this discount had not been available, would you most likely have paid the full price for the [NUMBER] compact fluorescent bulb(s)?

1 Yes [SKIP TO CF5]
3 No
-8 Don't know [SKIP TO CF6]
-9 Refused
● NA

(Ask CF4b if CF4a=2 and purchased more than 1 CFL)

CF4b How many compact fluorescent bulbs would you have purchased at that time if the price had not been discounted by 75%?

_____ CFLs [SKIP TO DEMOGRAPHICS]
[IF MORE THAN NUMBER REBATED: This is more than you originally bought, is this correct? CORRECT IF NECESSARY]
-8 Don't know
-9 Refused
● NA

CF5 So, you are saying the discounted price had no impact on your decision to purchase this/these compact fluorescent light bulbs?

1 Yes [SKIP TO DEMOGRAPHICS]
3 No
-8 Don't know/recall
-9 Refused
● NA

(CATI CONSISTENCY CHECK: If the respondent answers "don't recall" to CF4a, or "no" or "don't recall" to CF5, ask CF6)

CF6 Can you clarify for me in your own words what impact, if any, the discounted price had on your decision to purchase compact fluorescent light bulbs? (INTERVIEWER: record verbatim response and skip back to earlier questions if necessary)

See Id List #1

DEMOGRAPHICS—ALL PARTICIPANTS

Finally, I need to ask you a few questions about your household. I want to assure you that all your answers are confidential. This information is only used for classification purposes.

D1a In what type of residence do you live?

1 Single family detached house
2 Mobile home or house trailer
3 2-4 unit multi-family building
4 5+ unit multi-family building
6 Condominium
7 Apartment
-8 Don't know
-9 Refused

D2a Do you own or rent this residence?

1 Own or buying
2 Rent or lease
4 Government owns building
-8 Don't know
-9 Refused

D3 What is the highest grade of schooling you have completed?

1 Grade school or less
2 Some high school
3 High school graduate
4 Some business or technical school
5 Business or technical school graduate
6 Some college
7 College graduate (4-year degree)
8 Some graduate work
9 Graduate degree
-8 Don't know
-9 Refused

D4 Which of the following age categories best describes your age? Are you . . . ?

1 Less than 25 years old
2 25 to 34 years old
3 35 to 44 years old
4 45 to 54 years old
5 55 to 59 years old
6 60 to 64 years old
7 65 years old or older
-8 Don't know
-9 Refused

D5 Finally, which of the following broad categories best describes your total household income in 1996 before taxes? Was it . . . ?

1 Less than $10,000
2 $10,000 to $14,999
3 $15,000 to $19,999
4 $20,000 to $29,999
5 $30,000 to $39,999
6 $40,000 to $49,999
7 $50,000 to $74,999
8 $75,000 to $99,999
9 $100,000 or more
-8 Don’t know
-9 Refused

GEND
1 Male
3 Female

ID LIST #1

CF6 - What impact, if any, the discounted price had on your decision to purchase compact fluorescent light bulbs?

30002	Major decision. Bought more at one time because of offer.
30045	Probably helped, that's what I needed.
30051	Had impact, but still had to buy light bulb anyway. I saw it when shopping.
30055	Had a little effect, looking for the best deal.
30061	Discount was an incentive to purchase light bulbs. I'm just not sure the discount was 75.
30091	Purchased more compact fluorescent bulbs when I heard about discount. Would have waited if not for discount.
30106	Purchased because of discount.
30128	Triggered me to buy them then. It was a good deal.
30165	Because on sale, but did not like quality of the light.
30170	It influenced me, but I would have bought them anyway. You want to save energy, and looking at the long term, you can save a lot of money.
30174	Even with discount, thought the bulbs were a little expensive, but bought them anyway because like the theory behind them.
30186	As far as using them in the house, a very great impact.
30194	Not much impact, really, didn't influence my purchase.
30197	Discount price did encourage him to buy more than he would have otherwise. Had originally bought two at no discount, then bought two more because they were discounted.
30200	It had a little impact.
30221	I always look for a bargain.
30234	None, I only wanted one so I would have paid it.
30236	I would buy them anyway, but I like the discount.
30263	Saving money is always a factor, encouraging.
30272	The price makes very easy to make decision to buy.

ID LIST #1, Contd.
CF6 - What impact, if any, the discounted price had on your decision to purchase compact fluorescent light bulbs?

30296 Helped him make decision to buy at the time. Had planned to replace all other bulbs with CFLs.

30325 I wanted to save money, and would have bought them anyway, probably, but there was probably some impact, because I wanted to save money. I also wanted to save electricity.

30340 Would have purchased some at that time, but all over a period of time.

30350 Didn't have any influence at all. Unaware of the discount. Wanted and thought I needed it.

30364 The discount had some impact, but not very much. Considered the bulbs to be a novelty toy.

30366 Discount was marginal incentive. Prompted me to purchase bulbs immediately rather than waiting.

30377 When I was in the store, I saw how cheap they were, pretty big impact.

30383 I liked the circular ones in the lamps; might not had purchased as many.

30395 When you want to buy something you don't worry about price.

30406 Was going to buy anyway, but discount was like a bonus.

30412 Husband used to work for utilities and realized the cost savings there would be using them and because of discount, they bought more at that particular time than normally would have.

30414 No question, once I found them at discount, I knew I would buy them for my own use.

30426 Had some impact because she would not have bought as many without the discount, spent over $100 on the day she bought the bulbs and would not have done that without discount.

30440 It probably hastened our decision to go ahead and purchase the bulbs. It was definitely an incentive.

30472 Was the main reason we bought them at the time because they were discounted at the time.

30526 It had impact. Wouldn't have bought as many, might have bought more than four. Really likes that type of bulb, long lasting.

30527 Sped purchase, but had intended to purchase one anyway to try.

ID LIST #1, Contd.
CF6 - What impact, if any, the discounted price had on your decision to purchase compact fluorescent light bulbs?

30542 Beyond the timing on it, no. I was doing it anyway and wanted that fluorescent type of bulb.

30571 We liked the one from SDG&E so much, went out and bought two more. The discount made a big difference.

APPENDIX C
CUSTOMER SURVEY RESULTS

A1A Can you tell me who you currently receive your electric service from?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Pacific Gas & Electric (PG&E)	947	24.1	24.1	24.1
	San Diego Gas & Electric (SDG&E)	822	20.9	20.9	45.0
	Other	2132	54.2	54.2	99.2
	NA/rent and electricity is included in rent	30	.8	.8	100.0
	Total	3931	100.0	100.0	
Total		3931	100.0		

NBRBULBS Number of lightbulbs purchased (A2+A2a) * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
Number of lightbulbs purchased (A2+A2a)	0	115	6.1%	160	8.8%	275	7.4%
	1	15	.8%	16	.9%	31	.8%
	2	44	2.3%	65	3.6%	109	2.9%
	3	32	1.7%	69	3.8%	101	2.7%
	4	130	6.9%	155	8.5%	285	7.7%
	5	75	4.0%	106	5.8%	181	4.9%
	6	190	10.0%	221	12.2%	411	11.1%
	7	18	1.0%	21	1.2%	39	1.1%
	8	89	4.7%	94	5.2%	183	4.9%
	9	8	.4%	5	.3%	13	.4%
	10	231	12.2%	211	11.6%	442	11.9%
	11			4	.2%	4	.1%
	12	266	14.1%	248	13.7%	514	13.9%
	13	2	.1%	4	.2%	6	.2%
	14	3	.2%	3	.2%	6	.2%
	15	74	3.9%	60	3.3%	134	3.6%
	16	17	.9%	14	.8%	31	.8%
	17	1	.1%	1	.1%	2	.1%
	18	7	.4%	7	.4%	14	.4%
	20	201	10.6%	124	6.8%	325	8.8%
	21	1	.1%			1	.0%
	22	3	.2%	3	.2%	6	.2%
	24	69	3.6%	45	2.5%	114	3.1%
	25	52	2.7%	34	1.9%	86	2.3%
	26	3	.2%	1	.1%	4	.1%
	28	1	.1%	2	.1%	3	.1%

NBRBULBS Number of lightbulbs purchased (A2+A2a) * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
Number of lightbulbs purchased (A2+A2a)	29	1	.1%			1	.0%
	30	70	3.7%	46	2.5%	116	3.1%
	32	2	.1%	4	.2%	6	.2%
	35	7	.4%	5	.3%	12	.3%
	36	13	.7%	4	.2%	17	.5%
	40	30	1.6%	18	1.0%	48	1.3%
	44	1	.1%			1	.0%
	45	4	.2%	1	.1%	5	.1%
	46	1	.1%	1	.1%	2	.1%
	48	9	.5%	4	.2%	13	.4%
	49	1	.1%			1	.0%
	50	61	3.2%	43	2.4%	104	2.8%
	52	1	.1%			1	.0%
	56	1	.1%			1	.0%
	60	5	.3%	1	.1%	6	.2%
	65	1	.1%			1	.0%
	68	1	.1%			1	.0%
	70			2	.1%	2	.1%
	72	2	.1%			2	.1%
	75	6	.3%	2	.1%	8	.2%
	90	1	.1%			1	.0%
	96	1	.1%			1	.0%
	98	3	.2%	1	.1%	4	.1%
	99	1	.1%	1	.1%	2	.1%
	100	22	1.2%	9	.5%	31	.8%
Total		1892	100.0%	1815	100.0%	3707	100.0%

NBRBULBS Number of lightbulbs purchased (A2+A2a)

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	15.45	11.71	13.62
N	1892	1815	3707
Std. Deviation	16.10	12.68	14.64

A3BOTH Heard of CFLs? (A3+A3a) * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
Heard of CFLs? (A3+A3a)	No	845	42.0%	616	32.1%	1461	37.2%
	Yes	1167	58.0%	1303	67.9%	2470	62.8%
Total		2012	100.0%	1919	100.0%	3931	100.0%

A4 Have you or anyone else in your household ever purchased a compact * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
Have you or anyone else in your household ever purchased a compact	Yes	382	33.1%	569	43.9%	951	38.8%
	No	772	66.9%	726	56.1%	1498	61.2%
Total		1154	100.0%	1295	100.0%	2449	100.0%

A5COMBO When bought first CFLs? (A5 - A10) * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
When bought first CFLs? (A5 - A10)	Never purchased or do not know	785	39.0%	734	38.2%	1519	38.6%
	Do not know	851	42.3%	624	32.5%	1475	37.5%
	<5years ago but not 1996	186	9.2%	250	13.0%	436	11.1%
	Between 6 and 9 years ago	11	.5%	27	1.4%	38	1.0%
	10 or more years ago	1	.0%	1	.1%	2	.1%
	More than 10 years ago	11	.5%	23	1.2%	34	.9%
	Before 1996, not 5 years ago	2	.1%	10	.5%	12	.3%
	Before 1992, not 10 years ago	1	.0%	5	.3%	6	.2%
	In 1996 or 1997	1	.0%	4	.2%	5	.1%
	Before 1996	1	.0%	5	.3%	6	.2%
	Before 1992	1	.0%	1	.1%	2	.1%
	1986	18	.9%	22	1.1%	40	1.0%
	1991	26	1.3%	46	2.4%	72	1.8%
	1996	110	5.5%	154	8.0%	264	6.7%
	1997	7	.3%	13	.7%	20	.5%
Total		2012	100.0%	1919	100.0%	3931	100.0%

A10 Have you or anyone in your household ever received a free compact * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
Have you or anyone in your household ever received a free compact	Yes	60	5.2%	184	14.3%	244	10.0%
	No	1099	94.8%	1102	85.7%	2201	90.0%
Total		1159	100.0%	1286	100.0%	2445	100.0%

A11COMBO When received first free CFL? (A11 - A15) * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
When received first free CFL? (A11 - A15)	Never received free one or do not know if got one	1107	55.0%	1119	58.3%	2226	56.6%
	Do not know	845	42.0%	620	32.3%	1465	37.3%
	<5years ago but not 1996	36	1.8%	92	4.8%	128	3.3%
	Between 6 and 9 years ago	3	.1%	6	.3%	9	.2%
	More than 10 years ago	1	.0%	2	.1%	3	.1%
	Before 1996, not 5 years ago	1	.0%	2	.1%	3	.1%
	Before 1992, not 10 years ago			3	.2%	3	.1%
	In 1996 or 1997			1	.1%	1	.0%
	1986	3	.1%	4	.2%	7	.2%
	1991	6	.3%	14	.7%	20	.5%
	1996	9	.4%	54	2.8%	63	1.6%
	1997	1	.0%	2	.1%	3	.1%
Total		2012	100.0%	1919	100.0%	3931	100.0%

A16 How many compact fluorescent light bulbs do you currently have installed * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
How many compact fluorescent light bulbs do you currently have installed	0	64	16.9%	86	15.2%	150	15.9%
	1	82	21.6%	114	20.1%	196	20.7%
	2	81	21.4%	120	21.2%	201	21.3%
	3	38	10.0%	57	10.1%	95	10.1%
	4	44	11.6%	61	10.8%	105	11.1%
	5	13	3.4%	40	7.1%	53	5.6%
	6	18	4.7%	32	5.7%	50	5.3%
	7	5	1.3%	8	1.4%	13	1.4%
	8	8	2.1%	16	2.8%	24	2.5%
	9	1	.3%	1	.2%	2	.2%
	10	8	2.1%	5	.9%	13	1.4%
	11	2	.5%			2	.2%
	12	1	.3%	10	1.8%	11	1.2%
	13			1	.2%	1	.1%
	14	3	.8%	3	.5%	6	.6%
	15	3	.8%	2	.4%	5	.5%
	17	1	.3%			1	.1%
	20	2	.5%	3	.5%	5	.5%
	22			2	.4%	2	.2%
	24	1	.3%			1	.1%
	27	1	.3%			1	.1%
	30	1	.3%	3	.5%	4	.4%
	35	1	.3%			1	.1%
	36			1	.2%	1	.1%
	72	1	.3%			1	.1%
	99			1	.2%	1	.1%
Total		379	100.0%	566	100.0%	945	100.0%

A16 How many compact fluorescent light bulbs do you currently have installed

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	3.33	3.42	3.39
N	379	566	945
Std. Deviation	5.45	5.68	5.58

A17 Did you purchase any compact fluorescent light bulbs in 1996? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
Did you purchase any compact fluorescent light bulbs in 1996?	Yes	22	21.8%	56	30.6%	78	27.5%
	No	79	78.2%	127	69.4%	206	72.5%
Total		101	100.0%	183	100.0%	284	100.0%

A18 How many compact fluorescent light bulbs did you purchase in 1996? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
How many compact fluorescent light bulbs did you purchase in 1996?	0	1	.9%	9	4.9%	10	3.4%
	1	29	25.4%	48	26.2%	77	25.9%
	2	35	30.7%	68	37.2%	103	34.7%
	3	16	14.0%	19	10.4%	35	11.8%
	4	14	12.3%	13	7.1%	27	9.1%
	5	4	3.5%	6	3.3%	10	3.4%
	6	6	5.3%	5	2.7%	11	3.7%
	7			3	1.6%	3	1.0%
	8	2	1.8%	2	1.1%	4	1.3%
	9			1	.5%	1	.3%
	10	2	1.8%	3	1.6%	5	1.7%
	11	1	.9%			1	.3%
	12	1	.9%	3	1.6%	4	1.3%
	15	1	.9%	1	.5%	2	.7%
	16			1	.5%	1	.3%
	17	1	.9%			1	.3%
	20	1	.9%			1	.3%
	21			1	.5%	1	.3%
Total		114	100.0%	183	100.0%	297	100.0%

A18 How many compact fluorescent light bulbs did you purchase in 1996?

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	3.25	2.83	2.99
N	114	183	297
Std. Deviation	3.20	2.94	3.05

CFL Completed CFL Buyer Survey * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
Completed CFL Buyer Survey	Did not complete CFL Buyer Survey	1883	93.6%	1711	89.2%	3594	91.4%
	Completed CFL Buyer Survey	129	6.4%	208	10.8%	337	8.6%
Total		2012	100.0%	1919	100.0%	3931	100.0%

CFLNON Completed CFL NonBuyer Survey * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
Completed CFL NonBuyer Survey	Did not complete NonCFL Buyer Survey	1938	96.3%	1843	96.0%	3781	96.2%
	Completed CFL NonBuyer Survey	74	3.7%	76	4.0%	150	3.8%
Total		2012	100.0%	1919	100.0%	3931	100.0%

A19 How many refrigerators do you use in this residence? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
How many refrigerators do you use in this residence?	0	4	.2%	1	.1%	5	.1%
	1	1555	77.3%	1512	78.9%	3067	78.1%
	2	408	20.3%	360	18.8%	768	19.6%
	3	38	1.9%	42	2.2%	80	2.0%
	4	5	.2%	2	.1%	7	.2%
	5	1	.0%			1	.0%
Total		2011	100.0%	1917	100.0%	3928	100.0%

A19 How many refrigerators do you use in this residence?

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	1.25	1.23	1.24
N	2011	1917	3928
Std. Deviation	.50	.48	.49

A20BOTH Bought a new refrigerator (A20+A21) * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
Bought a new refrigerator (A20+A21)	No	573	28.5%	541	28.2%	1114	28.3%
	Yes	1439	71.5%	1378	71.8%	2817	71.7%
Total		2012	100.0%	1919	100.0%	3931	100.0%

A22COMBO When bought refrigerator? (a22 - A23) * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
When bought refrigerator? (a22 - A23)	Never purchased or do not know	573	28.5%	541	28.2%	1114	28.3%
	Do not know age	13	.6%	11	.6%	24	.6%
	<5years ago but not 1996	460	22.9%	413	21.5%	873	22.2%
	Between 6 and 9 years ago	243	12.1%	272	14.2%	515	13.1%
	More than 10 years ago	316	15.7%	309	16.1%	625	15.9%
	1986	95	4.7%	109	5.7%	204	5.2%
	1991	122	6.1%	118	6.1%	240	6.1%
	1996	168	8.3%	133	6.9%	301	7.7%
	1997	22	1.1%	13	.7%	35	.9%
Total		2012	100.0%	1919	100.0%	3931	100.0%

REFRIG Completed Refrigerator Buyer Survey * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
Completed Refrigerator Buyer Survey	Did not complete Refrig Buyer Survey	1648	81.9%	1566	81.6%	3214	81.8%
	Completed Refrigerator Buyer Survey	364	18.1%	353	18.4%	717	18.2%
Total		2012	100.0%	1919	100.0%	3931	100.0%

A22COMBO When bought refrigerator? (a22 - A23) * REFRIG Completed Refrigerator Buyer Survey * INSTATE In or out of California Crosstabulation

			REFRIG Completed Refrigerator Buyer Survey					
			Did not complete Refrig Buyer Survey		Completed Refrigerator Buyer Survey		Total	
		INSTATE In or out of California	Count	Column %	Count	Column %	Count	Column %
When bought refrigerator? (a22 - A23)	Never purchased or do not know	Rest of Country	573	34.8%			573	28.5%
		In California	541	34.5%			541	28.2%
	Do not know age	Rest of Country	13	.8%			13	.6%
		In California	11	.7%			11	.6%
	<5years ago but not 1996	Rest of Country	460	27.9%			460	22.9%
		In California	413	26.4%			413	21.5%
	Between 6 and 9 years ago	Rest of Country	243	14.7%			243	12.1%
		In California	272	17.4%			272	14.2%
	More than 10 years ago	Rest of Country	316	19.2%			316	15.7%
		In California	309	19.7%			309	16.1%
	1986	Rest of Country			95	26.1%	95	4.7%
		In California			109	30.9%	109	5.7%
	1991	Rest of Country			122	33.5%	122	6.1%
		In California			118	33.4%	118	6.1%
	1996	Rest of Country	21	1.3%	147	40.4%	168	8.3%
		In California	7	.4%	126	35.7%	133	6.9%
	1997	Rest of Country	22	1.3%			22	1.1%
		In California	13	.8%			13	.7%
Total		Rest of Country	1648	100.0%	364	100.0%	2012	100.0%
		In California	1566	100.0%	353	100.0%	1919	100.0%

B1A Did you purchase this new refrigerator because you * INSTATE In or out of California * YEARGRP Year Crosstabulation

			INSTATE In or out of California				Total	
			Rest of Country		In California			
		Year	Count	Column %	Count	Column %	Count	Column %
Did you purchase this new refrigerator because you	Decided to replace an existing refrigerator	1986	59	63.4%	73	69.5%	132	66.7%
		1991	75	64.1%	85	77.3%	160	70.5%
		1996	105	72.9%	93	79.5%	198	75.9%
	Purchased or built a brand new residence (new construction)	1986	16	17.2%	16	15.2%	32	16.2%
		1991	21	17.9%	12	10.9%	33	14.5%
		1996	19	13.2%	11	9.4%	30	11.5%
	Moved to a different residence and there was no refrigerator	1986	12	12.9%	12	11.4%	24	12.1%
		1991	15	12.8%	6	5.5%	21	9.3%
		1996	14	9.7%	5	4.3%	19	7.3%
	Didn't have a refrigerator	1986	4	4.3%	2	1.9%	6	3.0%
		1991	2	1.7%	2	1.8%	4	1.8%
		1996	2	1.4%	1	.9%	3	1.1%
	Good price	1991	1	.9%			1	.4%
		1996	2	1.4%	1	.9%	3	1.1%
	Purchased by building owner	1991	1	.9%	2	1.8%	3	1.3%
		1996	1	.7%	2	1.7%	3	1.1%
	Gift	1986	1	1.1%			1	.5%
		1991			1	.9%	1	.4%
		1996			1	.9%	1	.4%
	Wanted a second refrigerator	1986	1	1.1%	2	1.9%	3	1.5%
		1991	2	1.7%	2	1.8%	4	1.8%
		1996	1	.7%	3	2.6%	4	1.5%
Total		1986	93	100.0%	105	100.0%	198	100.0%
		1991	117	100.0%	110	100.0%	227	100.0%
		1996	144	100.0%	117	100.0%	261	100.0%

B2A Who purchased this refrigerator? Was it someone in your household, your building owner, or someone else?
INSTATE In or out of California * YEARGRP Year Crosstabulation

			INSTATE In or out of California				Total	
			Rest of Country		In California			
		Year	Count	Column %	Count	Column %	Count	Column %
Who purchased this refrigerator? Was it someone in your household, your building owner, or someone else?	Someone in household	1986	85	92.4%	102	97.1%	187	94.9%
		1991	107	91.5%	102	93.6%	209	92.5%
		1996	136	95.1%	109	92.4%	245	93.9%
	Building owner	1986	1	1.1%	1	1.0%	2	1.0%
		1991	5	4.3%	5	4.6%	10	4.4%
		1996	4	2.8%	4	3.4%	8	3.1%
	Builder or contractor	1986	1	1.1%	1	1.0%	2	1.0%
		1991	2	1.7%	1	.9%	3	1.3%
		1996	1	.7%			1	.4%
	Family member (parents or children)	1986	5	5.4%	1	1.0%	6	3.0%
		1991	1	.9%	1	.9%	2	.9%
		1996	1	.7%	1	.8%	2	.8%
	Friend	1996	1	.7%	1	.8%	2	.8%
	Community	1996			1	.8%	1	.4%
	Utility	1996			2	1.7%	2	.8%
	Previous owner	1991	2	1.7%			2	.9%
Total		1986	92	100.0%	105	100.0%	197	100.0%
		1991	117	100.0%	109	100.0%	226	100.0%
		1996	143	100.0%	118	100.0%	261	100.0%

B3 How many stores did you visit while looking for a new refrigerator? * INSTATE In or out of California * YEARGRP Year Crosstabulation

			INSTATE In or out of California				Total	
			Rest of Country		In California			
		Year	Count	Column %	Count	Column %	Count	Column %
How many stores did you visit while looking for a new refrigerator?	1	1986	39	47.6%	40	42.6%	79	44.9%
		1991	47	46.5%	34	35.4%	81	41.1%
		1996	69	52.7%	51	50.0%	120	51.5%
	2	1986	19	23.2%	19	20.2%	38	21.6%
		1991	21	20.8%	25	26.0%	46	23.4%
		1996	13	9.9%	14	13.7%	27	11.6%
	3	1986	12	14.6%	19	20.2%	31	17.6%
		1991	17	16.8%	18	18.8%	35	17.8%
		1996	22	16.8%	26	25.5%	48	20.6%
	4	1986	6	7.3%	8	8.5%	14	8.0%
		1991	9	8.9%	10	10.4%	19	9.6%
		1996	12	9.2%	4	3.9%	16	6.9%
	5	1986	5	6.1%	2	2.1%	7	4.0%
		1991	3	3.0%	3	3.1%	6	3.0%
		1996	9	6.9%	3	2.9%	12	5.2%
	6	1986			3	3.2%	3	1.7%
		1991	1	1.0%	1	1.0%	2	1.0%
		1996	4	3.1%	4	3.9%	8	3.4%
	8	1986			1	1.1%	1	.6%
		1991			2	2.1%	2	1.0%
		1996	1	.8%			1	.4%
	10	1986			1	1.1%	1	.6%
	20	1991	1	1.0%			1	.5%
	23	1996	1	.8%			1	.4%
	Specified to builder without visiting store	1986	1	1.2%	1	1.1%	2	1.1%
		1991	2	2.0%	3	3.1%	5	2.5%
Total		1986	82	100.0%	94	100.0%	176	100.0%
		1991	101	100.0%	96	100.0%	197	100.0%
		1996	131	100.0%	102	100.0%	233	100.0%

B3 How many stores did you visit while looking for a new refrigerator?

	YEARGRP Year	INSTATE In or out of California: Rest of Country	In California	Total
Mean	1986	1.64	1.47	1.55
	1991	1.61	1.69	1.65
	1996	1.98	1.43	1.73
	Total	1.77	1.52	1.65
N	1986	84	101	185
	1991	105	99	204
	1996	136	109	245
	Total	325	309	634
Std. Deviation	1986	2.22	3.24	2.82
	1991	3.18	2.85	3.02
	1996	3.06	2.80	2.95
	Total	2.90	2.96	2.93

B4 Notice difference in efficiency of refrigerators? * INSTATE In or out of California * YEARGRP Year Crosstabulation

		Year	INSTATE In or out of California: Rest of Country Count	Rest of Country Column %	In California Count	In California Column %	Total Count	Total Column %
Notice difference in efficiency of refrigerators?	Yes	1986	31	43.1%	53	65.4%	84	54.9%
		1991	45	48.9%	59	62.8%	104	55.9%
		1996	69	54.8%	52	54.7%	121	54.8%
	No	1986	41	56.9%	28	34.6%	69	45.1%
		1991	47	51.1%	35	37.2%	82	44.1%
		1996	57	45.2%	43	45.3%	100	45.2%
Total		1986	72	100.0%	81	100.0%	153	100.0%
		1991	92	100.0%	94	100.0%	186	100.0%
		1996	126	100.0%	95	100.0%	221	100.0%

B5 Did you consider energy consumption or the efficiency of the refrigerators * INSTATE In or out of California * YEARGRP Year Crosstabulation

		Year	INSTATE In or out of California: Rest of Country Count	Rest of Country Column %	In California Count	In California Column %	Total Count	Total Column %
Did you consider energy consumption or the efficiency of the refrigerators	Yes	1986	45	54.9%	69	71.9%	114	64.0%
		1991	53	51.5%	63	67.0%	116	58.9%
		1996	66	51.2%	62	59.0%	128	54.7%
	No	1986	37	45.1%	27	28.1%	64	36.0%
		1991	50	48.5%	31	33.0%	81	41.1%
		1996	63	48.8%	43	41.0%	106	45.3%
Total		1986	82	100.0%	96	100.0%	178	100.0%
		1991	103	100.0%	94	100.0%	197	100.0%
		1996	129	100.0%	105	100.0%	234	100.0%

Why did you not buy a high effiency refrigerator?

				INSTATE In or out of California			
				Rest of Country		In California	
				Cases	Col Response %	Cases	Col Response %
B6	Did not think about EE when choosing	Year	1986	6	6%	9	12%
			1991	12	11%	7	9%
			1996	16	15%	8	11%
	Did not know that the energy efficiency levels varied	Year	1986	1	1%	2	3%
			1991	5	5%	4	5%
			1996	15	14%	5	7%
	Didnt have features I wanted	Year	1986	4	4%	2	3%
			1991	7	6%	3	4%
			1996	5	5%	6	8%
	Not the size I wanted	Year	1986	3	3%	1	1%
			1991	4	4%	6	8%
			1996	7	6%	6	8%
	Did not know enough about them	Year	1986	3	3%	6	8%
			1991	10	9%		
			1996	6	6%	2	3%
	Too expensive, more that I wanted to pay	Year	1986	6	6%		
			1991	4	4%	6	8%
			1996	4	4%	4	5%
	Not available as quickly as I needed	Year	1986	1	1%	1	1%
			1991	2	2%	1	1%
			1996	1	1%	3	4%
	Not available at store I purchased from	Year	1986	2	2%	1	1%
			1991				
			1996	3	3%		
	EE does not save enough energy or money	Year	1986				
			1991	1	1%		
			1996	3	3%		
	Too hard to learn about them	Year	1986	1	1%		
			1991	1	1%	1	1%
			1996	1	1%		
	dont pay the electricity bill	Year	1986				
			1991				
			1996	1	1%	1	1%
	Payback on EE too long	Year	1986				
			1991	1	1%		
			1996	1	1%		
	Not as reliable	Year	1986				
			1991	2	2%		
			1996				
Total		Year	1986	24	25%	20	29%
			1991	38	45%	24	37%
			1996	46	58%	31	47%

Why did you not buy a high effiency refrigerator?

				Total	
				Cases	Col Response %
B6	Did not think about EE when choosing	Year	1986	15	8%
			1991	19	10%
			1996	24	13%
	Did not know that the energy efficiency levels varied	Year	1986	3	2%
			1991	9	5%
			1996	20	11%
	Didnt have features I wanted	Year	1986	6	3%
			1991	10	5%
			1996	11	6%
	Not the size I wanted	Year	1986	4	2%
			1991	10	5%
			1996	13	7%
	Did not know enough about them	Year	1986	9	5%
			1991	10	5%
			1996	8	4%
	Too expensive, more that I wanted to pay	Year	1986	6	3%
			1991	10	5%
			1996	8	4%
	Not available as quickly as I needed	Year	1986	2	1%
			1991	3	2%
			1996	4	2%
	Not available at store I purchased from	Year	1986	3	2%
			1991		
			1996	3	2%
	EE does not save enough energy or money	Year	1986		
			1991	1	1%
			1996	3	2%
	Too hard to learn about them	Year	1986	1	1%
			1991	2	1%
			1996	1	1%
	dont pay the electricity bill	Year	1986		
			1991		
			1996	2	1%
	Payback on EE too long	Year	1986		
			1991	1	1%
			1996	1	1%
	Not as reliable	Year	1986		
			1991	2	1%
			1996		
Total		Year	1986	44	27%
			1991	62	42%
			1996	77	54%

B7 How easy was it to find the type of refrigerator you wanted in a high-efficiency model * INSTATE In or out of California * YEARGRP Year Crosstabulation

			INSTATE In or out of California				Total	
			Rest of Country		In California			
		Year	Count	Column %	Count	Column %	Count	Column %
How easy was it to find the type of refrigerator you wanted in a high-efficiency model	Very Easy	1986	24	50.0%	35	49.3%	59	49.6%
		1991	31	54.4%	31	49.2%	62	51.7%
		1996	35	49.3%	36	61.0%	71	54.6%
	2	1986	11	22.9%	17	23.9%	28	23.5%
		1991	10	17.5%	22	34.9%	32	26.7%
		1996	18	25.4%	13	22.0%	31	23.8%
	3	1986	10	20.8%	14	19.7%	24	20.2%
		1991	9	15.8%	4	6.3%	13	10.8%
		1996	14	19.7%	4	6.8%	18	13.8%
	4	1986	2	4.2%	2	2.8%	4	3.4%
		1991	5	8.8%	4	6.3%	9	7.5%
		1996	1	1.4%	4	6.8%	5	3.8%
	Very Difficult	1986	1	2.1%	3	4.2%	4	3.4%
		1991	2	3.5%	2	3.2%	4	3.3%
		1996	3	4.2%	2	3.4%	5	3.8%
Total		1986	48	100.0%	71	100.0%	119	100.0%
		1991	57	100.0%	63	100.0%	120	100.0%
		1996	71	100.0%	59	100.0%	130	100.0%

B7 How easy was it to find the type of refrigerator you wanted in a high-efficiency model

		INSTATE In or out of California		
	YEARGRP Year	Rest of Country	In California	Total
Mean	1986	1.85	1.89	1.87
	1991	1.89	1.79	1.84
	1996	1.86	1.69	1.78
	Total	1.87	1.80	1.83
N	1986	48	71	119
	1991	57	63	120
	1996	71	59	130
	Total	176	193	369
Std. Deviation	1986	1.03	1.09	1.06
	1991	1.18	1.03	1.10
	1996	1.06	1.09	1.07
	Total	1.08	1.07	1.08

Why was it difficult to find High Efficiency refrigerator

				INSTATE In or out of California				Total	
				Rest of Country		In California			
				Cases	Col Response %	Cases	Col Response %	Cases	Col Response %
B8	Energy efficient models were not the size I wanted	Year	1986	1	8%	1	7%	2	7%
			1991	3	23%	1	7%	4	15%
			1996			2	14%	2	7%
	Energy efficient models didnt have features I wanted	Year	1986			2	14%	2	7%
			1991	1	8%	1	7%	2	7%
			1996	1	8%	2	14%	3	11%
	Energy efficient models were too expensive, more that I want	Year	1986						
			1991	4	31%			4	15%
			1996			3	21%	3	11%
	Few energy efficient units available in the stores I looked	Year	1986	2	15%	1	7%	3	11%
			1991			1	7%	1	4%
			1996			1	7%	1	4%
	Did not know enough about them	Year	1986			2	14%	2	7%
			1991						
			1996	1	8%	1	7%	2	7%
	Too hard to learn about them	Year	1986			1	7%	1	4%
			1991			1	7%	1	4%
			1996	1	8%			1	4%
Total		Year	1986	3	23%	5	50%	8	37%
			1991	7	62%	4	29%	11	44%
			1996	3	23%	5	64%	8	44%

B9 How easy was it to find a refrigerator in your price range in a high-efficiency model * INSTATE In or out of Cali * YEARGRP Year Crosstabulation

			INSTATE In or out of California				Total	
			Rest of Country		In California			
		Year	Count	Column %	Count	Column %	Count	Column %
How easy was it to find a refrigerator in your price range in a high-efficiency model	Very Easy	1986	19	40.4%	24	35.3%	43	37.4%
		1991	22	39.3%	24	35.8%	46	37.4%
		1996	28	38.9%	29	48.3%	57	43.2%
	2	1986	15	31.9%	27	39.7%	42	36.5%
		1991	13	23.2%	26	38.8%	39	31.7%
		1996	24	33.3%	15	25.0%	39	29.5%
	3	1986	10	21.3%	14	20.6%	24	20.9%
		1991	15	26.8%	9	13.4%	24	19.5%
		1996	10	13.9%	11	18.3%	21	15.9%
	4	1986	2	4.3%	1	1.5%	3	2.6%
		1991	5	8.9%	5	7.5%	10	8.1%
		1996	5	6.9%	4	6.7%	9	6.8%
	Very Difficult	1986	1	2.1%	2	2.9%	3	2.6%
		1991	1	1.8%	3	4.5%	4	3.3%
		1996	5	6.9%	1	1.7%	6	4.5%
Total		1986	47	100.0%	68	100.0%	115	100.0%
		1991	56	100.0%	67	100.0%	123	100.0%
		1996	72	100.0%	60	100.0%	132	100.0%

B9 How easy was it to find a refrigerator in your price range in a high-efficiency model

		INSTATE In or out of California		
	YEARGRP Year	Rest of Country	In California	Total
Mean	1986	1.96	1.97	1.97
	1991	2.11	2.06	2.08
	1996	2.10	1.88	2.00
	Total	2.06	1.97	2.02
N	1986	47	68	115
	1991	56	67	123
	1996	72	60	132
	Total	175	195	370
Std. Deviation	1986	1.00	.95	.96
	1991	1.09	1.10	1.09
	1996	1.20	1.04	1.13
	Total	1.11	1.03	1.07

B10 Is the refrigerator you bought a high efficiency unit? * INSTATE In or out of California * YEARGRP Year Crosstabulation

			INSTATE In or out of California				Total	
			Rest of Country		In California			
		Year	Count	Column %	Count	Column %	Count	Column %
Is the refrigerator you bought a high efficiency unit?	Yes	1986	41	91.1%	48	76.2%	89	82.4%
		1991	41	87.2%	55	85.9%	96	86.5%
		1996	60	90.9%	51	87.9%	111	89.5%
	Yes, but not the highest I saw	1986	3	6.7%	13	20.6%	16	14.8%
		1991	4	8.5%	9	14.1%	13	11.7%
		1996	5	7.6%	5	8.6%	10	8.1%
	No	1986	1	2.2%	2	3.2%	3	2.8%
		1991	2	4.3%			2	1.8%
		1996	1	1.5%	2	3.4%	3	2.4%
Total		1986	45	100.0%	63	100.0%	108	100.0%
		1991	47	100.0%	64	100.0%	111	100.0%
		1996	66	100.0%	58	100.0%	124	100.0%

Why did buy a high efficiency refrigerator

				INSTATE In or out of California				Total	
				Rest of Country		In California			
				Cases	Col Response %	Cases	Col Response %	Cases	Col Response %
B11	EE cost less to operate	Year	1986	25	17%	33	19%	58	18%
			1991	23	15%	33	19%	56	17%
			1996	35	23%	36	21%	71	22%
	EE a good value	Year	1986	11	7%	10	6%	21	6%
			1991	5	3%	14	8%	19	6%
			1996	11	7%	9	5%	20	6%
	Had the features I wanted	Year	1986	8	5%	8	5%	16	5%
			1991	6	4%	9	5%	15	5%
			1996	13	9%	14	8%	27	8%
	EE good for environment	Year	1986	6	4%	12	7%	18	6%
			1991	3	2%	12	7%	15	5%
			1996	6	4%	13	7%	19	6%
	EE was all that was available. It was the only choice.	Year	1986	3	2%	7	4%	10	3%
			1991	5	3%	8	5%	13	4%
			1996	3	2%	6	3%	9	3%
	Was the size I wanted	Year	1986	4	3%	5	3%	9	3%
			1991	3	2%	7	4%	10	3%
			1996	6	4%	6	3%	12	4%
	EE did not cost more	Year	1986	3	2%	4	2%	7	2%
			1991	4	3%	1	1%	5	2%
			1996	6	4%	1	1%	7	2%
	Salesperson pushed EE	Year	1986	1	1%	1	1%	2	1%
			1991	2	1%			2	1%
			1996	2	1%	4	2%	6	2%
	Rebate	Year	1986			3	2%	3	1%
			1991	1	1%	1	1%	2	1%
			1996	1	1%	2	1%	3	1%
	Suggested by friend or family	Year	1986						
			1991	1	1%	2	1%	3	1%
			1996	2	1%	1	1%	3	1%
	Contractors pushed EE	Year	1986						
			1991	1	1%			1	0%
			1996						
Total		Year	1986	43	41%	58	47%	101	44%
			1991	44	36%	63	50%	107	44%
			1996	62	57%	54	53%	116	55%

B12 Did salesperson talk about energy efficiency? * INSTATE In or out of California * YEARGRP Year Crosstabulatio

			INSTATE In or out of California				Total	
			Rest of Country		In California			
		Year	Count	Column %	Count	Column %	Count	Column %
Did salesperson talk about energy efficiency?	Yes	1986	34	57.6%	41	56.2%	75	56.8%
		1991	44	56.4%	50	64.9%	94	60.6%
		1996	64	55.7%	54	61.4%	118	58.1%
	No	1986	25	42.4%	32	43.8%	57	43.2%
		1991	34	43.6%	27	35.1%	61	39.4%
		1996	51	44.3%	34	38.6%	85	41.9%
Total		1986	59	100.0%	73	100.0%	132	100.0%
		1991	78	100.0%	77	100.0%	155	100.0%
		1996	115	100.0%	88	100.0%	203	100.0%

What did the salesperson say?

				INSTATE In or out of California				Total	
				Rest of Country		In California			
				Cases	Col Response %	Cases	Col Response %	Cases	Col Response %
B13	Encouraged purchase of high efficiency	Year	1986	5	8%	14	21%	19	15%
			1991	12	19%	15	23%	27	21%
			1996	25	40%	14	21%	39	30%
	Said recommended unit also is HE	Year	1986	3	5%	4	6%	7	5%
			1991	8	13%	6	9%	14	11%
			1996	7	11%	7	11%	14	11%
	Said everything on market is high efficiency	Year	1986			1	2%	1	1%
			1991	3	5%	3	5%	6	5%
			1996	4	6%	4	6%	8	6%
	Explained EE label	Year	1986	1	2%	2	3%	3	2%
			1991			1	2%	1	1%
			1996	2	3%	1	2%	3	2%
	Said to compare all models	Year	1986	1	2%	1	2%	2	2%
			1991						
			1996	1	2%	2	3%	3	2%
	Discouraged purchase of high efficiency	Year	1986	1	2%	1	2%	2	2%
			1991	1	2%			1	1%
			1996						
Total		Year	1986	11	17%	19	35%	30	26%
			1991	18	38%	22	38%	40	38%
			1996	34	62%	25	42%	59	52%

B14 Did the salesperson encourage you to buy a high efficiency model? * INSTATE In or out of California * YEARGRP Year Crosstabulation

			INSTATE In or out of California				Total	
			Rest of Country		In California			
		Year	Count	Column %	Count	Column %	Count	Column %
Did the salesperson encourage you to buy a high efficiency model?	Yes	1986	18	62.1%	22	62.9%	40	62.5%
		1991	23	67.6%	26	63.4%	49	65.3%
		1996	27	52.9%	33	67.3%	60	60.0%
	No	1986	11	37.9%	13	37.1%	24	37.5%
		1991	11	32.4%	15	36.6%	26	34.7%
		1996	24	47.1%	16	32.7%	40	40.0%
Total		1986	29	100.0%	35	100.0%	64	100.0%
		1991	34	100.0%	41	100.0%	75	100.0%
		1996	51	100.0%	49	100.0%	100	100.0%

B15 How much influence would you say the salesperson had on your decision * INSTATE In or out of California YEARGRP Year Crosstabulation

			INSTATE In or out of California				Total	
			Rest of Country		In California			
		Year	Count	Column %	Count	Column %	Count	Column %
How much influence would you say the salesperson had on your decision	No influence	1986	5	27.8%	6	28.6%	11	28.2%
		1991	7	30.4%	4	15.4%	11	22.4%
		1996	7	25.9%	7	21.2%	14	23.3%
	Very little influence	1986	4	22.2%	4	19.0%	8	20.5%
		1991	5	21.7%	9	34.6%	14	28.6%
		1996	7	25.9%	9	27.3%	16	26.7%
	Some influence	1986	7	38.9%	7	33.3%	14	35.9%
		1991	8	34.8%	10	38.5%	18	36.7%
		1996	9	33.3%	10	30.3%	19	31.7%
	Very much of an influence	1986	1	5.6%	1	4.8%	2	5.1%
		1991			2	7.7%	2	4.1%
		1996	1	3.7%	4	12.1%	5	8.3%
	A great deal of influence	1986	1	5.6%	3	14.3%	4	10.3%
		1991	3	13.0%	1	3.8%	4	8.2%
		1996	3	11.1%	3	9.1%	6	10.0%
Total		1986	18	100.0%	21	100.0%	39	100.0%
		1991	23	100.0%	26	100.0%	49	100.0%
		1996	27	100.0%	33	100.0%	60	100.0%

B15 How much influence would you say the salesperson had on your decision

	YEARGRP Year	INSTATE In or out of California: Rest of Country	In California	Total
Mean	1986	2.39	2.57	2.49
	1991	2.43	2.50	2.47
	1996	2.48	2.61	2.55
	Total	2.44	2.56	2.51
N	1986	18	21	39
	1991	23	26	49
	1996	27	33	60
	Total	68	80	148
Std. Deviation	1986	1.14	1.36	1.25
	1991	1.31	.99	1.14
	1996	1.25	1.22	1.23
	Total	1.23	1.18	1.20

B16 Notice a price difference between HE & others? * INSTATE In or out of California * YEARGRP Year Crosstabulation

			INSTATE In or out of California: Rest of Country		In California		Total	
		Year	Count	Column %	Count	Column %	Count	Column %
Notice a price difference between HE & others?	Yes	1986	18	26.9%	28	37.8%	46	32.6%
		1991	28	34.1%	23	33.3%	51	33.8%
		1996	42	42.4%	31	36.9%	73	39.9%
	No	1986	49	73.1%	46	62.2%	95	67.4%
		1991	54	65.9%	46	66.7%	100	66.2%
		1996	57	57.6%	53	63.1%	110	60.1%
Total		1986	67	100.0%	74	100.0%	141	100.0%
		1991	82	100.0%	69	100.0%	151	100.0%
		1996	99	100.0%	84	100.0%	183	100.0%

B17 Which was more expensive? * INSTATE In or out of California * YEARGRP Year Crosstabulation

			INSTATE In or out of California: Rest of Country		In California		Total	
		Year	Count	Column %	Count	Column %	Count	Column %
Which was more expensive?	High efficiency unit more expensive	1986	15	100.0%	19	90.5%	34	94.4%
		1991	23	100.0%	20	100.0%	43	100.0%
		1996	36	100.0%	23	92.0%	59	96.7%
	Lower efficiency unit more expensive	1986			2	9.5%	2	5.6%
		1996			2	8.0%	2	3.3%
Total		1986	15	100.0%	21	100.0%	36	100.0%
		1991	23	100.0%	20	100.0%	43	100.0%
		1996	36	100.0%	25	100.0%	61	100.0%

B18 How much more expensive? * INSTATE In or out of California * YEARGRP Year Crosstabulation

			INSTATE In or out of California				Total	
			Rest of Country		In California			
		Year	Count	Column %	Count	Column %	Count	Column %
How much more expensive?	1	1996			1	6.3%	1	2.4%
	10	1996			1	6.3%	1	2.4%
	20	1996	1	4.0%	1	6.3%	2	4.9%
	30	1991	1	11.1%			1	6.7%
		1996	2	8.0%	1	6.3%	3	7.3%
	40	1986			1	12.5%	1	8.3%
		1991			1	16.7%	1	6.7%
		1996	2	8.0%			2	4.9%
	50	1986			1	12.5%	1	8.3%
		1991	1	11.1%			1	6.7%
		1996			2	12.5%	2	4.9%
	70	1996	1	4.0%			1	2.4%
	80	1991			1	16.7%	1	6.7%
		1996			1	6.3%	1	2.4%
	100	1986	2	50.0%	4	50.0%	6	50.0%
		1991	3	33.3%			3	20.0%
		1996	8	32.0%	3	18.8%	11	26.8%
	150	1991	2	22.2%	2	33.3%	4	26.7%
		1996	1	4.0%			1	2.4%
	200	1986	1	25.0%	2	25.0%	3	25.0%
		1991	2	22.2%			2	13.3%
		1996	6	24.0%	3	18.8%	9	22.0%
	300	1991			1	16.7%	1	6.7%
		1996	1	4.0%	2	12.5%	3	7.3%
	400	1996	1	4.0%	1	6.3%	2	4.9%
	450	1986	1	25.0%			1	8.3%
	500	1991			1	16.7%	1	6.7%
		1996	1	4.0%			1	2.4%
	1000	1996	1	4.0%			1	2.4%
Total		1986	4	100.0%	8	100.0%	12	100.0%
		1991	9	100.0%	6	100.0%	15	100.0%
		1996	25	100.0%	16	100.0%	41	100.0%

B18 How much more expensive?

	YEARGRP Year	INSTATE In or out of California: Rest of Country	In California	Total
Mean	1986	212.50	111.25	145.00
	1991	120.00	203.33	153.33
	1996	183.20	133.81	163.93
	Total	171.32	141.70	158.25
N	1986	4	8	12
	1991	9	6	15
	1996	25	16	41
	Total	38	30	68
Std. Deviation	1986	165.20	59.87	110.49
	1991	60.00	170.25	119.14
	1996	205.52	120.09	177.05
	Total	176.94	119.99	154.08

B19 When you purchased, were you aware of any rebates for HE? * INSTATE In or out of California * YEARGRP Year Crosstabulation

			INSTATE In or out of California: Rest of Country		In California		Total	
		Year	Count	Column %	Count	Column %	Count	Column %
When you purchased, were you aware of any rebates for HE?	Yes	1986	5	7.4%	20	22.7%	25	16.0%
		1991	14	13.9%	35	41.2%	49	26.3%
		1996	18	14.4%	39	39.8%	57	25.6%
	No	1986	63	92.6%	68	77.3%	131	84.0%
		1991	87	86.1%	50	58.8%	137	73.7%
		1996	107	85.6%	59	60.2%	166	74.4%
Total		1986	68	100.0%	88	100.0%	156	100.0%
		1991	101	100.0%	85	100.0%	186	100.0%
		1996	125	100.0%	98	100.0%	223	100.0%

Who offered the Rebate?

				INSTATE In or out of California				Total	
				Rest of Country		In California			
				Cases	Col Response %	Cases	Col Response %	Cases	Col Response %
B20	Utility	Year	1986	1	3%	9	12%	10	10%
			1991	4	13%	15	21%	19	18%
			1996	4	13%	25	34%	29	28%
	Manufacturer	Year	1986	1	3%	4	5%	5	5%
			1991	5	17%	8	11%	13	13%
			1996	9	30%	12	16%	21	20%
	Retailer	Year	1986	1	3%	1	1%	2	2%
			1991			5	7%	5	5%
			1996	9	30%	3	4%	12	12%
Total		Year	1986	3	10%	13	19%	16	17%
			1991	9	30%	26	38%	35	36%
			1996	18	73%	34	55%	52	60%

B21 Did you receive a rebate for this refrigerator? * INSTATE In or out of California * YEARGRP Year Crosstabulatior

			INSTATE In or out of California				Total	
			Rest of Country		In California			
		Year	Count	Column %	Count	Column %	Count	Column %
Did you receive a rebate for this refrigerator?	Yes	1986	2	50.0%	13	72.2%	15	68.2%
		1991	6	46.2%	23	79.3%	29	69.0%
		1996	12	75.0%	28	75.7%	40	75.5%
	No	1986	2	50.0%	5	27.8%	7	31.8%
		1991	7	53.8%	6	20.7%	13	31.0%
		1996	4	25.0%	9	24.3%	13	24.5%
Total		1986	4	100.0%	18	100.0%	22	100.0%
		1991	13	100.0%	29	100.0%	42	100.0%
		1996	16	100.0%	37	100.0%	53	100.0%

B22 Would you be willing to look for this information if I tell you where to find it? * INSTATE In or out of California * YEARGRP Year Crosstabulation

			INSTATE In or out of California				Total	
			Rest of Country		In California			
		Year	Count	Column %	Count	Column %	Count	Column %
Would you be willing to look for this information if I tell you where to find it?	Yes	1986	78	81.3%	94	86.2%	172	83.9%
		1991	110	92.4%	109	91.6%	219	92.0%
		1996	135	90.6%	114	91.9%	249	91.2%
	No	1986	18	18.8%	15	13.8%	33	16.1%
		1991	9	7.6%	10	8.4%	19	8.0%
		1996	14	9.4%	10	8.1%	24	8.8%
Total		1986	96	100.0%	109	100.0%	205	100.0%
		1991	119	100.0%	119	100.0%	238	100.0%
		1996	149	100.0%	124	100.0%	273	100.0%

B24A Where did you find this information * INSTATE In or out of California * YEARGRP Year Crosstabulation

			INSTATE In or out of California				Total	
			Rest of Country		In California			
		Year	Count	Column %	Count	Column %	Count	Column %
Where did you find this information	Label on the refrigerator	1986	60	83.3%	59	70.2%	119	76.3%
		1991	87	87.9%	85	90.4%	172	89.1%
		1996	107	85.6%	92	88.5%	199	86.9%
	Yellow energy guide label	1986			1	1.2%	1	.6%
		1991	1	1.0%			1	.5%
		1996	3	2.4%			3	1.3%
	Owner's manual	1986	2	2.8%	7	8.3%	9	5.8%
		1991	3	3.0%	1	1.1%	4	2.1%
		1996	1	.8%	4	3.8%	5	2.2%
	Sales receipt	1986			1	1.2%	1	.6%
		1996	1	.8%			1	.4%
	Warranty	1986			1	1.2%	1	.6%
		1991			1	1.1%	1	.5%
	Cannot find	1986	8	11.1%	2	2.4%	10	6.4%
		1991	3	3.0%	3	3.2%	6	3.1%
		1996	4	3.2%	1	1.0%	5	2.2%
	From memory	1986	2	2.8%	13	15.5%	15	9.6%
		1991	5	5.1%	4	4.3%	9	4.7%
		1996	9	7.2%	7	6.7%	16	7.0%
Total		1986	72	100.0%	84	100.0%	156	100.0%
		1991	99	100.0%	94	100.0%	193	100.0%
		1996	125	100.0%	104	100.0%	229	100.0%

C1 Did you consider energy consumption when deciding to purchase compact fluorescent bulbs rather than regular incandescent bulbs? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
Did you consider energy consumption when deciding to purchase compact fluorescent bulbs rather than regular incandescent bulbs?	Yes	95	76.0%	167	84.3%	262	81.1%
	No	30	24.0%	31	15.7%	61	18.9%
Total		125	100.0%	198	100.0%	323	100.0%

C2 Have you ever talked with a salesperson about compact fluorescent light * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
Have you ever talked with a salesperson about compact fluorescent light	Yes	19	15.0%	24	11.9%	43	13.1%
	No	108	85.0%	178	88.1%	286	86.9%
Total		127	100.0%	202	100.0%	329	100.0%

C3 How much influence would you say the salesperson had on your decision * INSTATE In or out of Cali Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
How much influence would you say the salesperson had on your decision	No influence	4	21.1%	9	37.5%	13	30.2%
	Very little influence	6	31.6%	4	16.7%	10	23.3%
	Some influence	3	15.8%	7	29.2%	10	23.3%
	Very much of an influence	2	10.5%			2	4.7%
	A great deal of influence	4	21.1%	4	16.7%	8	18.6%
Total		19	100.0%	24	100.0%	43	100.0%

C3 How much influence would you say the salesperson had on your decision

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	2.79	2.42	2.58
N	19	24	43
Std. Deviation	1.47	1.44	1.45

C4 When shopping, see any info on advantages of CFLs? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
When shopping, see any info on advantages of CFLs?	Yes	58	46.8%	110	57.3%	168	53.2%
	No	66	53.2%	82	42.7%	148	46.8%
Total		124	100.0%	192	100.0%	316	100.0%

C5 Receive any information from your utility on CFLs? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
Receive any information from your utility on CFLs?	Yes	50	43.9%	114	61.0%	164	54.5%
	No	64	56.1%	73	39.0%	137	45.5%
Total		114	100.0%	187	100.0%	301	100.0%

C6 See information on CFLs from any other sources? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
See information on CFLs from any other sources?	Yes	61	48.0%	110	56.4%	171	53.1%
	No	66	52.0%	85	43.6%	151	46.9%
Total		127	100.0%	195	100.0%	322	100.0%

Sources of CFL info

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Cases	Col Response %	Cases	Col Response %	Cases	Col Response %
C7	Magazine article	33	59%	46	46%	79	50%
	Newspaper article	13	23%	26	26%	39	25%
	TV	14	25%	19	19%	33	21%
	Relative or friend	3	5%	12	12%	15	10%
	Displays or Brochures	3	5%	11	11%	14	9%
	Employer	2	4%	4	4%	6	4%
	Contractor	1	2%	2	2%	3	2%
	Environmental Groups	1	2%	2	2%	3	2%
	Direct mail	3	5%			3	2%
	Radio			3	3%	3	2%
	Consumer Reports	1	2%	1	1%	2	1%
	Catalogs			1	1%	1	1%
	Church	1	2%			1	1%
	Council on Aging	1	2%			1	1%
	Telemarketers			1	1%	1	1%
	Internet			1	1%	1	1%
Total		56	136%	101	128%	157	131%

Advantages of CFLs

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Cases	Col Response %	Cases	Col Response %	Cases	Col Response %
C8	Longer life of bulbs	88	77%	108	59%	196	66%
	Energy efficient	58	51%	118	64%	176	59%
	Lower operating costs	36	32%	65	35%	101	34%
	Give off better light	16	14%	24	13%	40	13%
	Cooler	9	8%	14	8%	23	8%
	Better for environment	1	1%	1	1%	2	1%
	Smaller			1	1%	1	0%
	Liked shape	1	1%			1	0%
	Does not see a difference			1	1%	1	0%
Total		114	183%	184	180%	298	182%

Concerns about CFLS

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Cases	Col Response %	Cases	Col Response %	Cases	Col Response %
C9	dont fit my fixtures	20	31%	38	35%	58	33%
	Poor light quality - too dim, flicker, too cool	13	20%	35	32%	48	27%
	Cost too much	23	35%	16	15%	39	22%
	Safety concerns/breakage	6	9%	14	13%	20	11%
	No concerns	4	6%	11	10%	15	9%
	Do not work as well as claimed	5	8%	7	6%	12	7%
	Slow start-up	4	6%	7	6%	11	6%
	Un-appealing light color (e.g., It makes me look green.)	1	2%	7	6%	8	5%
	Not convince they save money	3	5%	3	3%	6	3%
	Make noise	2	3%	3	3%	5	3%
	Availability	3	5%	1	1%	4	2%
	Too heavy			2	2%	2	1%
Total		65	129%	110	131%	175	130%

C10A Did you go to a particular store looking for compact fluorescent light bulbs or did you purchase the bulbs a of other shopping you were doing * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
Did you go to a particular store looking for compact fluorescent light bulbs or did you purchase the bulbs as part of other shopping you were doing	Went to particular store	37	30.1%	71	37.6%	108	34.6%
	Part of other shopping	76	61.8%	111	58.7%	187	59.9%
	Both	1	.8%	2	1.1%	3	1.0%
	Catalog purchase	4	3.3%	2	1.1%	6	1.9%
	Received free	5	4.1%	3	1.6%	8	2.6%
Total		123	100.0%	189	100.0%	312	100.0%

Where did you purchase CFLs

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Cases	Col Response %	Cases	Col Response %	Cases	Col Response %
C11	Home Depot	20	17%	84	44%	104	34%
	Hardware store	28	23%	37	19%	65	21%
	Home center or discount hardware store	22	18%	15	8%	37	12%
	Discount department store	20	17%	11	6%	31	10%
	Department store	12	10%	11	6%	23	7%
	Warehouse, bulk purchase discounter (e.g., Costco,Price Club	9	8%	12	6%	21	7%
	Home Base			18	9%	18	6%
	Lighting specialty store	8	7%	7	4%	15	5%
	Mail order	6	5%	5	3%	11	4%
	Utility sale or promotion	3	3%	5	3%	8	3%
	Grocery store	2	2%	3	2%	5	2%
	Dixieline			5	3%	5	2%
	Received free	2	2%	2	1%	4	1%
	A number of different places	1	1%	2	1%	3	1%
	Drugstore	1	1%	2	1%	3	1%
	Contractor			1	1%	1	0%
	Flea market			1	1%	1	0%
	Military store			1	1%	1	0%
Total		120	112%	190	117%	310	115%

C12 How easy was it to find the type of compact fluorescent light bulbs you wanted? * INSTATE In or out of Ca Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
How easy was it to find the type of compact fluorescent light bulbs you wanted?	Very Easy	77	66.4%	125	65.1%	202	65.6%
	2	16	13.8%	34	17.7%	50	16.2%
	3	13	11.2%	19	9.9%	32	10.4%
	4	6	5.2%	5	2.6%	11	3.6%
	Very Difficult	4	3.4%	9	4.7%	13	4.2%
Total		116	100.0%	192	100.0%	308	100.0%

C12 How easy was it to find the type of compact fluorescent light bulbs you wanted?

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	1.66	1.64	1.65
N	116	192	308
Std. Deviation	1.09	1.07	1.08

Where do you purchase incandescents?

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Cases	Col Response %	Cases	Col Response %	Cases	Col Response %
C13	Grocery store	39	32%	61	31%	100	31%
	Hardware store	38	31%	44	22%	82	25%
	Discount department store	35	28%	31	16%	66	20%
	Home Depot	14	11%	51	26%	65	20%
	Warehouse, bulk purchase discounter (e.g., Costco,Price Club	12	10%	25	13%	37	11%
	Department store	12	10%	13	7%	25	8%
	Home center or discount hardware store	12	10%	11	6%	23	7%
	Home Base			10	5%	10	3%
	Drug store	2	2%	6	3%	8	2%
	A variety of stores	1	1%	5	3%	6	2%
	Lighting specialty store	3	2%	1	1%	4	1%
	Dixieline			4	2%	4	1%
	Longs Drugs			3	2%	3	1%
	Commissary or military store			3	2%	3	1%
	Utility sale or promotion	1	1%	1	1%	2	1%
	Do not purchase			2	1%	2	1%
	Amway			1	1%	1	0%
	Mall	1	1%			1	0%
	Appliance store	1	1%			1	0%
Total		123	139%	200	136%	323	137%

C14 How many of these stores regularly have CFLs available? * INSTATE In or out of California Cros

			INSTATE In or out of California		
			Rest of Country	In California	Total
How many of these stores regularly have CFLs available?	All	Count	32	63	95
		Column %	28.6%	40.1%	35.3%
	Most	Count	31	42	73
		Column %	27.7%	26.8%	27.1%
	Some	Count	28	25	53
		Column %	25.0%	15.9%	19.7%
	A few	Count	17	17	34
		Column %	15.2%	10.8%	12.6%
	None	Count	4	10	14
		Column %	3.6%	6.4%	5.2%
Total		Count	112	157	269
		Column %	100.0%	100.0%	100.0%

C14 How many of these stores regularly have CFLs available?

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	2.38	2.17	2.25
N	112	157	269
Std. Deviation	1.16	1.24	1.21

C15 How likely are you to purchase compact fluorescent light bulbs in the future * INSTATE In or out of C Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
How likely are you to purchase compact fluorescent light bulbs in the future	Not at all likely	13	10.3%	22	11.0%	35	10.7%
	2	21	16.7%	11	5.5%	32	9.8%
	3	29	23.0%	31	15.5%	60	18.4%
	4	14	11.1%	38	19.0%	52	16.0%
	Very Likely	49	38.9%	98	49.0%	147	45.1%
Total		126	100.0%	200	100.0%	326	100.0%

C15 How likely are you to purchase compact fluorescent light bulbs in the future

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	3.52	3.90	3.75
N	126	200	326
Std. Deviation	1.41	1.36	1.39

Why no purchase of CFLs?

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Cases	Col Response %	Cases	Col Response %	Cases	Col Response %
D1	No specific reason	31	50%	29	44%	60	47%
	Cost too much	15	24%	20	30%	35	27%
	Did not need any	6	10%	4	6%	10	8%
	Poor light quality - too dim, flicker, too cool	2	3%	6	9%	8	6%
	dont fit my fixtures	2	3%	4	6%	6	5%
	Was not aware of them	4	6%	1	2%	5	4%
	Hard to find	2	3%	2	3%	4	3%
	Dislike CFLs			3	5%	3	2%
	Satisfied with regular bulbs	1	2%	2	3%	3	2%
	Not convince they save money	1	2%	1	2%	2	2%
	Interfere with other electronics			1	2%	1	1%
Total		62	103%	66	111%	128	107%

D2 Have you ever talked with a salesperson about compact fluorescent light * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
Have you ever talked with a salesperson about compact fluorescent light	Yes	4	5.4%	7	9.2%	11	7.3%
	No	70	94.6%	69	90.8%	139	92.7%
Total		74	100.0%	76	100.0%	150	100.0%

D3 When shopping, see any info on advantages of CFLs? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
When shopping, see any info on advantages of CFLs?	Yes	10	14.1%	26	36.1%	36	25.2%
	No	61	85.9%	46	63.9%	107	74.8%
Total		71	100.0%	72	100.0%	143	100.0%

D4 Receive any information from your utility on CFLs? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
Receive any information from your utility on CFLs?	Yes	13	20.3%	29	42.0%	42	31.6%
	No	51	79.7%	40	58.0%	91	68.4%
Total		64	100.0%	69	100.0%	133	100.0%

D5 See information on CFLs from any other sources? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
See information on CFLs from any other sources?	Yes	26	36.1%	33	45.2%	59	40.7%
	No	46	63.9%	40	54.8%	86	59.3%
Total		72	100.0%	73	100.0%	145	100.0%

What other info sources heard about CFLs?

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Cases	Col Response %	Cases	Col Response %	Cases	Col Response %
D6	Magazine article	12	57%	10	38%	22	47%
	TV	6	29%	7	27%	13	28%
	Newspaper article	4	19%	5	19%	9	19%
	Relative or Friend	2	10%	2	8%	4	9%
	Employer			3	12%	3	6%
	Display at store			3	12%	3	6%
	Direct mail			2	8%	2	4%
	Catalog			1	4%	1	2%
Total		21	114%	26	127%	47	121%

What are CFL advantages?

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Cases	Col Response %	Cases	Col Response %	Cases	Col Response %
D7	Longer life of bulbs	32	59%	27	43%	59	50%
	Energy efficient	15	28%	34	54%	49	42%
	Lower operating costs	14	26%	17	27%	31	26%
	Do not know about CFLs	7	13%	4	6%	11	9%
	Brighter	4	7%	4	6%	8	7%
	No advantages	2	4%	4	6%	6	5%
	Cooler			5	8%	5	4%
	Easier on the eyes			1	2%	1	1%
Total		54	137%	63	152%	117	145%

What are your concerns about CFLs?

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Cases	Col Response %	Cases	Col Response %	Cases	Col Response %
D8	Cost too much	19	40%	22	42%	41	41%
	Poor light quality - too dim, flicker, too cool	4	9%	16	30%	20	20%
	No concerns	11	23%	8	15%	19	19%
	Safety concerns	5	11%	6	11%	11	11%
	dont fit my fixtures	3	6%	7	13%	10	10%
	Not convince they save money	4	9%	2	4%	6	6%
	Do not know enough about CFLs	4	9%	1	2%	5	5%
	Slow start-up	2	4%			2	2%
	Bothers eyes			2	4%	2	2%
	Availability is poor			2	4%	2	2%
	Too heavy			2	4%	2	2%
	Interferes with other electronics			1	2%	1	1%
	Concerned if they last longer	1	2%			1	1%
	Used to regular bulbs			1	2%	1	1%
	Make buzzing sound			1	2%	1	1%
Total		47	113%	53	134%	100	124%

D9 Does your utility offer rebates promotions for CFLs? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
Does your utility offer rebates promotions for CFLs?	Yes	1	1.9%	9	18.0%	10	9.7%
	No	52	98.1%	41	82.0%	93	90.3%
Total		53	100.0%	50	100.0%	103	100.0%

D10 On a scale of 1 to 5, know as much as need to to know about CFLs to buy * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
On a scale of 1 to 5, know as much as need to to know about CFLs to buy	do not know enough	29	40.3%	25	33.3%	54	36.7%
	2	11	15.3%	12	16.0%	23	15.6%
	3	10	13.9%	9	12.0%	19	12.9%
	4	10	13.9%	15	20.0%	25	17.0%
	know all I need to know	12	16.7%	14	18.7%	26	17.7%
Total		72	100.0%	75	100.0%	147	100.0%

D10 On a scale of 1 to 5, know as much as need to to know about CFLs to buy

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	2.51	2.75	2.63
N	72	75	147
Std. Deviation	1.54	1.55	1.54

D11 On a scale of 1 to 5, how likely to purchase CFLs in the future * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
On a scale of 1 to 5, how likely to purchase CFLs in the future	not at all likely	28	39.4%	31	42.5%	59	41.0%
	2	15	21.1%	16	21.9%	31	21.5%
	3	20	28.2%	16	21.9%	36	25.0%
	4	6	8.5%	6	8.2%	12	8.3%
	very likely	2	2.8%	4	5.5%	6	4.2%
Total		71	100.0%	73	100.0%	144	100.0%

D11 On a scale of 1 to 5, how likely to purchase CFLs in the future

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	2.14	2.12	2.13
N	71	73	144
Std. Deviation	1.12	1.21	1.17

E1 Are you considering buying new refrigerator in next 2 years? * INSTATE In or out of California * YEARGRP Year Crosstabulation[a]

		Year	INSTATE In or out of California: Rest of Country Count	Rest of Country Column %	In California Count	In California Column %	Total Count	Total Column %
E1 Are you considering buying new refrigerator in next 2 years?	Yes	-8	101	10.3%	128	13.1%	229	11.7%
		1986	9	13.4%	11	16.2%	20	14.8%
		1991	6	9.0%	3	4.2%	9	6.5%
		1996	4	3.4%	1	1.2%	5	2.5%
	No	-8	884	89.7%	848	86.9%	1732	88.3%
		1986	58	86.6%	57	83.8%	115	85.2%
		1991	61	91.0%	68	95.8%	129	93.5%
		1996	113	96.6%	84	98.8%	197	97.5%
Total		-8	985	100.0%	976	100.0%	1961	100.0%
		1986	67	100.0%	68	100.0%	135	100.0%
		1991	67	100.0%	71	100.0%	138	100.0%
		1996	117	100.0%	85	100.0%	202	100.0%

a. Footnote -8 refers to respondents who did not purchase a refrigerator in 1986, 1991, or 1996

		Year	INSTATE In or out of California: Rest of Country	In California	Total
Mean	E2A Size of refrigerator (CuFt)	-8	4.50	4.49	4.49
		1986	4.11	4.55	4.35
		1991	4.50	4.33	4.44
		1996	4.75	5.00	4.80
	E2B appearance of the refrigerator	-8	3.64	3.65	3.65
		1986	3.56	3.55	3.55
		1991	4.33	3.00	3.89
		1996	3.75	5.00	4.00
	E2C manufacturer or brand name	-8	3.73	3.66	3.69
		1986	3.67	3.64	3.65
		1991	4.00	3.00	3.67
		1996	3.25	1.00	2.80
	E2D operating cost	-8	4.31	4.42	4.37
		1986	4.11	4.18	4.15
		1991	4.67	4.33	4.56
		1996	3.50	5.00	3.80
	E2E purchase price	-8	4.43	4.36	4.39
		1986	4.22	4.18	4.20
		1991	4.67	3.67	4.33
		1996	3.50	5.00	3.80
	E2F special features, such as ice-maker, water dispenser, and so forth	-8	3.10	3.23	3.17
		1986	2.78	3.73	3.30
		1991	3.50	3.00	3.33
		1996	4.00	5.00	4.20

			INSTATE In or out of California		
		Year	Rest of Country	In California	Total
Mean	E2G recommendation of dealer or contractor	-8	2.73	2.82	2.78
		1986	3.22	2.09	2.60
		1991	2.50	3.00	2.67
		1996	1.00	5.00	1.80
	E2H recommendation of friend, neighbor, or relative	-8	3.34	3.29	3.31
		1986	2.67	2.82	2.75
		1991	3.83	2.33	3.33
		1996	1.50	5.00	2.20
	E2I warranty	-8	4.25	4.07	4.15
		1986	4.78	3.64	4.15
		1991	4.17	3.33	3.89
		1996	4.50	5.00	4.60
	E2J availability of rebate or discount	-8	3.79	3.72	3.75
		1986	4.00	3.64	3.80
		1991	4.17	2.33	3.56
		1996	3.75	5.00	4.00
	E2K energy efficiency rating	-8	4.35	4.54	4.46
		1986	4.78	4.40	4.58
		1991	4.50	4.00	4.33
		1996	4.25	5.00	4.40
	E2L recommendation of a consumer magazine	-8	3.68	3.62	3.65
		1986	3.89	3.36	3.60
		1991	3.17	2.67	3.00
		1996	2.00	5.00	2.60
	E2M dealer's reputation for repairing equipment	-8	4.30	4.05	4.16
		1986	4.67	2.64	3.55
		1991	4.50	3.33	4.11
		1996	2.25	5.00	2.80
N	E2A Size of refrigerator (CuFt)	-8	101	127	228
		1986	9	11	20
		1991	6	3	9
		1996	4	1	5
	E2B appearance of the refrigerator	-8	101	128	229
		1986	9	11	20
		1991	6	3	9
		1996	4	1	5
	E2C manufacturer or brand name	-8	101	128	229
		1986	9	11	20
		1991	6	3	9
		1996	4	1	5
	E2D operating cost	-8	101	127	228
		1986	9	11	20
		1991	6	3	9
		1996	4	1	5

			INSTATE In or out of California		
		Year	Rest of Country	In California	Total
N	E2E purchase price	-8	101	128	229
		1986	9	11	20
		1991	6	3	9
		1996	4	1	5
	E2F special features, such as ice-maker, water dispenser, and so forth	-8	101	128	229
		1986	9	11	20
		1991	6	3	9
		1996	4	1	5
	E2G recommendation of dealer or contractor	-8	101	128	229
		1986	9	11	20
		1991	6	3	9
		1996	4	1	5
	E2H recommendation of friend, neighbor, or relative	-8	101	127	228
		1986	9	11	20
		1991	6	3	9
		1996	4	1	5
	E2I warranty	-8	101	127	228
		1986	9	11	20
		1991	6	3	9
		1996	4	1	5
	E2J availability of rebate or discount	-8	101	127	228
		1986	9	11	20
		1991	6	3	9
		1996	4	1	5
	E2K energy efficiency rating	-8	101	127	228
		1986	9	10	19
		1991	6	3	9
		1996	4	1	5
	E2L recommendation of a consumer magazine	-8	101	126	227
		1986	9	11	20
		1991	6	3	9
		1996	4	1	5
	E2M dealer's reputation for repairing equipment	-8	100	127	227
		1986	9	11	20
		1991	6	3	9
		1996	4	1	5
Std. Deviation	E2A Size of refrigerator (CuFt)	-8	.86	.85	.85
		1986	1.45	.69	1.09
		1991	.84	1.15	.88
		1996	.50	.	.45
	E2B appearance of the refrigerator	-8	1.25	1.16	1.20
		1986	1.59	1.13	1.32
		1991	1.21	1.00	1.27
		1996	1.89	.	1.73

			INSTATE In or out of California		
		Year	Rest of Country	In California	Total
Std. Deviation	E2C manufacturer or brand name	-8	1.14	1.17	1.16
		1986	1.12	1.50	1.31
		1991	1.26	1.73	1.41
		1996	1.71	.	1.79
	E2D operating cost	-8	1.13	.94	1.03
		1986	1.54	1.25	1.35
		1991	.52	.58	.53
		1996	1.73	.	1.64
	E2E purchase price	-8	.89	.89	.89
		1986	1.39	.87	1.11
		1991	.82	1.53	1.12
		1996	1.91	.	1.79
	E2F special features, such as ice-maker, water dispenser, and so forth	-8	1.42	1.25	1.33
		1986	.67	1.49	1.26
		1991	1.05	.00	.87
		1996	2.00	.	1.79
	E2G recommendation of dealer or contractor	-8	1.37	1.30	1.33
		1986	1.30	1.14	1.31
		1991	1.97	1.00	1.66
		1996	.00	.	1.79
	E2H recommendation of friend, neighbor, or relative	-8	1.17	1.13	1.14
		1986	1.22	1.54	1.37
		1991	1.47	.58	1.41
		1996	1.00	.	1.79
	E2I warranty	-8	1.08	1.00	1.04
		1986	.44	1.29	1.14
		1991	1.60	.58	1.36
		1996	1.00	.	.89
	E2J availability of rebate or discount	-8	1.14	1.11	1.12
		1986	1.00	1.12	1.06
		1991	.98	.58	1.24
		1996	1.50	.	1.41
	E2K energy efficiency rating	-8	.93	.84	.89
		1986	.67	.84	.77
		1991	.84	.00	.71
		1996	1.50	.	1.34
	E2L recommendation of a consumer magazine	-8	1.26	1.24	1.25
		1986	.93	1.63	1.35
		1991	1.47	1.15	1.32
		1996	1.15	.	1.67
	E2M dealer's reputation for repairing equipment	-8	1.14	1.08	1.11
		1986	.71	1.69	1.67
		1991	.84	1.53	1.17
		1996	1.50	.	1.79

CFLSTAT2 CFL Knowledge & Purchase Status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	CFL buyer	950	37.1	37.1	37.1
	CFL non-buyer, heard of	154	6.0	6.0	43.1
	Never heard of CFLs	1458	56.9	56.9	100.0
	Total	2562	100.0	100.0	
Total		2562	100.0		

		INSTATE In or out of California: Rest of Country; CFLSTAT2 CFL Knowledge & Purchase Status			
		CFL buyer	CFL non-buyer, heard of	Never heard of CFLs	Total
E3A life of the bulb	Mean	3.86	2.96	3.41	3.52
	N	369	72	791	1232
	Std. Deviation	1.24	1.58	1.41	1.40
E3B brightness or wattage of bulb	Mean	4.14	3.60	3.98	4.01
	N	371	72	792	1235
	Std. Deviation	1.09	1.34	1.17	1.16
E3C size of bulb	Mean	3.24	3.10	3.18	3.20
	N	366	73	784	1223
	Std. Deviation	1.47	1.34	1.49	1.47
E3D light color or quality	Mean	3.75	3.55	3.64	3.67
	N	371	73	788	1232
	Std. Deviation	1.33	1.30	1.36	1.35
E3E appearance of the bulb	Mean	2.35	2.33	2.31	2.32
	N	367	73	791	1231
	Std. Deviation	1.33	1.35	1.39	1.37
E3F operating cost	Mean	3.85	3.40	3.67	3.71
	N	368	73	785	1226
	Std. Deviation	1.32	1.55	1.42	1.41
E3G energy efficiency	Mean	4.02	3.64	3.82	3.87
	N	371	73	783	1227
	Std. Deviation	1.22	1.46	1.36	1.33
E3H price of bulb	Mean	3.85	3.85	3.95	3.91
	N	369	73	792	1234
	Std. Deviation	1.18	1.39	1.26	1.25

		INSTATE In or out of California			
		In California			
		CFLSTAT2 CFL Knowledge & Purchase Status			
		CFL buyer	CFL non-buyer, heard of	Never heard of CFLs	Total
E3A life of the bulb	Mean	3.73	3.18	3.42	3.55
	N	542	77	576	1195
	Std. Deviation	1.30	1.59	1.43	1.39
E3B brightness or wattage of bulb	Mean	4.18	4.05	4.04	4.10
	N	540	76	571	1187
	Std. Deviation	1.03	1.12	1.13	1.09
E3C size of bulb	Mean	3.39	3.22	3.04	3.21
	N	536	73	562	1171
	Std. Deviation	1.40	1.41	1.44	1.43
E3D light color or quality	Mean	3.79	3.74	3.53	3.66
	N	542	77	573	1192
	Std. Deviation	1.23	1.25	1.41	1.32
E3E appearance of the bulb	Mean	2.29	2.39	2.22	2.26
	N	541	74	575	1190
	Std. Deviation	1.32	1.38	1.38	1.35
E3F operating cost	Mean	3.89	3.42	3.57	3.71
	N	538	78	564	1180
	Std. Deviation	1.28	1.49	1.47	1.40
E3G energy efficiency	Mean	4.09	3.48	3.83	3.92
	N	537	77	563	1177
	Std. Deviation	1.16	1.45	1.38	1.30
E3H price of bulb	Mean	3.87	3.68	3.76	3.80
	N	540	77	572	1189
	Std. Deviation	1.15	1.43	1.34	1.27

		INSTATE In or out of California			
		Total			
		CFLSTAT2 CFL Knowledge & Purchase Status			
		CFL buyer	CFL non-buyer, heard of	Never heard of CFLs	Total
E3A life of the bulb	Mean	3.78	3.07	3.42	3.53
	N	911	149	1367	2427
	Std. Deviation	1.28	1.58	1.42	1.39
E3B brightness or wattage of bulb	Mean	4.16	3.83	4.01	4.05
	N	911	148	1363	2422
	Std. Deviation	1.05	1.25	1.15	1.13
E3C size of bulb	Mean	3.33	3.16	3.13	3.20
	N	902	146	1346	2394
	Std. Deviation	1.43	1.37	1.47	1.45
E3D light color or quality	Mean	3.77	3.65	3.59	3.67
	N	913	150	1361	2424
	Std. Deviation	1.27	1.28	1.38	1.34
E3E appearance of the bulb	Mean	2.32	2.36	2.27	2.29
	N	908	147	1366	2421
	Std. Deviation	1.32	1.36	1.38	1.36
E3F operating cost	Mean	3.87	3.41	3.63	3.71
	N	906	151	1349	2406
	Std. Deviation	1.30	1.52	1.44	1.40
E3G energy efficiency	Mean	4.06	3.56	3.82	3.90
	N	908	150	1346	2404
	Std. Deviation	1.18	1.45	1.37	1.31
E3H price of bulb	Mean	3.86	3.76	3.87	3.86
	N	909	150	1364	2423
	Std. Deviation	1.16	1.41	1.30	1.26

F1A In what type of residence do you live * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
F1A In what type of residence do you live	Single family detached house	1539	78.5%	1413	76.1%	2952	77.3%
	Mobile home or house trailer	102	5.2%	101	5.4%	203	5.3%
	2-4 unit multi-family building	150	7.6%	180	9.7%	330	8.6%
	5+ unit multi-family building	168	8.6%	161	8.7%	329	8.6%
	Independent living center	2	.1%			2	.1%
	Military housing			1	.1%	1	.0%
Total		1961	100.0%	1856	100.0%	3817	100.0%

F2 Is this residence occupied year-round, or only part of the year? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
F2 Is this residence occupied year-round, or only part of the year?	Year-round	1927	98.0%	1841	99.2%	3768	98.6%
	Part of the year	39	2.0%	15	.8%	54	1.4%
Total		1966	100.0%	1856	100.0%	3822	100.0%

F3A Do you own or rent this residence? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
F3A Do you own or rent this residence?	Own or buying	1599	81.8%	1475	79.7%	3074	80.8%
	Rent or lease	342	17.5%	368	19.9%	710	18.7%
	Housing paid by employer	6	.3%	6	.3%	12	.3%
	Relative owns	8	.4%	2	.1%	10	.3%
Total		1955	100.0%	1851	100.0%	3806	100.0%

F4 How many rooms are in this residence? Do not count bathrooms, halls, * INSTATE In or out of Califor Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
F4 How many rooms are in this residence? Do not count bathrooms, halls,	1	11	.6%	23	1.2%	34	.9%
	2	35	1.8%	54	2.9%	89	2.3%
	3	122	6.3%	161	8.7%	283	7.5%
	4	211	10.8%	246	13.3%	457	12.0%
	5	365	18.7%	370	20.0%	735	19.4%
	6	417	21.4%	411	22.2%	828	21.8%
	7	276	14.2%	282	15.3%	558	14.7%
	8	247	12.7%	169	9.1%	416	11.0%
	9	120	6.2%	61	3.3%	181	4.8%
	10	79	4.1%	40	2.2%	119	3.1%
	11	22	1.1%	13	.7%	35	.9%
	12	26	1.3%	8	.4%	34	.9%
	13	5	.3%	4	.2%	9	.2%
	14	3	.2%	1	.1%	4	.1%
	15	6	.3%	3	.2%	9	.2%
	18	1	.1%			1	.0%
	20			1	.1%	1	.0%
	25	1	.1%			1	.0%
	67	1	.1%			1	.0%
	68	1	.1%			1	.0%
	76			1	.1%	1	.0%
Total		1949	100.0%	1848	100.0%	3797	100.0%

F4 How many rooms are in this residence? Do not count bathrooms, halls,

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	6.32	5.75	6.05
N	1949	1848	3797
Std. Deviation	2.96	2.60	2.80

F5 What is the approximate square footage of living space? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
F5 What is the approximate square footage of living space?	Less than 600 square feet	48	3.5%	61	4.1%	109	3.8%
	600 to 999 square feet	165	12.2%	141	9.4%	306	10.7%
	1,000 to 1,499 square feet	369	27.2%	423	28.2%	792	27.7%
	1,500 to 1,999 square feet	294	21.7%	406	27.0%	700	24.5%
	2,000 to 2,499 square feet	256	18.9%	272	18.1%	528	18.5%
	2,500 to 2,999 square feet	88	6.5%	96	6.4%	184	6.4%
	3,000 square feet or more	136	10.0%	103	6.9%	239	8.4%
Total		1356	100.0%	1502	100.0%	2858	100.0%

F6 How many years have you lived at this residence?

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	13.04	14.90	13.95
N	1944	1843	3787
Std. Deviation	12.62	12.57	12.63

F7 How many people live in this residence? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
F7 How many people live in this residence?	1	385	19.9%	377	20.6%	762	20.2%
	2	676	34.9%	757	41.3%	1433	38.0%
	3	360	18.6%	294	16.1%	654	17.4%
	4	302	15.6%	243	13.3%	545	14.5%
	5	134	6.9%	102	5.6%	236	6.3%
	6	54	2.8%	41	2.2%	95	2.5%
	7	18	.9%	10	.5%	28	.7%
	8	3	.2%	2	.1%	5	.1%
	9	2	.1%	2	.1%	4	.1%
	10	1	.1%	2	.1%	3	.1%
	11	2	.1%			2	.1%
	14			1	.1%	1	.0%
Total		1937	100.0%	1831	100.0%	3768	100.0%

F7 How many people live in this residence?

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	2.69	2.53	2.62
N	1937	1831	3768
Std. Deviation	1.43	1.36	1.40

F8 How many of these people are under the age of 18? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
F8 How many of these people are under the age of 18?	0	1209	62.4%	1325	72.2%	2534	67.2%
	1	308	15.9%	215	11.7%	523	13.9%
	2	269	13.9%	193	10.5%	462	12.3%
	3	105	5.4%	72	3.9%	177	4.7%
	4	30	1.5%	23	1.3%	53	1.4%
	5	9	.5%	5	.3%	14	.4%
	6	3	.2%	2	.1%	5	.1%
	7	2	.1%			2	.1%
	9	1	.1%			1	.0%
Total		1936	100.0%	1835	100.0%	3771	100.0%

F8 How many of these people are under the age of 18?

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	.71	.52	.61
N	1936	1835	3771
Std. Deviation	1.10	.97	1.04

F9A Price of electricity (kWh) * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
F9A Price of electricity (kWh)	.05	1	.6%			1	.3%
	.10			1	.5%	1	.3%
	.11	1	.6%			1	.3%
	1.00	6	3.5%	5	2.7%	11	3.1%
	1.04			1	.5%	1	.3%
	1.38	1	.6%			1	.3%
	1.50			1	.5%	1	.3%
	1.60			1	.5%	1	.3%
	1.65	1	.6%			1	.3%
	2.00	4	2.3%	1	.5%	5	1.4%
	3.50	1	.6%	1	.5%	2	.6%
	4.00	7	4.0%			7	1.9%
	4.50	1	.6%			1	.3%
	4.70	1	.6%			1	.3%
	5.00	7	4.0%	2	1.1%	9	2.5%
	5.20	1	.6%			1	.3%
	6.00	15	8.7%	5	2.7%	20	5.6%
	6.50	4	2.3%	1	.5%	5	1.4%
	6.60	1	.6%			1	.3%
	6.90	1	.6%			1	.3%
	7.00	13	7.5%	8	4.3%	21	5.8%
	7.40	1	.6%			1	.3%
	7.50	3	1.7%			3	.8%
	7.60	1	.6%			1	.3%
	8.00	11	6.4%	7	3.7%	18	5.0%
	8.20	1	.6%			1	.3%
	8.50	1	.6%	2	1.1%	3	.8%
	8.67	1	.6%			1	.3%
	8.80			1	.5%	1	.3%
	9.00	4	2.3%	5	2.7%	9	2.5%
	9.50	1	.6%	1	.5%	2	.6%
	10.00	11	6.4%	23	12.3%	34	9.4%
	10.10			1	.5%	1	.3%
	10.40	2	1.2%	1	.5%	3	.8%
	10.50			2	1.1%	2	.6%

F9A Price of electricity (kWh) * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
F9A Price of electricity (kWh)	11.00	8	4.6%	23	12.3%	31	8.6%
	11.40			1	.5%	1	.3%
	11.50			2	1.1%	2	.6%
	11.60			1	.5%	1	.3%
	12.00	10	5.8%	40	21.4%	50	13.9%
	12.20			1	.5%	1	.3%
	12.40			1	.5%	1	.3%
	12.50			3	1.6%	3	.8%
	12.90	1	.6%			1	.3%
	13.00	7	4.0%	16	8.6%	23	6.4%
	13.30			1	.5%	1	.3%
	13.50	1	.6%	1	.5%	2	.6%
	13.60	1	.6%	1	.5%	2	.6%
	14.00			3	1.6%	3	.8%
	14.50	1	.6%			1	.3%
	15.00	2	1.2%	1	.5%	3	.8%
	16.00	1	.6%	2	1.1%	3	.8%
	16.30			1	.5%	1	.3%
	17.00	2	1.2%	2	1.1%	4	1.1%
	18.00	1	.6%	1	.5%	2	.6%
	19.00	1	.6%	2	1.1%	3	.8%
	20.00	3	1.7%	2	1.1%	5	1.4%
	21.00			1	.5%	1	.3%
	22.00			1	.5%	1	.3%
	22.50	1	.6%			1	.3%
	22.80			1	.5%	1	.3%
	24.00	1	.6%			1	.3%
	25.00	2	1.2%			2	.6%
	25.90			1	.5%	1	.3%
	26.60	1	.6%			1	.3%
	27.00	1	.6%	1	.5%	2	.6%
	28.00	1	.6%			1	.3%
	29.00	1	.6%			1	.3%
	30.00	1	.6%			1	.3%
	31.00	1	.6%			1	.3%
	32.00	5	2.9%	2	1.1%	7	1.9%
	33.00	1	.6%	1	.5%	2	.6%
	34.00	1	.6%			1	.3%
	37.00	1	.6%			1	.3%
	38.00	1	.6%			1	.3%
	43.00			1	.5%	1	.3%
	47.00	2	1.2%			2	.6%
	48.00	1	.6%			1	.3%
	50.00			1	.5%	1	.3%
	51.00	1	.6%			1	.3%

F9A Price of electricity (kWh) * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
F9A Price of electricity (kWh)	53.00	1	.6%			1	.3%
	56.00	1	.6%			1	.3%
	58.00			1	.5%	1	.3%
	60.00	1	.6%	1	.5%	2	.6%
	67.00	1	.6%			1	.3%
	70.00	1	.6%			1	.3%
	78.00	1	.6%			1	.3%
	79.00	1	.6%			1	.3%
	90.00	1	.6%			1	.3%
Total		173	100.0%	187	100.0%	360	100.0%

F9A Price of electricity (kWh)

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	14.4067	12.1740	13.2469
N	173	187	360
Std. Deviation	15.7146	7.7852	12.2868

F10 What is the highest grade of schooling completed by you or another adult * INSTATE In or out of Ca Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
F10 What is the highest grade of schooling completed by you or another adult	Grade school or less	33	1.7%	12	.7%	45	1.2%
	Some high school	78	4.1%	54	3.0%	132	3.5%
	High school graduate	512	26.7%	307	16.9%	819	21.9%
	Some business or technical school	52	2.7%	27	1.5%	79	2.1%
	Business or technical school graduate	75	3.9%	62	3.4%	137	3.7%
	Some college	380	19.8%	421	23.2%	801	21.5%
	College graduate (4-year degree)	475	24.7%	523	28.8%	998	26.7%
	Some graduate work	62	3.2%	75	4.1%	137	3.7%
	Graduate degree	254	13.2%	332	18.3%	586	15.7%
Total		1921	100.0%	1813	100.0%	3734	100.0%

F11 Which of the following age categories best describes your age? * INSTATE In or out of California Cros

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
F11 Which of the following age categories best describes your age?	Less than 25 years old	69	3.6%	56	3.1%	125	3.3%
	25 to 34 years old	319	16.6%	218	12.0%	537	14.4%
	35 to 44 years old	481	25.0%	312	17.2%	793	21.2%
	45 to 54 years old	385	20.0%	392	21.6%	777	20.8%
	55 to 59 years old	168	8.7%	168	9.3%	336	9.0%
	60 to 64 years old	130	6.8%	125	6.9%	255	6.8%
	65 years old or older	373	19.4%	542	29.9%	915	24.5%
Total		1925	100.0%	1813	100.0%	3738	100.0%

F12 Household income * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
F12 Household income	Less than $10,000	93	6.1%	81	5.5%	174	5.8%
	$10,000 to $14,999	98	6.5%	100	6.7%	198	6.6%
	$15,000 to $19,999	121	8.0%	112	7.6%	233	7.8%
	$20,000 to $29,999	251	16.5%	196	13.2%	447	14.9%
	$30,000 to $39,999	272	17.9%	214	14.4%	486	16.2%
	$40,000 to $49,999	215	14.2%	203	13.7%	418	13.9%
	$50,000 to $74,999	275	18.1%	305	20.6%	580	19.3%
	$75,000 to $99,999	108	7.1%	130	8.8%	238	7.9%
	$100,000 or more	86	5.7%	141	9.5%	227	7.6%
Total		1519	100.0%	1482	100.0%	3001	100.0%

GEND Gender * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
GEND Gender	Male	802	40.1%	854	44.7%	1656	42.3%
	Female	1200	59.9%	1057	55.3%	2257	57.7%
Total		2002	100.0%	1911	100.0%	3913	100.0%

STATE * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
STATE	AL	46	2.3%			46	1.2%
	AR	27	1.3%			27	.7%
	AZ	35	1.7%			35	.9%
	CA	7	.3%	1919	100.0%	1926	49.0%
	CO	32	1.6%			32	.8%
	CT	24	1.2%			24	.6%
	DC	4	.2%			4	.1%
	DE	6	.3%			6	.2%
	FL	82	4.1%			82	2.1%
	GA	62	3.1%			62	1.6%

STATE * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
STATE	IA	43	2.1%			43	1.1%
	ID	12	.6%			12	.3%
	IL	92	4.6%			92	2.3%
	IN	70	3.5%			70	1.8%
	KS	26	1.3%			26	.7%
	KY	45	2.2%			45	1.1%
	LA	49	2.4%			49	1.2%
	MA	53	2.6%			53	1.3%
	MD	37	1.8%			37	.9%
	ME	16	.8%			16	.4%
	MI	74	3.7%			74	1.9%
	MN	57	2.8%			57	1.5%
	MO	59	2.9%			59	1.5%
	MS	21	1.0%			21	.5%
	MT	19	.9%			19	.5%
	NC	69	3.4%			69	1.8%
	ND	7	.3%			7	.2%
	NE	23	1.1%			23	.6%
	NH	12	.6%			12	.3%
	NJ	35	1.7%			35	.9%
	NM	17	.8%			17	.4%
	NV	10	.5%			10	.3%
	NY	146	7.3%			146	3.7%
	OH	100	5.0%			100	2.5%
	OK	28	1.4%			28	.7%
	OR	26	1.3%			26	.7%
	PA	95	4.7%			95	2.4%
	RI	4	.2%			4	.1%
	SC	35	1.7%			35	.9%
	SD	11	.5%			11	.3%
	TN	43	2.1%			43	1.1%
	TX	116	5.8%			116	3.0%
	UT	18	.9%			18	.5%
	VA	58	2.9%			58	1.5%
	VT	8	.4%			8	.2%
	WA	53	2.6%			53	1.3%
	WI	67	3.3%			67	1.7%
	WV	27	1.3%			27	.7%
	WY	6	.3%			6	.2%
Total		2012	100.0%	1919	100.0%	3931	100.0%

CENSUS * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
CENSUS	1	117	5.8%			117	3.0%
	2	276	13.7%			276	7.0%
	3	403	20.0%			403	10.3%
	4	226	11.2%			226	5.7%
	5	380	18.9%			380	9.7%
	6	155	7.7%			155	3.9%
	7	220	10.9%			220	5.6%
	8	149	7.4%			149	3.8%
	9	86	4.3%	1919	100.0%	2005	51.0%
Total		2012	100.0%	1919	100.0%	3931	100.0%

DEMO Completed some demographics questions * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
DEMO Completed some demographics questions	Completed No Demographics Questions	45	2.2%	58	3.0%	103	2.6%
	Completed Some Demographics Questions	1967	97.8%	1861	97.0%	3828	97.4%
Total		2012	100.0%	1919	100.0%	3931	100.0%

APPENDIX D
TRADE ALLY SURVEY RESULTS

REFRIGERATOR RETAILERS

A1 First, did you sell refrigerators in 1996? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
A1 First, did you sell refrigerators in 1996?	Yes	50	100.0%	62	100.0%	112	100.0%
Total		50	100.0%	62	100.0%	112	100.0%

A2A Stores responsible for * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
A2A How many stores would that be?	This store at this site only	46	92.0%	55	88.7%	101	90.2%
	A number of stores at various sites in your state	4	8.0%	6	9.7%	10	8.9%
	A number of stores at various sites around the country			1	1.6%	1	.9%
Total		50	100.0%	62	100.0%	112	100.0%

A2@A How many stores at various sites in your state

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	2.33	2.50	2.44
N	3	6	9
Std. Deviation	.58	.84	.73

A2@B How many stores at various sites around the country

	INSTATE In or out of California	
	In California	Total
Mean	900.00	900.00
N	1	1
Std. Deviation	.	.

A3 Are you part of a local, state, or a national chain? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
A3 Are you part of a local, state, or a national chain?	Yes, local chain	7	14.0%	5	8.1%	12	10.7%
	Yes, state chain	1	2.0%	3	4.8%	4	3.6%
	Yes, national chain	19	38.0%	23	37.1%	42	37.5%
	No	23	46.0%	31	50.0%	54	48.2%
Total		50	100.0%	62	100.0%	112	100.0%

A4 Are you primarily an appliance store? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
A4 Are you primarily an appliance store?	Yes	26	52.0%	41	66.1%	67	59.8%
	No	24	48.0%	21	33.9%	45	40.2%
Total		50	100.0%	62	100.0%	112	100.0%

A5A What kind of store are you * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
A5A What kind of store are you	Appliances	1	4.2%	1	4.8%	2	4.4%
	Department store	6	25.0%	7	33.3%	13	28.9%
	Home improvement	3	12.5%	1	4.8%	4	8.9%
	Appliance, electronics, and computers store	8	33.3%	9	42.9%	17	37.8%
	General retailer	4	16.7%	3	14.3%	7	15.6%
	Hardware	2	8.3%			2	4.4%
Total		24	100.0%	21	100.0%	45	100.0%

A6 Are you considered a discount retail store? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
A6 Are you considered a discount retail store?	Yes	20	40.0%	29	47.5%	49	44.1%
	No	30	60.0%	32	52.5%	62	55.9%
Total		50	100.0%	61	100.0%	111	100.0%

Annual estimates of units sold

		INSTATE In or out of California	
		Rest of Country	In California
A7 Annual estimate of units sold	Minimum	200	200
	Maximum	3000	5000
	Mean	368	636
	Standard Deviation	469	987
	Valid N	N=47	N=59

A8 We just need an approximate number, was it ... * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
A8 We just need an approximate number, was it ...	Less than 500			1	50.0%	1	20.0%
	500 to 1000			1	50.0%	1	20.0%
	Was it more than 200?	1	33.3%			1	20.0%
	More than 200	2	66.7%			2	40.0%
Total		3	100.0%	2	100.0%	5	100.0%

A8A Was it more than 200? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California		Total	
		In California			
		Count	Column %	Count	Column %
A8A Was it more than 200?	Yes	1	100.0%	1	100.0%
Total		1	100.0%	1	100.0%

A9A What is your title * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
A9A What is your title	Store manager	9	18.0%	13	21.0%	22	19.6%
	Sales manager	9	18.0%	10	16.1%	19	17.0%
	Owner or president	15	30.0%	11	17.7%	26	23.2%
	Supervisor			1	1.6%	1	.9%
	Salesperson	14	28.0%	26	41.9%	40	35.7%
	Department Manager	2	4.0%	1	1.6%	3	2.7%
	Vice President	1	2.0%			1	.9%
Total		50	100.0%	62	100.0%	112	100.0%

A10 How long have you worked for this company?

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	10.81	14.18	12.71
N	48	62	110
Std. Deviation	10.37	12.86	11.90

B1B Percent sold from own warehouse

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	82.20	75.85	78.57
N	45	60	105
Std. Deviation	25.83	32.02	29.56

B2 What % of 1996 sales were identical to display

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	83.50	84.18	83.89
N	46	61	107
Std. Deviation	24.80	17.83	21.01

B3 Refrigerators on floor similar features different energy efficiency* INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
B3 Do you have refrigerators on your display floor that are quite similar	Yes	38	76.0%	49	79.0%	87	77.7%
	No	12	24.0%	13	21.0%	25	22.3%
Total		50	100.0%	62	100.0%	112	100.0%

B4 How often do they have choices on your display floor for different energy efficiency levels * INSTATE In or California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
B4 How often do they have choices on your display floor for different energy efficiency levels	Never	3	7.9%	5	10.2%	8	9.2%
	2	8	21.1%	3	6.1%	11	12.6%
	3	10	26.3%	15	30.6%	25	28.7%
	4	9	23.7%	17	34.7%	26	29.9%
	Always	8	21.1%	9	18.4%	17	19.5%
Total		38	100.0%	49	100.0%	87	100.0%

B4 How often do they have choices on your display floor for different energy efficiency levels

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	3.29	3.45	3.38
N	38	49	87
Std. Deviation	1.25	1.17	1.20

B5 Percent of 1996 refrigerators compared to standard

		INSTATE In or out of California		
		Rest of Country	In California	Total
Mean	B5A 10% more efficient	55.26	58.00	56.92
	B5B 20% more efficient	31.34	27.22	28.74
	B5C 30% more efficient	12.17	10.37	11.03
N	B5A 10% more efficient	38	58	96
	B5B 20% more efficient	32	55	87
	B5C 30% more efficient	29	51	80
Std. Deviation	B5A 10% more efficient	32.36	32.47	32.28
	B5B 20% more efficient	30.40	21.20	24.89
	B5C 30% more efficient	21.01	13.92	16.73

B6A What percent of refrigerators in 1991 were * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
B6A What percent of refrigerators in 1991 were	at least 10% more efficient than the 1990 federal standards	12	63.2%	23	63.9%	35	63.6%
	Did not sell refrigerators in 1991	7	36.8%	13	36.1%	20	36.4%
Total		19	100.0%	36	100.0%	55	100.0%

B6B-B6D Percent of 1991 refrigerators compared to standard

		INSTATE In or out of California		
		Rest of Country	In California	Total
Mean	B6B 10% more efficient than 1990 federal standards	37.27	55.65	49.13
	B6C 20% more efficient	20.00	27.06	24.54
	B6D 30% more efficient	6.70	11.00	9.35
N	B6B 10% more efficient than 1990 federal standards	11	20	31
	B6C 20% more efficient	10	18	28
	B6D 30% more efficient	10	16	26
Std. Deviation	B6B 10% more efficient than 1990 federal standards	31.97	25.21	28.69
	B6C 20% more efficient	28.96	19.78	23.19
	B6D 30% more efficient	15.35	11.37	12.92

B7A What percent refrigerators in 1986 were * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
B7A What percent refrigerators in 1986 were	at least 10% more efficient than standard units	8	88.9%	15	75.0%	23	79.3%
	Did not sell refrigerators in 1986	1	11.1%	5	25.0%	6	20.7%
Total		9	100.0%	20	100.0%	29	100.0%

B7B-B7D Percent of 1986 refrigerators compared to standard

		INSTATE In or out of California		
		Rest of Country	In California	Total
Mean	B7B 10% more efficient	15.83	50.00	36.33
	B7C 20% more efficient	8.75	26.11	20.77
	B7D 30% more efficient	1.25	5.63	4.17
N	B7B 10% more efficient	6	9	15
	B7C 20% more efficient	4	9	13
	B7D 30% more efficient	4	8	12
Std. Deviation	B7B 10% more efficient	22.45	33.91	33.73
	B7C 20% more efficient	10.31	20.88	19.67
	B7D 30% more efficient	2.50	4.96	4.69

B8 Percent of 1996 refrigerator sales compared to standard

		INSTATE In or out of California		
		Rest of Country	In California	Total
Mean	B8A 10% more efficient	55.68	60.00	58.31
	B8B 20% more efficient	25.68	30.39	28.56
	B8C 30% more efficient	10.27	11.22	10.84
N	B8A 10% more efficient	34	53	87
	B8B 20% more efficient	31	49	80
	B8C 30% more efficient	30	46	76
Std. Deviation	B8A 10% more efficient	35.31	33.82	34.27
	B8B 20% more efficient	28.98	22.55	25.16
	B8C 30% more efficient	19.80	14.32	16.58

B9 What is the lead time required to receive standard efficiency refrigertors * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California					
		Rest of Country		In California		Total	
		Count	Column %	Count	Column %	Count	Column %
B9 What is the lead time required to receive standard efficiency refrigertors	1-2 days	24	49.0%	31	50.8%	55	50.0%
	About a week	24	49.0%	25	41.0%	49	44.5%
	About two weeks	1	2.0%	5	8.2%	6	5.5%
Total		49	100.0%	61	100.0%	110	100.0%

B10 What is the lead time required to receive an energy efficient * INSTATE In or out of California Crossta

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
B10 What is the lead time required to receive an energy efficient	1-2 days	23	46.0%	32	52.5%	55	49.5%
	About a week	25	50.0%	24	39.3%	49	44.1%
	About two weeks	1	2.0%	5	8.2%	6	5.4%
	About three weeks	1	2.0%			1	.9%
Total		50	100.0%	61	100.0%	111	100.0%

B11 Delays or backorders for energy efficient in last two years * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
B11 In the last two years, have you experienced any delays or backorders	Yes	7	14.0%	15	24.6%	22	19.8%
	No	42	84.0%	46	75.4%	88	79.3%
	Less severe (unlikely)	1	2.0%			1	.9%
Total		50	100.0%	61	100.0%	111	100.0%

B12 Was this a change from previous years? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
B12 Was this a change from previous years?	Yes	4	8.3%	12	21.8%	16	15.5%
	No	44	91.7%	43	78.2%	87	84.5%
Total		48	100.0%	55	100.0%	103	100.0%

B13A How? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
B13A How?	Previously we had delays or backorders	3	75.0%	4	33.3%	7	43.8%
	Previously we had no delays or backorders	1	25.0%	4	33.3%	5	31.3%
	Demand was greater than supply			1	8.3%	1	6.3%
	Less refrigerators qualified			2	16.7%	2	12.5%
	Stocking practices of manufactures delayed us			1	8.3%	1	6.3%
Total		4	100.0%	12	100.0%	16	100.0%

C1A The creation and expansion of utility conservation or demand side management programs that offer rebate other financial incentives * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
C1A The creation and expansion of utility conservation or demand side management programs that offer rebates or other financial incentives	No influence	9	18.4%	1	1.6%	10	9.0%
	2	11	22.4%	1	1.6%	12	10.8%
	3	15	30.6%	8	12.9%	23	20.7%
	4	7	14.3%	17	27.4%	24	21.6%
	Great deal of Influence	7	14.3%	35	56.5%	42	37.8%
Total		49	100.0%	62	100.0%	111	100.0%

C1A The creation and expansion of utility conservation or demand side management programs tha financial incentives

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	2.84	4.35	3.68
N	49	62	111
Std. Deviation	1.30	.89	1.32

C1B Changes in appliance codes and regulations * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
C1B Changes in appliance codes and regulations	No influence	22	46.8%	20	32.3%	42	38.5%
	2	7	14.9%	17	27.4%	24	22.0%
	3	10	21.3%	11	17.7%	21	19.3%
	4	3	6.4%	3	4.8%	6	5.5%
	Great Deal of Influence	5	10.6%	11	17.7%	16	14.7%
Total		47	100.0%	62	100.0%	109	100.0%

C1B Changes in appliance codes and regulations

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	2.19	2.48	2.36
N	47	62	109
Std. Deviation	1.38	1.45	1.42

C1C Changes in energy prices * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
C1C Changes in energy prices	No Influence	11	22.9%	5	8.1%	16	14.5%
	2	6	12.5%	9	14.5%	15	13.6%
	3	19	39.6%	19	30.6%	38	34.5%
	4	7	14.6%	14	22.6%	21	19.1%
	Great Deal of Influence	5	10.4%	15	24.2%	20	18.2%
Total		48	100.0%	62	100.0%	110	100.0%

C1C Changes in energy prices

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	2.77	3.40	3.13
N	48	62	110
Std. Deviation	1.26	1.23	1.28

C1D Environmental concerns * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
C1D Environmental concerns	No Influence	17	34.7%	13	21.0%	30	27.0%
	2	7	14.3%	9	14.5%	16	14.4%
	3	11	22.4%	18	29.0%	29	26.1%
	4	10	20.4%	8	12.9%	18	16.2%
	Great Deal of Influence	4	8.2%	14	22.6%	18	16.2%
Total		49	100.0%	62	100.0%	111	100.0%

C1D Environmental concerns

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	2.53	3.02	2.80
N	49	62	111
Std. Deviation	1.37	1.43	1.42

C1E Improvements made in energy-efficient refrigerators * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
C1E Improvements made in energy-efficient refrigerators	No Influence	7	14.6%	4	6.5%	11	10.0%
	2	8	16.7%	4	6.5%	12	10.9%
	3	12	25.0%	16	25.8%	28	25.5%
	4	14	29.2%	17	27.4%	31	28.2%
	Great Deal of Influence	7	14.6%	21	33.9%	28	25.5%
Total		48	100.0%	62	100.0%	110	100.0%

C1E Improvements made in energy-efficient refrigerators

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	3.13	3.76	3.48
N	48	62	110
Std. Deviation	1.28	1.18	1.26

C1F Reductions in the price of energy-efficient refrigerators * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
C1F Reductions in the price of energy-efficient refrigerators	No Influence	10	20.8%	12	20.3%	22	20.6%
	2	10	20.8%	7	11.9%	17	15.9%
	3	9	18.8%	11	18.6%	20	18.7%
	4	11	22.9%	9	15.3%	20	18.7%
	Great Deal of Influence	8	16.7%	20	33.9%	28	26.2%
Total		48	100.0%	59	100.0%	107	100.0%

C1F Reductions in the price of energy-efficient refrigerators

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	2.94	3.31	3.14
N	48	59	107
Std. Deviation	1.41	1.55	1.49

C1G Your own efforts to market energy-efficient refrigerators * INSTATE In or out of California Crosstabulatio

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
C1G Your own efforts to market energy-efficient refrigerators	No Influence	9	19.1%	7	11.5%	16	14.8%
	2	8	17.0%	3	4.9%	11	10.2%
	3	15	31.9%	18	29.5%	33	30.6%
	4	8	17.0%	18	29.5%	26	24.1%
	Great Deal of Influence	7	14.9%	15	24.6%	22	20.4%
Total		47	100.0%	61	100.0%	108	100.0%

C1G Your own efforts to market energy-efficient refrigerators

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	2.91	3.51	3.25
N	47	61	108
Std. Deviation	1.32	1.25	1.31

C1H Utility educational programs * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
C1H Utility educational programs	No Influence	21	45.7%	7	11.5%	28	26.2%
	2	6	13.0%	13	21.3%	19	17.8%
	3	16	34.8%	15	24.6%	31	29.0%
	4	2	4.3%	11	18.0%	13	12.1%
	Great Deal of Influence	1	2.2%	15	24.6%	16	15.0%
Total		46	100.0%	61	100.0%	107	100.0%

C1H Utility educational programs

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	2.04	3.23	2.72
N	46	61	107
Std. Deviation	1.09	1.35	1.37

D1 How informed would you say your customers are about the benefits of energy efficient refrigerators? * INS or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
D1 How informed would you say your customers are about the benefits of energy efficient refrigerators?	Not at all Informed	9	18.4%			9	8.1%
	2	6	12.2%	3	4.8%	9	8.1%
	3	7	14.3%	5	8.1%	12	10.8%
	4	4	8.2%	2	3.2%	6	5.4%
	5	7	14.3%	18	29.0%	25	22.5%
	6	9	18.4%	9	14.5%	18	16.2%
	7	4	8.2%	14	22.6%	18	16.2%
	8	1	2.0%	6	9.7%	7	6.3%
	9			2	3.2%	2	1.8%
	Very Informed	2	4.1%	3	4.8%	5	4.5%
Total		49	100.0%	62	100.0%	111	100.0%

D1 How informed would you say your customers are about the benefits of energy efficient refrigera

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	4.14	5.92	5.14
N	49	62	111
Std. Deviation	2.41	1.91	2.31

D2 Has this level of awareness among consumers of the benefits of energy * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
D2 Has this level of awareness among consumers of the benefits of energy	Increased	21	42.9%	41	66.1%	62	55.9%
	Decreased	3	6.1%	7	11.3%	10	9.0%
	Stayed the same	25	51.0%	14	22.6%	39	35.1%
Total		49	100.0%	62	100.0%	111	100.0%

What have been the principal barriers to selling energy efficienct refrigerators?

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Cases	Col Response %	Cases	Col Response %	Cases	Col Response %
D3	Higher prices for energy efficient models	26	76%	29	66%	55	71%
	Lack of consumer education or awareness of product benefits	11	32%	8	18%	19	24%
	Elimination of utility rebates	2	6%	6	14%	8	10%
	Reductions in product supply or availability	1	3%	7	16%	8	10%
	Reduction in utility rebate levels	1	3%	6	14%	7	9%
	Elimination or reduction in manufacturer rebates or promotio			6	14%	6	8%
	Lack of product supply or availability	4	12%	1	2%	5	6%
	Operational characteristics of units (e.g. run continuously			3	7%	3	4%
	Elimination or reduction in utility promotional, advertising	1	3%	1	2%	2	3%
	Decreased salesperson or retailer sales push			2	5%	2	3%
	Lack of features consumers want	1	3%	1	2%	2	3%
Total		34	138%	44	159%	78	150%

D4 In your opinion, have manufacturers done anything to remove or change * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
D4 In your opinion, have manufacturers done anything to remove or change	Yes	19	61.3%	20	47.6%	39	53.4%
	No	12	38.7%	22	52.4%	34	46.6%
Total		31	100.0%	42	100.0%	73	100.0%

D6 Have utilities done anything to remove or change these barriers? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
D6 Have utilities done anything to remove or change these barriers?	Yes	11	34.4%	20	48.8%	31	42.5%
	No	21	65.6%	21	51.2%	42	57.5%
Total		32	100.0%	41	100.0%	73	100.0%

D8 Have you (or other retail stores) done anything to remove or * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
D8 Have you (or other retail stores) done anything to remove or	Yes	7	21.9%	20	50.0%	27	37.5%
	No	25	78.1%	20	50.0%	45	62.5%
Total		32	100.0%	40	100.0%	72	100.0%

E1 How often does your sales staff discuss refrigerator energy use with customers looking to buy a new refri
INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E1 How often does your sales staff discuss refrigerator energy use with customers looking to buy a new refrigerator?	Never	6	12.0%			6	5.4%
	2	3	6.0%	1	1.6%	4	3.6%
	3	2	4.0%	2	3.2%	4	3.6%
	4	3	6.0%	2	3.2%	5	4.5%
	5	9	18.0%	5	8.1%	14	12.5%
	6	7	14.0%	1	1.6%	8	7.1%
	7	6	12.0%	9	14.5%	15	13.4%
	8	4	8.0%	10	16.1%	14	12.5%
	9	4	8.0%	8	12.9%	12	10.7%
	Always	6	12.0%	24	38.7%	30	26.8%
Total		50	100.0%	62	100.0%	112	100.0%

E1 How often does your sales staff discuss refrigerator energy use with customers looking to buy a

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	5.74	8.10	7.04
N	50	62	112
Std. Deviation	2.81	2.14	2.72

E2 When energy use or efficiency is discussed with customers, what percent

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	32.25	45.50	40.00
N	44	62	106
Std. Deviation	25.92	25.74	26.52

What does your store do to promote or advertise energy efficient refrigerators

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Cases	Col Response %	Cases	Col Response %	Cases	Col Response %
E3	Labeling	18	38%	24	39%	42	39%
	Displays	10	21%	30	48%	40	37%
	Nothing	21	45%	13	21%	34	31%
	Talk to customers	9	19%	20	32%	29	27%
	Brochures	5	11%	11	18%	16	15%
	Advertise	3	6%	7	11%	10	9%
	Advertise in Newspapers	1	2%	4	6%	5	5%
	Put up rebate stickers			4	6%	4	4%
	Advertise in newspapers and radio	1	2%	2	3%	3	3%
	Mailings and Media ads			1	2%	1	1%
	Advertise in apartment owners magazine			1	2%	1	1%
	Help consumers with rebate paperwork			1	2%	1	1%
	Work with local utility to educate consumers			1	2%	1	1%
	Advertise on TV			1	2%	1	1%
Total		47	145%	62	194%	109	172%

E4 Aware if Energy Star Program * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E4 Under the Energy Star Program, sponsored by the federal Department	Yes	11	22.4%	21	35.0%	32	29.4%
	No	38	77.6%	39	65.0%	77	70.6%
Total		49	100.0%	60	100.0%	109	100.0%

E5 Are you currently participating, or do you plan on participating, in * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E5 Are you currently participating, or do you plan on participating, in	Yes, participating	7	77.8%	20	95.2%	27	90.0%
	No	2	22.2%	1	4.8%	3	10.0%
Total		9	100.0%	21	100.0%	30	100.0%

E6 Have you participated in any utility-sponsored refrigerator * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E6 Have you participated in any utility-sponsored refrigerator	Yes	11	22.4%	58	93.5%	69	62.2%
	No	38	77.6%	4	6.5%	42	37.8%
Total		49	100.0%	62	100.0%	111	100.0%

E7A Why not * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E7A Why not	Unaware of programs existence	23	69.7%	1	25.0%	24	64.9%
	Program participation process is too complicated			1	25.0%	1	2.7%
	Utility takes too long to reimburse retailers or customers			1	25.0%	1	2.7%
	Dont sell enough energy efficient refrigerators to make it w	1	3.0%			1	2.7%
	Rebate levels keep changing, decreasing			1	25.0%	1	2.7%
	Rebates have been eliminated	6	18.2%			6	16.2%
	Store doesn't allow participation	1	3.0%			1	2.7%
	Company has not encouraged participation	2	6.1%			2	5.4%
Total		33	100.0%	4	100.0%	37	100.0%

E8 How influential have these programs been on your sales of energy efficient refrigerators? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E8 How influential have these programs been on your sales of energy efficient refrigerators?	Not at all Influential	1	9.1%	3	5.2%	4	5.8%
	2	2	18.2%	3	5.2%	5	7.2%
	3	2	18.2%	1	1.7%	3	4.3%
	4	1	9.1%	2	3.4%	3	4.3%
	5	1	9.1%	8	13.8%	9	13.0%
	6			2	3.4%	2	2.9%
	7	1	9.1%	4	6.9%	5	7.2%
	8	1	9.1%	10	17.2%	11	15.9%
	9	1	9.1%	4	6.9%	5	7.2%
	Very Influential	1	9.1%	21	36.2%	22	31.9%
Total		11	100.0%	58	100.0%	69	100.0%

E8 How influential have these programs been on your sales of energy efficient refrigerators?

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	4.91	7.34	6.96
N	11	58	69
Std. Deviation	3.11	2.84	3.00

E9 Did these programs cause you to display more high efficiency refrigerators * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E9 Did these programs cause you to display more high efficiency refrigerators	Yes	3	27.3%	33	56.9%	36	52.2%
	No	8	72.7%	25	43.1%	33	47.8%
Total		11	100.0%	58	100.0%	69	100.0%

E10 Were any of your sales staff eligible to receive incentive payments * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E10 Were any of your sales staff eligible to receive incentive payments	Yes	1	2.0%	31	51.7%	32	29.4%
	Not in 1996 but in some other time period			4	6.7%	4	3.7%
	No	48	98.0%	25	41.7%	73	67.0%
Total		49	100.0%	60	100.0%	109	100.0%

E11 Did any of them receive incentive payments in 1996? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E11 Did any of them receive incentive payments in 1996?	Yes	1	100.0%	25	89.3%	26	89.7%
	No			3	10.7%	3	10.3%
Total		1	100.0%	28	100.0%	29	100.0%

E13 How much influence did these payments have on the sales practices of your sales staff? * INSTATE In or California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E13 How much influence did these payments have on the sales practices of your sales staff?	No influence			3	12.0%	3	11.5%
	2	1	100.0%	5	20.0%	6	23.1%
	3			7	28.0%	7	26.9%
	4			3	12.0%	3	11.5%
	Great deal of Influence			7	28.0%	7	26.9%
Total		1	100.0%	25	100.0%	26	100.0%

E13 How much influence did these payments have on the sales practices of your sales staff?

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	2.00	3.24	3.19
N	1	25	26
Std. Deviation	.	1.39	1.39

E15 Have you participated in the SERP (Super Efficiency Refrigerator) * INSTATE In or out of California Cross

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E15 Have you participated in the SERP (Super Efficiency Refrigerator)	Yes	5	10.0%	30	49.2%	35	31.5%
	No	44	88.0%	28	45.9%	72	64.9%
	Dont know what the program is	1	2.0%	3	4.9%	4	3.6%
Total		50	100.0%	61	100.0%	111	100.0%

E16 Do you sell Whirlpool refrigerators? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E16 Do you sell Whirlpool refrigerators?	Yes	32	72.7%	14	45.2%	46	61.3%
	No	12	27.3%	17	54.8%	29	38.7%
Total		44	100.0%	31	100.0%	75	100.0%

F1 Would you be able to answer questions about refrigerator sales at this location in 1991 and 1986? * INSTAT out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
F1 Would you be able to answer questions about refrigerator sales at this location in 1991 and 1986?	Yes for 1991 and 1986	5	11.9%	14	24.6%	19	19.2%
	Yes for 1991 not for 1986	3	7.1%	9	15.8%	12	12.1%
	No	34	81.0%	34	59.6%	68	68.7%
Total		42	100.0%	57	100.0%	99	100.0%

F2A Why Not * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
F2A Why Not	Didnt work at this location then	8	32.0%	12	40.0%	20	36.4%
	Worked at this location but can't recall	17	68.0%	11	36.7%	28	50.9%
	Store did not sell refrigertors before 1991			7	23.3%	7	12.7%
Total		25	100.0%	30	100.0%	55	100.0%

F3 Sales in 1991 and 1986

		INSTATE In or out of California		
		Rest of Country	In California	Total
Mean	F3A How many refrigerators did you sell in 1991	743.75	539.64	594.07
	F3B How many refrigerators did you sell in 1986	224.00	310.93	288.05
N	F3A How many refrigerators did you sell in 1991	8	22	30
	F3B How many refrigerators did you sell in 1986	5	14	19
Std. Deviation	F3A How many refrigerators did you sell in 1991	1015.75	567.83	700.68
	F3B How many refrigerators did you sell in 1986	71.62	466.50	399.82

F4 Sales of energy efficient refrigerators in 1991 and 1986

		INSTATE In or out of California		
		Rest of Country	In California	Total
Mean	F4A What percent of your refrigerator sales in 1991 were energy efficient	53.13	60.00	58.23
	F4B What percent of your refrigerator sales in 1986 were energy efficient	56.25	39.62	43.53
N	F4A What percent of your refrigerator sales in 1991 were energy efficient	8	23	31
	F4B What percent of your refrigerator sales in 1986 were energy efficient	4	13	17
Std. Deviation	F4A What percent of your refrigerator sales in 1991 were energy efficient	32.40	23.65	25.77
	F4B What percent of your refrigerator sales in 1986 were energy efficient	28.10	22.22	23.90

F5 Would you be able to further breakdown the percent of energy efficient * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
F5 Would you be able to further breakdown the percent of energy efficient	Yes	2	28.6%	3	14.3%	5	17.9%
	No	5	71.4%	18	85.7%	23	82.1%
Total		7	100.0%	21	100.0%	28	100.0%

F6 Percent of energy efficient refrigerators sold in 1991 and 1986 compared to standard

		INSTATE In or out of California		
		Rest of Country	In California	Total
Mean	F6A What percent in 1991 at least 10% more efficient	58.50	60.00	59.40
	F6B At least 20% more efficient compared to the 1990	10.00	23.33	18.00
	F6C At least 30% more efficient compared to the 1990	.50	20.67	12.60
	F6AA What percent efficient refrigerators in 1986 were at least 10% more efficient	97.00	20.00	45.67
	F6AB At least 20% more efficient than standard efficiency	.00	12.50	8.33
	F6AC At least 30% more efficient than standard efficiency	.00	10.00	6.67
N	F6A What percent in 1991 at least 10% more efficient	2	3	5
	F6B At least 20% more efficient compared to the 1990	2	3	5
	F6C At least 30% more efficient compared to the 1990	2	3	5
	F6AA What percent efficient refrigerators in 1986 were at least 10% more efficient	1	2	3
	F6AB At least 20% more efficient than standard efficiency	1	2	3
	F6AC At least 30% more efficient than standard efficiency	1	2	3
Std. Deviation	F6A What percent in 1991 at least 10% more efficient	54.45	34.64	36.63
	F6B At least 20% more efficient compared to the 1990	14.14	15.28	14.83
	F6C At least 30% more efficient compared to the 1990	.71	16.17	15.90
	F6AA What percent efficient refrigerators in 1986 were at least 10% more efficient	.	.00	44.46
	F6AB At least 20% more efficient than standard efficiency	.	10.61	10.41
	F6AC At least 30% more efficient than standard efficiency	.	14.14	11.55

F7@ID Have your sales of efficient refrigerators increased or decreased over time * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
F7@ID Have your sales of efficient refrigerators increased or decreased over time	Increased	8	100.0%	15	65.2%	23	74.2%
	decreased			8	34.8%	8	25.8%
Total		8	100.0%	23	100.0%	31	100.0%

To what do you attribute this increase

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Cases	Col Response %	Cases	Col Response %	Cases	Col Response %
F7I	More efficient refrigerators available	5	63%	6	40%	11	48%
	Increased consumer knowledge of efficiency issues	4	50%	5	33%	9	39%
	Lower prices for energy efficient models	2	25%	4	27%	6	26%
	Availability of rebates	1	13%	4	27%	5	22%
	Promotion or advertising - Manufactures			3	20%	3	13%
	Increased demand			3	20%	3	13%
	Availability of manufactures rebates			2	13%	2	9%
	Availability of retailer rebates			2	13%	2	9%
	Promotion or advertising - Utilities			2	13%	2	9%
	More efficient refrigerators on the display floor	1	13%	1	7%	2	9%
	Promotion or advertising - Retailers	1	13%			1	4%
Total		8	175%	15	213%	23	200%

To what do you attribute this decrease

		INSTATE In or out of California		Total	
		In California			
		Cases	Col Response %	Cases	Col Response %
F7D	Reduction in utility rebate levels	3	38%	3	38%
	Lack of demand	3	38%	3	38%
	Fewer efficient refrigerators on display floor	2	25%	2	25%
	Elimination of utility rebates	1	13%	1	13%
	Changes in utility rebate levels over time	1	13%	1	13%
	Promotion or advertising reduced - Manufactures	1	13%	1	13%
	Promotion or advertising reduced - Retailers	1	13%	1	13%
	Decreased salesperson or retailer sales push	1	13%	1	13%
	Higher prices for energy efficient models	1	13%	1	13%
	reductions in product supply or availability	1	13%	1	13%
	Rebates dropped or reduced	1	13%	1	13%
	Less difference in energy use between stand and eff models	1	13%	1	13%
Total		8	213%	8	213%

GEND GENDER OF THE RESPONDENT * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
GEND GENDER OF THE RESPONDENT	MALE	38	76.0%	48	77.4%	86	76.8%
	FEMALE	12	24.0%	14	22.6%	26	23.2%
Total		50	100.0%	62	100.0%	112	100.0%

STATE * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
STATE	AR	1	2.0%			1	.9%
	AZ	1	2.0%			1	.9%
	CA			62	100.0%	62	55.4%
	DE	1	2.0%			1	.9%
	FL	4	8.0%			4	3.6%
	ID	1	2.0%			1	.9%
	IL	3	6.0%			3	2.7%
	IN	2	4.0%			2	1.8%
	KY	1	2.0%			1	.9%
	LA	1	2.0%			1	.9%
	MA	2	4.0%			2	1.8%
	MD	1	2.0%			1	.9%
	MI	6	12.0%			6	5.4%
	MN	1	2.0%			1	.9%
	MO	2	4.0%			2	1.8%
	MS	1	2.0%			1	.9%
	NC	1	2.0%			1	.9%
	NE	1	2.0%			1	.9%
	NY	2	4.0%			2	1.8%
	OH	3	6.0%			3	2.7%
	PA	6	12.0%			6	5.4%
	SC	1	2.0%			1	.9%
	TN	1	2.0%			1	.9%
	TX	3	6.0%			3	2.7%
	VA	2	4.0%			2	1.8%
	VT	1	2.0%			1	.9%
	WA	1	2.0%			1	.9%
Total		50	100.0%	62	100.0%	112	100.0%

TERRITRY Territory * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
TERRITRY Territory	National	50	100.0%			50	44.6%
	PG&E			46	74.2%	46	41.1%
	SDG&E			16	25.8%	16	14.3%
Total		50	100.0%	62	100.0%	112	100.0%

CFL RETAILERS

A1 First, can you tell me if your store sells CFLs? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
A1 First, can you tell me if your store sells CFLs?	Yes	29	100.0%	29	100.0%	58	100.0%
Total		29	100.0%	29	100.0%	58	100.0%

A2 Do you sell compact fluorescent light fixtures? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
A2 Do you sell compact fluorescent light fixtures?	Yes	12	41.4%	9	31.0%	21	36.2%
	No	17	58.6%	20	69.0%	37	63.8%
Total		29	100.0%	29	100.0%	58	100.0%

A4A What is your title? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
A4A What is your title?	Store manager	6	20.7%	7	24.1%	13	22.4%
	Sales manager	7	24.1%	8	27.6%	15	25.9%
	Owner or president	1	3.4%	2	6.9%	3	5.2%
	Supervisor	3	10.3%	1	3.4%	4	6.9%
	Salesperson	11	37.9%	10	34.5%	21	36.2%
	National store manager	1	3.4%			1	1.7%
	Cashier			1	3.4%	1	1.7%
Total		29	100.0%	29	100.0%	58	100.0%

A5 How long have you worked for this company?

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	11.48	7.59	9.53
N	29	29	58
Std. Deviation	9.54	5.88	8.09

A6A Which of the following categories best describes your company? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
A6A Which of the following categories best describes your company?	Hardware store	16	55.2%	13	44.8%	29	50.0%
	Discount retail store	2	6.9%	5	17.2%	7	12.1%
	Grocery store	4	13.8%	4	13.8%	8	13.8%
	Drug store	1	3.4%	6	20.7%	7	12.1%
	1/2 drug store 1/2 grocery store			1	3.4%	1	1.7%
	Lighting store	6	20.7%			6	10.3%
Total		29	100.0%	29	100.0%	58	100.0%

A7 Are you part of a local, state, or national chain? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
A7 Are you part of a local, state, or national chain?	Yes, local chain	7	24.1%	3	10.3%	10	17.2%
	Yes, California/State chain	1	3.4%	2	6.9%	3	5.2%
	Yes, national chain	12	41.4%	23	79.3%	35	60.3%
	No	9	31.0%	1	3.4%	10	17.2%
Total		29	100.0%	29	100.0%	58	100.0%

A8A Who makes decisions about what lighting products are sold * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
A8A Who makes decisions about what lighting products are sold	Respondent makes all decisions locally (at this store)	6	46.2%	8	32.0%	14	36.8%
	Someone else in this store makes all decisions locally			4	16.0%	4	10.5%
	Regional HQ makes decisions about this store	3	23.1%	4	16.0%	7	18.4%
	National HQ makes decisions about this store	4	30.8%	9	36.0%	13	34.2%
Total		13	100.0%	25	100.0%	38	100.0%

A9@A Stores you are responsible for * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
A9@A Answer our questions for all the stores you are responsible	This store at this site only	11	84.6%	23	95.8%	34	91.9%
	A number of stores at various sites in your state	1	7.7%	1	4.2%	2	5.4%
	A number of stores at various sites around the country	1	7.7%			1	2.7%
Total		13	100.0%	24	100.0%	37	100.0%

A9A How many stores at various sites in your state

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	3.00	2.00	2.50
N	1	1	2
Std. Deviation	.	.	.71

A9B How many stores at various sites around the country

	INSTATE In or out of California	
	Rest of Country	Total
Mean	154.00	154.00
N	1	1
Std. Deviation	.	.

B1a Percent of CFL's sold in 1997

		INSTATE In or out of California		
		Rest of Country	In California	Total
Mean	B1A@A So far this year, what percent of all bulbs you sold were compact fluorescent light bulbs?	9.67	14.48	12.07
	B1AB What percent were incandescent bulbs?	66.18	70.89	68.49
N	B1A@A So far this year, what percent of all bulbs you sold were compact fluorescent light bulbs?	27	27	54
	B1AB What percent were incandescent bulbs?	28	27	55
Std. Deviation	B1A@A So far this year, what percent of all bulbs you sold were compact fluorescent light bulbs?	10.90	17.26	14.50
	B1AB What percent were incandescent bulbs?	25.99	24.06	24.94

B1_1 Percent of CFl's sold in 1996

		INSTATE In or out of California		
		Rest of Country	In California	Total
Mean	B1_1A In 1996 what percent of all bulbs you sold were CFLs	7.00	13.57	10.28
	B1_1B In 1996, What percent were incandescent bulbs?	64.83	70.57	67.70
N	B1_1A In 1996 what percent of all bulbs you sold were CFLs	23	23	46
	B1_1B In 1996, What percent were incandescent bulbs?	23	23	46
Std. Deviation	B1_1A In 1996 what percent of all bulbs you sold were CFLs	9.82	17.11	14.18
	B1_1B In 1996, What percent were incandescent bulbs?	26.47	23.44	24.89

B1_2 Percent of CFL's sold in 1991

		INSTATE In or out of California		
		Rest of Country	In California	Total
Mean	B1_2A In 1991 what percent of all bulbs you sold were CFLs	3.11	6.00	4.14
	B1_2B In 1991, What percent were incandescent bulbs?	76.00	67.00	72.40
N	B1_2A In 1991 what percent of all bulbs you sold were CFLs	9	5	14
	B1_2B In 1991, What percent were incandescent bulbs?	9	6	15
Std. Deviation	B1_2A In 1991 what percent of all bulbs you sold were CFLs	6.53	7.97	6.92
	B1_2B In 1991, What percent were incandescent bulbs?	28.60	30.20	28.53

B1_3 Percent of CFl's sold in 1986

		INSTATE In or out of California		
		Rest of Country	In California	Total
Mean	B1_3A In 1986 what percent of all bulbs you sold were CFLs	.33	2.00	.57
	B1_3B In 1986, What percent were incandescent bulbs?	67.50	95.00	71.43
N	B1_3A In 1986 what percent of all bulbs you sold were CFLs	6	1	7
	B1_3B In 1986, What percent were incandescent bulbs?	6	1	7
Std. Deviation	B1_3A In 1986 what percent of all bulbs you sold were CFLs	.52	.	.79
	B1_3B In 1986, What percent were incandescent bulbs?	30.29	.	29.54

B5 Percent of light fixtures sold in 1997

		INSTATE In or out of California		
		Rest of Country	In California	Total
Mean	B5A So far this year, what percent of all fixtures you sold were compact fluorescent light bulbs only	7.55	27.43	15.28
	B5B What percent would take only incandescent bulbs, such as small candle	16.45	29.38	21.89
	B5C What percent would take a regular screw-in bulb with a regular-size base	45.09	47.50	46.11
N	B5A So far this year, what percent of all fixtures you sold were compact fluorescent light bulbs only	11	7	18
	B5B What percent would take only incandescent bulbs, such as small candle	11	8	19
	B5C What percent would take a regular screw-in bulb with a regular-size base	11	8	19
Std. Deviation	B5A So far this year, what percent of all fixtures you sold were compact fluorescent light bulbs only	7.27	20.77	16.82
	B5B What percent would take only incandescent bulbs, such as small candle	16.80	30.52	23.71
	B5C What percent would take a regular screw-in bulb with a regular-size base	22.12	23.60	22.13

B5_5 Percent of light fixtures sold in 1996

		INSTATE In or out of California		
		Rest of Country	In California	Total
Mean	B5_5A In 1996, what percent of all fixtures were designed for CFLs	7.50	18.50	11.17
	B5_5B In 1996, What percent take only incandescent bulbs	22.67	23.33	22.89
	B5_5C In 1996, What percent take any regular screw-in bulb with a regular-size	34.75	47.50	39.00
N	B5_5A In 1996, what percent of all fixtures were designed for CFLs	12	6	18
	B5_5B In 1996, What percent take only incandescent bulbs	12	6	18
	B5_5C In 1996, What percent take any regular screw-in bulb with a regular-size	12	6	18
Std. Deviation	B5_5A In 1996, what percent of all fixtures were designed for CFLs	8.30	19.92	13.77
	B5_5B In 1996, What percent take only incandescent bulbs	21.29	18.89	19.96
	B5_5C In 1996, What percent take any regular screw-in bulb with a regular-size	22.72	17.82	21.58

B5_6 Percent of light fixtures sold in 1991

		INSTATE In or out of California		
		Rest of Country	In California	Total
Mean	B5_6A In 1991, what percent of all fixtures you sold were designed	4.20	10.00	5.17
	B5_6B In 1991, What percent would take only incandescent bulbs	27.50	75.00	34.29
	B5_6C In 1991, What percent would take any regular screw-in bulb with a regular-size	31.67	75.00	37.86
N	B5_6A In 1991, what percent of all fixtures you sold were designed	5	1	6
	B5_6B In 1991, What percent would take only incandescent bulbs	6	1	7
	B5_6C In 1991, What percent would take any regular screw-in bulb with a regular-size	6	1	7
Std. Deviation	B5_6A In 1991, what percent of all fixtures you sold were designed	6.38	.	6.18
	B5_6B In 1991, What percent would take only incandescent bulbs	23.79	.	28.18
	B5_6C In 1991, What percent would take any regular screw-in bulb with a regular-size	31.54	.	33.13

B5_7 Percent of light fixtures sold in 1986

		INSTATE In or out of California	
		Rest of Country	Total
Mean	B5_7A In 1986, what percent of all fixtures were CFL	2.00	2.00
	B5_7B In 1986, What percent would take only incandescent bulbs	30.33	30.33
	B5_7C In 1986, What percent would take any regular screw-in bulb with a regular-size	32.00	32.00
N	B5_7A In 1986, what percent of all fixtures were CFL	3	3
	B5_7B In 1986, What percent would take only incandescent bulbs	3	3
	B5_7C In 1986, What percent would take any regular screw-in bulb with a regular-size	3	3
Std. Deviation	B5_7A In 1986, what percent of all fixtures were CFL	2.65	2.65
	B5_7B In 1986, What percent would take only incandescent bulbs	32.33	32.33
	B5_7C In 1986, What percent would take any regular screw-in bulb with a regular-size	38.43	38.43

C1 - C5 Percent of shelf space devoted to different types of lighting products

		INSTATE In or out of California		
		Rest of Country	In California	Total
Mean	C1 Percent of shelf space devoted to different lighting products	16.69	14.96	15.91
	C2 What percent is currently used to display CFLs	8.39	9.76	9.09
	C3 What percent is currently being used to display incandescent or other	56.71	67.07	61.89
	C4 How about compact fluorescent light fixtures?	2.33	11.50	6.00
	C5 And other types of fixtures?	44.96	19.71	33.18
N	C1 Percent of shelf space devoted to different lighting products	29	24	53
	C2 What percent is currently used to display CFLs	28	29	57
	C3 What percent is currently being used to display incandescent or other	28	28	56
	C4 How about compact fluorescent light fixtures?	12	8	20
	C5 And other types of fixtures?	24	21	45
Std. Deviation	C1 Percent of shelf space devoted to different lighting products	22.63	27.43	24.69
	C2 What percent is currently used to display CFLs	9.75	12.88	11.37
	C3 What percent is currently being used to display incandescent or other	35.71	28.41	32.40
	C4 How about compact fluorescent light fixtures?	2.46	12.80	9.22
	C5 And other types of fixtures?	40.48	23.65	35.68

How many Light bulbs did you sell in 1996

		INSTATE In or out of California	
		Rest of Country	In California
C7 Approximately how many light bulbs, of any type, did you sell in 1996?	Minimum	0	18
	Maximum	144000	100000
	Mean	9779	10669
	Standard Deviation	34673	25921
	Valid N	N=17	N=14

How many Light bulbs did you sell in 1991

		INSTATE In or out of California	
		Rest of Country	In California
C8 How many in 1991?	Minimum	4	5400
	Maximum	140000	8500
	Mean	21803	6950
	Standard Deviation	52243	2192
	Valid N	N=7	N=2

How many Light bulbs did you sell in 1986

		INSTATE In or out of California	
		Rest of Country	In California
C9 How many in 1986?	Minimum	4	4860
	Maximum	130000	4860
	Mean	32630	4860
	Standard Deviation	64914	.
	Valid N	N=4	N=1

How many Light fixtures did you sell in 1996

		INSTATE In or out of California	
		Rest of Country	In California
C10 how many light fixtures, of any type, did you sell in 1996	Minimum	1	150
	Maximum	3500	13000
	Mean	684	3713
	Standard Deviation	1107	6223
	Valid N	N=9	N=4

How many Light fixtures did you sell in 1991

		INSTATE In or out of California
		Rest of Country
C11 How many in 1991?	Minimum	1
	Maximum	2500
	Mean	650
	Standard Deviation	894
	Valid N	N=7

How many Light fixtures did you sell in 1986

		INSTATE In or out of California
		Rest of Country
C12 How many in 1986? (PROBE: Can you give me an approximate number?)	Minimum	2
	Maximum	2000
	Mean	548
	Standard Deviation	865
	Valid N	N=5

D1B Percent of CFL's sold from own warehouse

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	67.93	82.14	75.16
N	27	28	55
Std. Deviation	43.40	38.11	41.05

D2 Does it take more, less or about the same time to receive CFLs * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
D2 Does it take more, less or about the same time to receive CFLs	More time	2	7.4%	2	7.1%	4	7.3%
	Less time			1	3.6%	1	1.8%
	Same time	25	92.6%	25	89.3%	50	90.9%
Total		27	100.0%	28	100.0%	55	100.0%

D3 How much longer does it take to receive CFLs * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
D3 How much longer does it take to receive CFLs	1-2 days	1	50.0%			1	25.0%
	One week	1	50.0%	2	100.0%	3	75.0%
Total		2	100.0%	2	100.0%	4	100.0%

D4 Does it take more, less or about the same time to receive CFLs * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
D4 Does it take more, less or about the same time to receive CFLs	More time	2	16.7%			2	10.0%
	Less time	1	8.3%	1	12.5%	2	10.0%
	Same time	9	75.0%	7	87.5%	16	80.0%
Total		12	100.0%	8	100.0%	20	100.0%

D5 How much longer does it take to receive CFLs * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California		Total	
		Rest of Country			
		Count	Column %	Count	Column %
D5 How much longer does it take to receive CFLs	1-2 days	2	100.0%	2	100.0%
Total		2	100.0%	2	100.0%

D6 have you experienced any delays or backorders for CFLs * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
D6 have you experienced any delays or backorders for CFLs	Yes	7	25.9%	4	14.3%	11	20.0%
	No	20	74.1%	24	85.7%	44	80.0%
Total		27	100.0%	28	100.0%	55	100.0%

D7 Was this a change from previous years? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
D7 Was this a change from previous years?	Yes	7	28.0%	2	9.5%	9	19.6%
	No	18	72.0%	19	90.5%	37	80.4%
Total		25	100.0%	21	100.0%	46	100.0%

D9A How frequently have these recent shortages occurred? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
D9A How frequently have these recent shortages occurred?	Once a year			1	100.0%	1	20.0%
	Twice a year	1	25.0%			1	20.0%
	Four times a year	1	25.0%			1	20.0%
	Five times a year or more	2	50.0%			2	40.0%
Total		4	100.0%	1	100.0%	5	100.0%

D10A What was the impact of these shortages on your business decisions? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
D10A What was the impact of these shortages on your business decisions?	Nothing, no impact			1	50.0%	1	16.7%
	Stopped displaying brands for which shortages had occurred			1	50.0%	1	16.7%
	Stopped ordering or stocking brands for which shortages had	1	25.0%			1	16.7%
	Changed ordering or stocking patterns to account for or acco	3	75.0%			3	50.0%
Total		4	100.0%	2	100.0%	6	100.0%

E1 how often does you sales staff talk with customers about CFL's * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E1 how often does you sales staff talk with customers about CFL's	Never	11	40.7%	13	44.8%	24	42.9%
	2	3	11.1%	4	13.8%	7	12.5%
	3	6	22.2%			6	10.7%
	4	2	7.4%	2	6.9%	4	7.1%
	5	1	3.7%	4	13.8%	5	8.9%
	6	1	3.7%			1	1.8%
	7	1	3.7%	3	10.3%	4	7.1%
	8			1	3.4%	1	1.8%
	9			1	3.4%	1	1.8%
	Always	2	7.4%	1	3.4%	3	5.4%
Total		27	100.0%	29	100.0%	56	100.0%

E1 how often does you sales staff talk with customers about CFL's

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	3.00	3.34	3.18
N	27	29	56
Std. Deviation	2.60	2.86	2.72

E2 Who initiates discussions about CFL products most often? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E2 Who initiates discussions about CFL products most often?	Always the customer	3	16.7%	4	25.0%	7	20.6%
	2	1	5.6%	4	25.0%	5	14.7%
	3	3	16.7%	1	6.3%	4	11.8%
	4	1	5.6%	2	12.5%	3	8.8%
	5			2	12.5%	2	5.9%
	7	4	22.2%	2	12.5%	6	17.6%
	8	3	16.7%			3	8.8%
	Always the sales staff	3	16.7%	1	6.3%	4	11.8%
Total		18	100.0%	16	100.0%	34	100.0%

E2 Who initiates discussions about CFL products most often?

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	5.56	3.56	4.62
N	18	16	34
Std. Deviation	3.28	2.66	3.12

E3 What percent of your customers' questions are about CFLs

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	8.68	15.72	12.26
N	28	29	57
Std. Deviation	13.08	25.62	20.57

E4 how often do you receive complaints or returns of CFLs * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E4 how often do you receive complaints or returns of CFLs	Never	29	100.0%	29	100.0%	58	100.0%
Total		29	100.0%	29	100.0%	58	100.0%

E4 how often do you receive complaints or returns of CFLs

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	1.00	1.00	1.00
N	29	29	58
Std. Deviation	.00	.00	.00

E5 how often do you receive complaints or returns of CFL Fixtures * INSTATE In or out of California Crosstabula

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E5 how often do you receive complaints or returns of CFL Fixtures	Never	6	54.5%	5	55.6%	11	55.0%
	2	3	27.3%	2	22.2%	5	25.0%
	3	2	18.2%	2	22.2%	4	20.0%
Total		11	100.0%	9	100.0%	20	100.0%

E5 how often do you receive complaints or returns of CFL Fixtures

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	1.64	1.67	1.65
N	11	9	20
Std. Deviation	.81	.87	.81

E6 Has your store had promotion campaigns for CFLs in the past 2 years with own resources * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California					
		Rest of Country		In California		Total	
		Count	Column %	Count	Column %	Count	Column %
E6 Has your store had promotion campaigns for CFLs in the past 2 years	Yes	5	17.9%	6	24.0%	11	20.8%
	No	23	82.1%	19	76.0%	42	79.2%
Total		28	100.0%	25	100.0%	53	100.0%

E7 Has your store had promotion campaigns for CFLs in the past 2 years funded by others * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California					
		Rest of Country		In California		Total	
		Count	Column %	Count	Column %	Count	Column %
E7 Has your store had promotion campaigns for CFLs in the past 2 years	Yes	5	18.5%	11	45.8%	16	31.4%
	No	22	81.5%	13	54.2%	35	68.6%
Total		27	100.0%	24	100.0%	51	100.0%

How did you promote CFLs

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Cases	Col Response %	Cases	Col Response %	Cases	Col Response %
E8	Newspaper advertisements	5	63%	6	46%	11	52%
	Point-of-purchase displays or advertising	4	50%	6	46%	10	48%
	Offer price discounts			3	23%	3	14%
	Offer rebates			2	15%	2	10%
	Nothing			1	8%	1	5%
	Salesperson promotion, active sales techniques			1	8%	1	5%
	Radio Ads			1	8%	1	5%
	Mail Advertisement			1	8%	1	5%
Total		8	113%	13	162%	21	143%

E9 Utility programs offering rebates or price discounts for CFL products * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E9 Utility programs offering rebates or price discounts for CFL products	No influence	16	55.2%	7	26.9%	23	41.8%
	2	4	13.8%	2	7.7%	6	10.9%
	3	4	13.8%	6	23.1%	10	18.2%
	4	4	13.8%	3	11.5%	7	12.7%
	Great deal of influence	1	3.4%	8	30.8%	9	16.4%
Total		29	100.0%	26	100.0%	55	100.0%

E9 Utility programs offering rebates or price discounts for CFL products

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	1.97	3.12	2.51
N	29	26	55
Std. Deviation	1.27	1.61	1.54

E10 Manufacturer rebate or incentive programs * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E10 Manufacturer rebate or incentive programs	No influence	14	51.9%	11	39.3%	25	45.5%
	2	3	11.1%	5	17.9%	8	14.5%
	3	8	29.6%	5	17.9%	13	23.6%
	4	1	3.7%	4	14.3%	5	9.1%
	Great deal of influence	1	3.7%	3	10.7%	4	7.3%
Total		27	100.0%	28	100.0%	55	100.0%

E10 Manufacturer rebate or incentive programs

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	1.96	2.39	2.18
N	27	28	55
Std. Deviation	1.16	1.42	1.31

E11 Changes in energy prices * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E11 Changes in energy prices	No influence	11	42.3%	8	29.6%	19	35.8%
	2	7	26.9%	4	14.8%	11	20.8%
	3	5	19.2%	6	22.2%	11	20.8%
	4	1	3.8%	7	25.9%	8	15.1%
	Great deal of influence	2	7.7%	2	7.4%	4	7.5%
Total		26	100.0%	27	100.0%	53	100.0%

E11 Changes in energy prices

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	2.08	2.67	2.38
N	26	27	53
Std. Deviation	1.23	1.36	1.32

E12 Environmental concerns * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E12 Environmental concerns	No influence	12	48.0%	10	37.0%	22	42.3%
	2	5	20.0%	4	14.8%	9	17.3%
	3	6	24.0%	6	22.2%	12	23.1%
	4			2	7.4%	2	3.8%
	Great deal of influence	2	8.0%	5	18.5%	7	13.5%
Total		25	100.0%	27	100.0%	52	100.0%

E12 Environmental concerns

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	2.00	2.56	2.29
N	25	27	52
Std. Deviation	1.22	1.53	1.40

E13 Changes in CFL product quality or performance standards * INSTATE In or out of California Crosstabula

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E13 Changes in CFL product quality or performance standards	No influence	10	40.0%	14	53.8%	24	47.1%
	2	6	24.0%	3	11.5%	9	17.6%
	3	3	12.0%	5	19.2%	8	15.7%
	4	4	16.0%	1	3.8%	5	9.8%
	Great deal of influence	2	8.0%	3	11.5%	5	9.8%
Total		25	100.0%	26	100.0%	51	100.0%

E13 Changes in CFL product quality or performance standards

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	2.28	2.08	2.18
N	25	26	51
Std. Deviation	1.37	1.41	1.38

E14 Reductions in the prices of CFL products * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E14 Reductions in the prices of CFL products	No influence	6	23.1%	6	24.0%	12	23.5%
	2	5	19.2%	2	8.0%	7	13.7%
	3	5	19.2%	5	20.0%	10	19.6%
	4	6	23.1%	6	24.0%	12	23.5%
	Great deal of influence	4	15.4%	6	24.0%	10	19.6%
Total		26	100.0%	25	100.0%	51	100.0%

E14 Reductions in the prices of CFL products

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	2.88	3.16	3.02
N	26	25	51
Std. Deviation	1.42	1.52	1.46

E15 Your own efforts to promote CFL products * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E15 Your own efforts to promote CFL products	No influence	11	42.3%	12	48.0%	23	45.1%
	2	8	30.8%	3	12.0%	11	21.6%
	3	4	15.4%	6	24.0%	10	19.6%
	4	3	11.5%	1	4.0%	4	7.8%
	Great deal of influence			3	12.0%	3	5.9%
Total		26	100.0%	25	100.0%	51	100.0%

E15 Your own efforts to promote CFL products

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	1.96	2.20	2.08
N	26	25	51
Std. Deviation	1.04	1.41	1.23

E16 Utility educational programs * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E16 Utility educational programs	No influence	14	56.0%	9	36.0%	23	46.0%
	2	6	24.0%	7	28.0%	13	26.0%
	3	2	8.0%	4	16.0%	6	12.0%
	4	2	8.0%	2	8.0%	4	8.0%
	Great deal of influence	1	4.0%	3	12.0%	4	8.0%
Total		25	100.0%	25	100.0%	50	100.0%

E16 Utility educational programs

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	1.80	2.32	2.06
N	25	25	50
Std. Deviation	1.15	1.38	1.28

E17A Most influential factor that influenc the sale of CFLs * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
E17A All the possible factors that could have influenced the sale of CFL	Rebates or incentives or price discounts from Utility	1	5.3%	8	34.8%	9	21.4%
	Rebates or incentive or price discounts from Manufacturer			2	8.7%	2	4.8%
	Rebates or incentive or price discounts from Retailer			2	8.7%	2	4.8%
	Promotion or advertising support from Utility			1	4.3%	1	2.4%
	Promotion or advertising support from Manufacturer			1	4.3%	1	2.4%
	Promotion or advertising support from Retailer	1	5.3%	1	4.3%	2	4.8%
	Increased consumer education or awareness of product benefit	9	47.4%	2	8.7%	11	26.2%
	Price of CFL products over time has decreased	4	21.1%	4	17.4%	8	19.0%
	Increased availability or supply of CFL products	1	5.3%	1	4.3%	2	4.8%
	Increased availability or supply of higher quality CFL produ	1	5.3%			1	2.4%
	Change in construction			1	4.3%	1	2.4%
	Increased demand	1	5.3%			1	2.4%
	Rebates from all sources	1	5.3%			1	2.4%
Total		19	100.0%	23	100.0%	42	100.0%

E18 Principal Barriers

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Cases	Col Response %	Cases	Col Response %	Cases	Col Response %
E18	Higher prices for CFL products v. incandescent products	13	57%	11	41%	24	48%
	Lack of consumer education or awareness of product benefits	7	30%	6	22%	13	26%
	Lack of demand	3	13%	6	22%	9	18%
	Problems with product quality	3	13%	1	4%	4	8%
	Lack of rebates			3	11%	3	6%
	Fewer CFLs on the display shelves	1	4%	2	7%	3	6%
	Elimination or reduction in Promotion or advertising Utiliti	1	4%	1	4%	2	4%
	CFLs too large			2	7%	2	4%
	Elimination or reduction in Promotion or advertising Manufac	1	4%			1	2%
	Elimination or reduction in Promotion or advertising Retaile	1	4%			1	2%
	CFLs were not available			1	4%	1	2%
Total		23	130%	27	122%	50	126%

F1 How informed are customers are about benefits of CFL products? * INSTATE In or out of California Cross

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
F1 informed would you say your customers are about benefits of CFL products?	Not at all	9	32.1%	8	29.6%	17	30.9%
	2	5	17.9%	1	3.7%	6	10.9%
	3	1	3.6%	7	25.9%	8	14.5%
	4	4	14.3%	3	11.1%	7	12.7%
	5	7	25.0%	6	22.2%	13	23.6%
	7	1	3.6%	1	3.7%	2	3.6%
	8			1	3.7%	1	1.8%
	9	1	3.6%			1	1.8%
Total		28	100.0%	27	100.0%	55	100.0%

F1 informed would you say your customers are about benefits of CFL products?

	INSTATE In or out of California		
	Rest of Country	In California	Total
Mean	3.18	3.26	3.22
N	28	27	55
Std. Deviation	2.14	1.95	2.03

F2 Has awareness among consumers increased, stayed the same, decreased * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
F2 Has awareness among consumers increased, stayed the same, decreased	Increased	11	39.3%	14	58.3%	25	48.1%
	Stayed the same	16	57.1%	7	29.2%	23	44.2%
	Decreased	1	3.6%	3	12.5%	4	7.7%
Total		28	100.0%	24	100.0%	52	100.0%

G1 Aware of utility initiatives * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
G1 utilities have initiated a number of programs designed to encourage	Yes	11	40.7%	13	48.1%	24	44.4%
	No	16	59.3%	14	51.9%	30	55.6%
Total		27	100.0%	27	100.0%	54	100.0%

G2A Which utilities sponsored these initiatives? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
G2A Which utilities sponsored these initiatives?	PG&E			5	45.5%	5	27.8%
	SDG&E			5	45.5%	5	27.8%
	PG&L			1	9.1%	1	5.6%
	AEP	1	14.3%			1	5.6%
	Haywood & Duke	1	14.3%			1	5.6%
	Local Con Edison	1	14.3%			1	5.6%
	NFP	1	14.3%			1	5.6%
	Niagra	1	14.3%			1	5.6%
	NSP	1	14.3%			1	5.6%
	PSE	1	14.3%			1	5.6%
Total		7	100.0%	11	100.0%	18	100.0%

G3 how influential have these initiatives been in increasing CFL sales * INSTATE In or out of California Crosstabulat

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
G3 how influential have these initiatives been in increasing CFL sales	Not at all Influential	1	10.0%	1	8.3%	2	9.1%
	2	1	10.0%	1	8.3%	2	9.1%
	3	2	20.0%			2	9.1%
	4	1	10.0%	2	16.7%	3	13.6%
	5	2	20.0%	1	8.3%	3	13.6%
	6	3	30.0%			3	13.6%
	8			5	41.7%	5	22.7%
	9			1	8.3%	1	4.5%
	Very Influential			1	8.3%	1	4.5%
Total		10	100.0%	12	100.0%	22	100.0%

G4A Why do you say that? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
G4A Why do you say that?	Rebate or incentive levels are too low	2	50.0%			2	28.6%
	Lack of assistance in raising consumer education or awareness	1	25.0%	2	66.7%	3	42.9%
	Lack of assistance in retailer and consumer education			1	33.3%	1	14.3%
	Program too much of a burden	1	25.0%			1	14.3%
Total		4	100.0%	3	100.0%	7	100.0%

G5 Are any of your CFL products currently eligible for rebates? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
G5 Are any of your CFL products currently eligible for rebates?	Yes	2	22.2%	3	25.0%	5	23.8%
	No	7	77.8%	9	75.0%	16	76.2%
Total		9	100.0%	12	100.0%	21	100.0%

G6 Were any of your CFL products eligible for rebates in 1996? * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
G6 Were any of your CFL products eligible for rebates in 1996?	Yes	7	77.8%	4	40.0%	11	57.9%
	No	2	22.2%	6	60.0%	8	42.1%
Total		9	100.0%	10	100.0%	19	100.0%

GEND GENDER OF THE RESPONDENT * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
GEND GENDER OF THE RESPONDENT	Male	25	86.2%	20	69.0%	45	77.6%
	Female	4	13.8%	9	31.0%	13	22.4%
Total		29	100.0%	29	100.0%	58	100.0%

TERRITRY Territory * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
TERRITRY Territory	National	29	100.0%			29	50.0%
	PG&E			15	51.7%	15	25.9%
	SDG&E			14	48.3%	14	24.1%
Total		29	100.0%	29	100.0%	58	100.0%

COMPTYPE Company Type * INSTATE In or out of California Crosstabulation

		INSTATE In or out of California				Total	
		Rest of Country		In California			
		Count	Column %	Count	Column %	Count	Column %
COMPTYPE Company Type	Variety			1	3.4%	1	1.7%
	Hardware	10	34.5%	15	51.7%	25	43.1%
	Grocery	4	13.8%	4	13.8%	8	13.8%
	Drug Store	3	10.3%	9	31.0%	12	20.7%
	Lighting	12	41.4%			12	20.7%
Total		29	100.0%	29	100.0%	58	100.0%