

Transforming Private Multifamily Properties to Efficient Appliances and Lighting via Centralized and Negotiated Procurements

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ABSTRACT

The objective of our research is to permanently change the lighting and appliance purchasing behavior of private multifamily (PMF) owners/operators, as well as their tenants, without the use of direct financial incentives, and to eventually expand the program to include other underserved residential buyers groups such as senior communities. We present a novel approach to implementing energy efficiency in the PMF sector – a traditionally underserved market segment for energy efficiency programs – through centralized or negotiated procurement of ENERGY STAR[®] products. The approach, which relies on reaching the PMF segment through local/regional apartment associations, is being implemented through Southern California Edison's (SCE) Market Transformation (MT) Programs.

We administrated surveys to over 500 owners/operators and supplemented these data with audit data to determine that the 5 best near-term MT targets were subcompact screw-in CFLs (sub-CFLs) for exterior and common areas, refrigerators, dishwashers, wall/window air conditioners (AC), and coin-operated, family-size clothes washers. The sub-CFL and refrigerator programs were initiated in 1998 and 1999 and the dishwasher, wall/window AC, and clothes washer programs are being implemented in 2000.

The most significant result to date involves the MT of 15 ft³ refrigerators owned by PMF owners/operators. We estimated that targeted PMF owners/operators annually purchase 1250 15 ft³ refrigerators. Prior to implementing our program, we were unable to document even a single purchase of a 15 ft³ ENERGY STAR refrigerator by a PMF owner/operator for use in a PMF property. We initiated our 15 ft³ refrigerator program in October 1999 by promoting the Maytag manufactured Model 1511 15 ft³ Magic Chef refrigerator. The Model 1511 is 31% more efficient than the federal government standard. Through March 2000, we have documented that 29% of replacement sales are

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being captured by the Model 1511—and this is occurring in a market segment where there is no documented evidence of any ENERGY STAR refrigerators ever having been purchased, and that MT is occurring without the use of any manufacturer buy downs or consumer rebates.

Given the success to date, we suggest that other utilities consider adopting, or testing out, SCE's program design. Also, consideration should be given to using this approach to design and implement a California statewide market transformation program for private multifamily properties.

Introduction

Privately owned multifamily (PMF) properties make up an important and unique energy end use, comprising two different types of residential customers — owners/operators and tenants. Both types of customers are usually located on the same property and within the same building. These customer types each have identical and unique equipment end uses and each owns a portion of the end-use equipment. Owners/operators and tenants are usually assigned different electric and gas tariffs and owners/operators typically purchase some equipment for which they have little responsibility for paying the energy bill. These and other factors create significantly different incentives for owners/operators and tenants to purchase energy-efficient equipment.

Southern California Edison (SCE) requested Battelle's Pacific Northwest Division to assist in the initial design and implementation of a market transformation (MT) demonstration program focused on "aggregated volume purchase" for the residential sector¹. Because the PMF market is chronically underserved, it was agreed that this would be the initial focus with the program design accounting for the unique differences between owners/operators and tenants. The program's primary objective is to demonstrate the potential for SCE PMF customers to significantly and permanently increase their purchases of energy-efficient building equipment and lighting technologies, and to do so without relying on direct financial incentives such as upstream buy downs or downstream rebates. Targeted technologies primarily include equipment covered by the Consortium for Energy Efficiency (CEE) program and the U.S. Department of Energy's (DOE) and U.S. Environmental Protection Agency's ENERGY STAR program².

To determine the first target customers for the PMF MT demonstration program, we first characterized the SCE PMF customers' electricity use and expenditures (Currie et.al. 1998). Next, we identified the market effects and indicators we planned to use in measuring MT progress (Sandahl 1998). We then identified and verified the end-use targets before developing the SCE PMF MT demonstration program design (Currie et al. 1998). Finally, we characterized the program results and identified future program directions.

¹ This pilot program, the Consortium for Energy Efficiency Residential Electric End-Use Efficiency (CEEREE) Initiative was created by SCE and CEE and launched in mid-year 1998.

² A description of the ENERGY STAR program can be found at <http://www.energystar.gov/>.

SCE PMF Customer Characterization

The program objectives imply that PMF property owners and tenants account for a significant portion of SCE residential electricity use and revenues and, therefore, warrant attention in terms of a focused program design. Using a rich database provided by SCE, we determined that SCE has just over 1 million PMF owner/operator and tenant customers, representing 28% of total residential accounts. PMF customers account for 17% of both electricity use and the total residential electric bill. SCE PMF customers spend nearly one-half billion dollars annually for electricity, which is a sizeable amount. Depending on the efficacy of energy-efficient measures implemented in recent years, the potential for sizeable savings could still exist. For example, a 20% improvement in electricity efficiency would result in annual electricity savings of nearly \$100 million.

Representative Database for Initial Design

Before proceeding with the program design, we built a representative database that matched owner/operator bills with tenant bills, by property, so we could better characterize the relative electricity use between owners/operators and tenants for a given property. Although we were not able to match floor space and vintage with address, matching tenant and owner/operator addresses helped us understand how consumption varies as a function of property size (number of units). For example, from observations and discussions with owners and property managers, we know that properties having only a few units may not be constructed with swimming pools, common-area rooms (e.g., laundry, recreation, parties, meetings) and, for newer properties, exercise facilities. Properties having these amenities need to have a sufficient number of rental units to carry the additional operating costs. The electricity used by these additional amenities will increase the owner/operator electric bills relative to the tenant electric bills and would likely be better near-term targets for a focused program.

We then chose the minimum property size (number of rental units) for initial program design. Narrowing the range of property size helped minimize variations in key characteristics such as the presence of a permanent onsite manager and the equipment-purchasing process used by management. Finally, we reviewed the size of our initial target segment to ensure that it was large enough to warrant the program effort and, if so, to design the target demonstration program.

For designing the MT demonstration program, the desired database did not have to include 100% of the residential rental property customers; it only needed to be representative. The first step was to determine the spatial distribution of PMF customers served by SCE. A database search indicated that 75% of all SCE PMF customers are located in Orange and Los Angeles Counties. Therefore, it was convenient to reduce the comprehensive data set to these two counties to characterize customers, design the initial program, and implement the MT demonstration program, greatly reducing the cost and the time required.

We recognized that SCE’s service territory covers four different climate zones, which had to be considered when choosing to initially concentrate on only Orange and Los Angeles Counties. However, in discussions with property owners and apartment association representatives, we concluded that this was not an issue from the perspective of program design.

We then determined the minimum property size for the representative database as PMF housing having more than four rental units. Using only properties larger than a four-plex would increase the likelihood that the owner will have permanent representation onsite and that the monthly owner/operator electric bill will be large enough to warrant attention from SCE.

The most cost-effective way to build a representative database that matches owner/operator and tenant accounts, by property, is by using a common address. While this approach ensures that the resulting database will have correct owner/operator and tenant matches, it will fail to capture the small number of cases where owners/operators and tenants have different street addresses.

Table 1 is the matched set of Orange and Los Angeles County data for properties having more than four apartment units. The average number of units per property represented by the data in Table 1 is 15.7.

Table 1. Annual Electricity Use and Bills for SCE Private Multifamily Customers in Orange and Los Angeles Counties for Properties Having More than Four Apartment Units

	Number of Customers	% of Total Customers	Electricity Use (MWh)	% of Total Customers	Electricity Bill (Thousand \$ 1998)	% of Total Customers
Total Owner/Operator & Tenant ^{(a)(b)}	369,408	100	1,299,004	100	159,488	100
Total Tenant ^(c)	347,306	94.0	1,031,333	79.4	124,817	78.3
Total Owner/Operator ^{(b)(d)}	22,102	6.0	267,671	20.6	34,671	21.7

(a) Residential use code 03; nonresidential use code 05

(b) SCE data adjusted to account for 1.13 owner/operator meters per PMF complex

(c) Residential use code 03

(d) Nonresidential use code 05

Table 2 presents the annual electricity use and bills for properties having more than four apartment units. The annual owner/operator bill averages \$1,569, which is \$130 per month. The bill is, however, more than four times greater than the average annual tenant bill, which averages only \$30 per month.

Table 2. Average Annual Electricity Use and Bills for SCE Private Multifamily Customers in Orange and Los Angeles Counties for Properties Having More than Four Apartment Units

	Electricity Use (kWh)	Electricity Bill (\$ 1998)
Tenants ^(a)	2,970	359
Owners/Operators ^(b)	12,111	1,569

(a) Residential use code 03

(b) Nonresidential use code 05

Owner/Operator as a Gateway to Tenants

The data presented above support our initial hypothesis that the first primary target for a PMF MT demonstration program should be larger PMF properties with the owners/operators being the primary focus. The annual bill for owners/operators is much higher than for tenants. Unlike tenants, owners/ operators either purchase or control all electricity using equipment for which they pay the electric bill and have direct and natural incentives to cost-effectively reduce their electric bill. The owner/operator has a permanent presence at the property and the owner/operator agent is almost always available. Thus, the cost to contact and interact with the owner/operator is much less than with tenants.

Owners/operators have a natural interface with their tenants. They have a continuous, physical presence onsite with an established and maintained line of communication to the tenants. If a successful MT program could be implemented with a significant percentage of forward-thinking owners/operators, this group may be able to be incentivized as *de facto* agents for the electric utility in assisting with, and promoting, MT activities for the tenants. The first critical step is a successful MT program with owners/operators.

SCE PMF Customer Electrical End-Use Targets

Our tentative conclusion from Table 2 is that the owner/operator is the most obvious first target for a PMF MT demonstration program. However, simply because owners/operators have higher bills than tenants is not sufficient evidence to conclude that owners/operators are better candidates for MT than are tenants. The potential for cost-effective savings must be verified, and the means (program) for achieving the savings must be designed and demonstrated as having the potential for being cost-effective.

The first steps are to identify the relative end-use contributions that comprise the owner/operator electric bill and to determine that owners/operators have natural incentives to make cost-effective purchases of electricity using energy-efficient equipment. The major owner/operator electrical end uses are described in Table 3. We know that not all properties have all the end uses listed in the table. In fact, some end uses, such as swimming pools, laundry and recreation rooms, and saunas, are a function of property size and probably vintage. For example, a four-plex may not have all of these amenities but a 100-unit complex is likely to have them.

Table 3. SCE PMF Owner/Operator Electrical End Use

	Lighting	Vending	Plug Load	Washers	Dryers	HVAC	Pumps/Motors
Exterior & Common Areas	√	√	√				
Laundry Facility	√	√	√	√	√	√	√
Resident Office	√		√			√	
Swimming Pool	√	√	√			√	√
Sauna	√		√			√	
Recreational/Meeting Room	√	√	√			√	
Vacant Unit	√		√			√	

PMF Lighting and Appliance Saturation and Ownership Data

A cost-effective MT program design requires lighting and appliance saturation and ownership data. At the time this research was conducted, SCE had not conducted any detailed audits of PMF owner/operator electrical end uses.

Existing Data

Some data exist at the California Energy Commission (CEC), included in Edgemon and Parker (1998). However, we also conducted walk-through audits in over 12 PMF properties of various sizes and vintages in Orange and Los Angeles Counties. From the CEC data and these walk-throughs, we formed hypotheses regarding the potential for PMF cost-effective electricity end-use savings. We discussed these hypotheses with companies that manage PMF properties in the two counties and they agreed with our findings.

Owners/operators usually purchase all of the equipment contributing to their bill. However, at least two exceptions exist: laundry and vending. Many PMF owners/operators contract with multi-housing laundry service companies to provide

washers and dryers for laundry rooms (Multi-Housing Laundry Association 1998). The owner/operator pays the laundry room utility bills and splits a portion of the gross receipts with the route operator.³ Vending machines are also leased and the vending company and the PMF owner/operator share the gross receipts.

In addition to the common areas, an effective MT program design requires ownership data for appliances in the apartment units. The most important electrical appliance in this regard is the refrigerator. No data existed on refrigerator ownership. Without these ownership data, it is problematic regarding the cost-effectiveness of a program design targeted at either owners/operators or tenants.

Survey Data

SCE is aware of PMF data deficiencies and, as part of a statewide effort, has fielded a comprehensive survey that directly addresses the problems. However, we needed some information sooner than the completion of that survey, especially appliance ownership, in order to design a cost-effective program. As such, we designed and administered surveys to approximately 500 PMF owners/operators. The surveys were biased in that were administered to owners/operators attending MF trade shows in Los Angeles and Orange County. The key findings were:

- Over 50% of the refrigerators in PMF apartments are owned by PMF owners/operators.
- Over 40% of the coin-operated washers and dryers present at PMF properties are owned, or directly leased, by PMF owners/operators who retain 100% of the revenues.
- Over 95% of the wall/window air conditioners in PMF apartments are owned by PMF owners/operators.
- Nearly 100% of the dishwashers in PMF apartments are owned by PMF owners/operators.
- Over 50% of the PMF screw-base sockets, for which the electricity is paid by PMF owners/operators, contain incandescent bulbs. Over 80% of the properties have some incandescent lighting in exterior and common areas.

In addition, from the surveys, walk through audits, and discussions with PMF owners/operators, we were not able to identify a single example of an ENERGY STAR appliance being purchased by a PMF owner/operator for use in a PMF property.

The above lighting and appliance end-uses became the primary MT targets for this pilot program.

³ We had discussions with several multi-housing laundry (MHL) companies and PMF owners/operators to confirm this information. We also learned that MHL companies are beginning to offer a new contractual arrangement with owners/operators in which the MHL company leases the laundry room space, installs meters, and pays all utility bills. This arrangement creates incentives for MHL companies to install more cost-effective lighting and equipment in laundry rooms and incentives for MHL companies to demand more efficient coin-operated machines.

SCE PMF MT Program Design

An effective MT program design should account for the purchasing attitudes of the targeted buyers since we are attempting to permanently change their purchasing behavior. We relied on survey data we collected at trade shows to help in this regard because no other data were available.

Buyer Attitudes

From our surveys, the following buyer attitudes, regarding appliance and lighting purchases, were critical in designing the program.

- Low first cost is the overwhelming purchase criterion.
- Direct toll-free or internet purchase is only a short-term (trial) option.
- Maintenance of traditional purchase and distribution channels is critically important.
- Significance of ENERGY STAR label is not understood.
- Nearly 50% of respondents were not familiar with CFLs.
- Appliance is purchased when an existing appliance fails; there is little on-site warehousing of spare appliance inventory.
- Apartment associations, of which many owners and operators are members, are the most credible sources of information

It was clear that an effective MT program should mesh well with how PMF owners/operators like to conduct business and that working with apartment associations would be important.

Program Design Elements

Our program design is intended to cost-effectively reach PMF owners/operators while building credible and sustainable product and information delivery channels. The following design is based on our experience in the SCE CEEREEE Program. We have had success following the steps described below and believe they can be implemented by other utilities. The key elements of the program design are:

- Build Relationship with Apartment Associations
- Build Relationship with Appliance Manufacturers
- Identify Specific Low First-Cost ENERGY STAR Appliance or Lighting
- Identify Appliance or Lighting Distributor
- Negotiate Lowest Possible First Cost
- Promote Purchase of Specific Appliance or Lamp Through Distributor

Build Relationship with Apartment Associations

We have established a close working relationship with 4 apartment associations in SCE's service territory representing over 10,000 PMF owners/operators who are SCE customers. We have had several meetings with association officers to explain our objectives and to jointly map out a strategy. The result is that SCE is now a partner with

the apartment associations. SCE is a member of each association, promotes the program at association trade shows, attends monthly association meetings, purchases advertising space in association journals, and directs us to publish technical articles in association journals that explain the benefits of ENERGY STAR lighting and appliances.

Build Relationships With Appliance Manufacturers

It is important to develop and maintain relationships with appliance manufacturers at the national, regional, and local levels. We provided our contacts with estimates of the market potential for the appliances and screw-base CFLs that are MT technology targets of this program. We met with several to emphasize the importance of promoting specific ENERGY STAR appliances having the lowest possible first cost. Finally, it is critical to secure manufacturer support prior to attempting to negotiate prices with distributors. This is because manufacturers may choose to structure special prices for distributors to pursue the PMF market, and they will likely need to consider the impact on their local retailers.

Identify Specific Low First-Cost ENERGY STAR Appliance or Lamp

The importance of having the lowest possible first cost ENERGY STAR appliance cannot be overstated. PMF owners/operators are extremely sensitive to first cost—more so than another other market segment we have ever dealt with. The primary reason is the “split incentive” issue. For refrigerators, dishwashers, and wall/window AC, the PMF owners/operators buy the appliance but do not pay for the electricity to operate the appliance. As such, the owner/operator will almost always buy the lowest cost, reliable appliance available. We have observed, for example, that just a few dollars difference on the cost of a refrigerator can shift the outcome between many sales and almost no sales.

It is not sufficient to merely promote low-cost ENERGY STAR appliances and lighting, in general. PMF owners/operators are focused on the “here and now”. They purchase replacements in response to failure of an existing appliance. When failure occurs, PMF owners/operators decide at that time which appliance to purchase and from whom they will purchase it. Thus, it is critical to have specific options in front of them regarding make, model, price, and distributor. If they are aware of the benefits of an ENERGY STAR appliance, and can find a reliable one that is close to the lowest-cost appliance available, then some owners/operators will make the purchase.

Identify Appliance or Lighting Distributor(s)

The distributor is, perhaps, the most important link in the chain. Distributors are different from retailers. They have different manufacturer representatives, different incentives, different advertising approaches, and a different clientele. Also, they enter into sales and delivery contracts, finance purchases, negotiate special prices with manufacturers, and maintain lower overhead space than do retailers. As such, they are able to offer their customers lower prices and “just in time” delivery.

All apartment associations have “product supply councils” comprised of members who are focused on providing goods and services to other members of the association; i.e., PMF owners/operators. Included in the product supply council are lighting and appliance distributors. The distributors speak at luncheons, attend monthly meetings, advertise in the association journal, and purchase booth space at trade shows.

A necessary condition for a successful PMF owner/operator MT program is to work with distributors who are members of apartment association product supply councils. Our first step is to identify distributors who carry the ENERGY STAR appliance that we believe can be delivered at very low first cost. Identified candidates are then discussed with the regional appliance manufacturers representative to determine if this distributor is a top performer and in good stead with the manufacturer. Our objective is to identify one, or more, distributors who is the best candidate to approach for being the primary supplier of the ENERGY STAR appliance that will be promoted.

Negotiate Lowest Possible First Cost

Once the distributor(s) has been identified, one or more meetings are required to arrive at the carryout and the delivered price. It is important to describe the extent of advertising and promotional activity that the utility will engage in to promote both the specific appliance and the distributor as the place to purchase it. Furthermore, the distributor and manufacturer should be presented with an analysis showing the size of the existing stock and the expected annual turnover. This is an indication of the sales volume that is available through normal replacement. Finally, evidence and arguments should be put forth that emphasizes the potential for increased foot traffic at the distributor’s facility, and the corresponding increase in appliance sales associated with that. With this approach, we have been able to reach carryout prices on selected ENERGY STAR appliances that are only 2 - 5% above the price that manufacturers charged the distributors – without any utility buy-down or incentives.

Promote Purchase of Specific Appliance or Lamp Through Distributor

After the “deal” is structured, the utility needs to aggressively follow through on its end of the bargain to promote the specific appliance or lighting product. The promotion includes several complementary activities. First, the utility needs to place advertisements in apartment association monthly journals. These should be full-page ads and run for at least 3 months. For publication during the first or second month of advertising, a simple, technical article should be submitted to association journals. A credible party who is not a supplier of the ENERGY STAR appliance should write the article. Also, a flyer should be developed that the association can mail to its members. The greatest impact will occur if a letter signed by the association president, which endorses the utility program and the specific ENERGY STAR appliance being promoted, covers the opposite side of the flyer. Finally, the utility should purchase booth space at association trade shows and promote the utility’s ENERGY STAR program and the specific appliances and lighting products in the program. This includes handing out flyers, sample products, and contests or drawings for ENERGY STAR appliance giveaways.

Results

We currently have 3 PMF MT ENERGY STAR product promotions in place; sub-CFLs, refrigerators, and dishwashers. We expect to have wall/window air conditioner and coin-operated clothes washers in place prior to the end of CY 2000.

Sub-CFLs

The first program we promoted was the DOE/PNNL sub-CFL program⁴. In SCE's service territory, there are ~500,000 sockets in PMF exterior and common areas with electric bills paid by PMF owners/operators. Traditional CFLs are significantly longer than sub-CFLs and many 15W-20W CFLs will not fit into existing fixtures. In this situation, owners/operators who are aware of the benefits of CFLs are faced with the decision of replacing fixtures or continuing to use incandescent bulbs. At the margin, SCE's PMF owners/operators pay 12 cents/kWh for electricity. With exterior and common area lighting on 12 to 24 hours per day, this seemed like a great cost-saving opportunity.

However, as we learned from our surveys, PMF owners/operators are not inclined to abandon their traditional place of purchase, even if they can save a lot of money. Also, nearly 50% of the owners/operators surveyed were unaware of the benefits of CFLs making them unlikely buyers of the lamps. These two factors led to sub-CFL sales that were much less than originally expected.

We concluded that a much more targeted and sustained marketing activity than we envisioned. This would expose the PMF owner/operator to sub-CFLs—condition them, so to speak. Then, the program would need to be transitioned to a retail program with the sub-CFLs being available in traditional PMF owner/operator places of purchase.

Refrigerators

The second program promoted was an ENERGY STAR refrigerator program. There were no data available on refrigerator ownership in PMF properties. However, our surveys indicated that at least 50% of the refrigerators in PMF properties were owned by PMF owners/operators.

Our target was 10,000 PMF owners/operators, representing 100,000 to 150,000 apartment units filled with SCE customers. Data from the most recent California statewide survey indicate that these properties contain approximately 12,500 14-15 ft³ and 17,500 17-19 ft³ refrigerators owned by PMF owners/operators. Thus, we designed and implemented programs for both size refrigerators.

⁴ Sub-CFLs are smaller and lower cost than standard CFLs. Complete descriptions and prices can be found at <http://www.pnl.gov/cfl>.

Both programs targeted the Maytag manufactured Magic Chef refrigerators that are 31% more efficient than the federal standard. The Magic Chef 15 ft³ Model 1511 program began October 1, 1999 and sales have averaged just over 1 per day through March 2000. We estimate that the total number of 15 ft³ models replaced annually to be 1250. Thus, at the purchase rate of one per day, the Model 1511 is capturing 29% of the total replacement sales, assuming that owners/operators own 50% of the PMF 15 ft³ refrigerators. *This is occurring in a market where there has never been a documented sale of an ENERGY STAR refrigerator.* And, these sales occurred during a period when there was no rebate or incentive available from SCE.

The Magic Chef 18.5 ft³ Model 1911 program began January 1, 2000. We estimate the total number of 17-19 ft³ models replaced annually to be 1750. Through March 2000, there have no recorded sales of the Model 1911.

Why have there been so many sales of the 15 ft³ Model 1511, and no sales of the 18.5 ft³ Model 1911? The answer is that we were able to negotiate a price for the Model 1511 that is competitive with any 14-15 ft³ refrigerator on the market. The best price we could negotiate for the Model 1911 is close to \$100 above the lowest cost 17-19 ft³ refrigerator on the market. As the PMF owners/operators told us through our surveys, first cost is an overwhelming consideration in purchasing appliances when the buyer is faced with classic split incentives.

Dishwashers

The third program designed was an ENERGY STAR dishwasher program. We estimate that there are approximately 667,000 standard-sized built-in dishwashers in PMF properties serviced by SCE and nearly all of these are owned by PMF owners/operators. The annual replacement rate is around 100,000 and we have no documented evidence that any of these dishwashers being purchased are ENERGY STAR. This program was implemented on April 1, 2000. It is too soon to assess sales. However, we expect the sales to be very strong because we have negotiated prices that are competitive with *any* new dishwasher on the market.

We originally negotiated agreements with Amana and Frigidaire. However, just prior to going to press with the advertisements, Frigidaire pulled out because of concern regarding the impact of the very low price on Frigidaire retailers. This indicates the need to work closely with the national and local appliance representatives in the design of the program.

Other Appliances

We plan an ENERGY STAR wall/window air conditioner program by June 1 and a CEE Tier A1 coin-operated clothes washer program by September 1. We estimate that there are about 500,000 wall/window air conditioners in PMF properties serviced by SCE and that over 95% of these are owned by PMF owners/operators. Our initial market surveys

indicate that there are several ENERGY STAR models in the 9,000-12,000 Btu range manufactured by Friedrich that are potential candidates for this promotion.

There are no state or SCE data on coin-operated clothes washer saturation or ownership. Our survey data indicate that approximately 34,000 coin-operated washers are present in PMF properties serviced by SCE and that nearly 50% of these are owned by PMF owners/operators. This appliance offers an interesting opportunity because we avoid the problem of split incentives. However, currently available CEE Tier A1 washers are nearly twice the cost of a standard coin-op washer. We expect a new, lower-cost, coin-operated, family-size Whirlpool washer to be available by August. We have field-tested the residential version of this model in a multi-housing environment. It performed well, is very cost-effective and is, currently, our model of choice.

Direct Financial Incentives

The objective of this pilot program was to demonstrate the potential for MT in the PMF market segment without the use of direct financial incentives. We have demonstrated how to successfully do this. But, there is a role for direct financial incentives under certain conditions. The refrigerator program provides a good example. The prices we were able to negotiate for the Magic Chef Models 1511 and 1911 seem at odds because the Model 1511 is competitive on first cost while the Model 1911 is not competitive in the current market for 17-19 ft³ models. However, this type of situation appears to be more of the norm than an anomaly in the appliance market. This suggests that specific, and targeted, direct financial incentives, such as rebates, could play an important role in transforming this market. Rebates are not needed to transform the market for the Model 1511 or equivalent ENERGY STAR refrigerator—it's happening now at a rapid rate. But, there will be no sales of the Model 1911 at the current relative prices because our negotiated price is just too much above the lowest-cost 17-19 ft³ models available.

On July 2, 2000, the California statewide program plans a \$100 rebate for refrigerators that are at least 30% more efficient than the current federal standard. PMF owners/operators and tenants who will be shopping for a 15 ft³ refrigerator will experience a windfall gain of \$100 for every Magic Chef Model 1511 purchased—and this will be at the expense of the California ratepayers as this rebate is not necessary to induce the purchase of the Model 1511. However, the rebate is sorely needed to spur sales in the 17-19 ft³ category as well as the 20-22 ft³ category. We hypothesize that the rebate, as it is now envisioned, would shift some sales from the 17-19 ft³ models to the 15 ft³ models and discussions with PMF owners/operators suggest this as well.

Consideration should be given to a targeted and flexible rebate program. This may not be implementable because it would require authorities to empower program designers and managers to specify rebates as a function of refrigerator size and could confuse the manufacturers, distributors and retailers. Furthermore, it would add another element of complexity to an already challenging statewide decision-making process. However, it is clear that, in some cases, rebates, or other direct financial incentives, are not necessary for MT to occur at a fairly rapid rate.

Future Directions

Although we only have less than two years of continuous experience with the PMF SCE approach, we are convinced that it can permanently impact the purchasing behavior of PMF owners/operators. As such, the timing is right for disseminating our results and to encourage other utilities to give serious consideration to either adopting the approach outright or, as a minimum, to test it in a pilot or demonstration program.

The greatest immediate potential would be to design and implement a California statewide program across the 4 investor-owned utilities and even perhaps include the aggressive public utilities with a significant PMF customer base. Coordination could be through the California Apartment Association (CAA), which is the parent of many local and regional associations across the state. The CAA is particularly strong outside of southern California.

We have established relationships with many national headquarters and regional appliance manufacturer representatives and have discussed with them the general concept of a statewide thrust at transforming the PMF appliance market. There is broad support across several manufacturers for this concept.