Multifamily Markets: Hard-to-Reach and Hard-to-Serve

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ABSTRACT

This paper presents findings from an evaluation of program efforts to tap energy efficiency opportunities in the California Multifamily (MF) markets. While MF customers are often broadly characterized as "hard-to-reach," (HTR) the realities of program implementation experience indicate that this market is also fundamentally "hard-to-serve." Challenges encountered include: (1) ensuring the persistence of measures, (2) marketing in a way that attracts the attention of property owners and managers, (3) optimizing incentive levels to overcome split-incentive barriers, (4) including cost-effective gas efficiency measures, and (5) targeting truly hard-to-reach customers.

The results from this study provide an in-depth look at the first statewide MF program in California. In-depth interviews, on-site surveys, telephone surveys, and GIS analyses were used to assess program experiences and provide recommendations for serving this difficult market. Measure persistence associated with a few specific lighting measures proved to be an early issue and was addressed promptly after it was identified during on-site research. The need to enhance the adoption of gas-related measures was also identified and investigated in greater detail to provide program managers with actionable recommendations for future program designs. Finally, GIS analysis was used to analyze the success of the program in reaching hard-to-reach customers, as defined by the California Public Utilities Commission (CPUC), and to illustrate the benefits of targeted marketing based upon census-tracts rather than zip code identifiers.

Introduction and Background

For most energy efficiency programs, cracking into the multifamily sector has been an especially frustrating endeavor. While a few programs have demonstrated some success in getting property owners and managers to invest in common areas where these parties have responsibility for the energy bills, fewer have overcome the split incentive barriers and delivered services to the tenant spaces.

California utilities, frustrated with the low participation by multifamily buildings in the statewide residential retrofit program, designed a new initiative, the Multifamily Rebate Programs (MFRP) to target specifically the multifamily and mobile home market. The MFRP provides rebates for a broad list of energy efficiency measures that can be installed in apartment dwelling units and in the common areas of apartment and condominium complexes. The rebate values were set at levels where each measure type passed the total resource test. This created a dichotomy between highly cost effective lighting measures, where relatively significant energy savings enabled the establishment of rebates that covered the full cost of the product and installation, and other products where rebates covered only a portion of the full costs. This differential in rebate levels created distinctive challenges for the programs' electric and gas achievement goals. In 2002, some measures with large incentives, such as lighting, were fully

subscribed quickly. Gas-related measures, which had smaller incentives, required significant utility marketing in order to fully utilize available program funds by the end of the year.

Unlike earlier programs, this program targeted property managers and owners directly. The individual utilities made numerous efforts to attract the attention of property managers/owners using such methods as direct mailing, cold calling of large customers, and teaming with local building owner/manager trade associations. Interested parties, whether they were contractors or owner/managers, could submit program applications using the standardized forms. In 2002, these applications were processed on a first-come first-serve basis with no limitations imposed and no reservation system. A reservation system was implemented for 2003. Although these efforts had some success, program activity was largely driven by the active participation by a limited number of large contracting firms.

The MFRP program tapped a previously underserved market and demonstrated that measures specifically designed for tenant spaces can be installed via rebates. For the lighting measures, the Energy Service Company (ESCO) industry quickly developed work teams to sell the concept to property managers and install the equipment for them. While these firms soon exhausted the Public Goods Charge (PGC) funds allocated for this program, there remains an almost unlimited potential if this program is configured as a resource acquisition option. As California turns to resource acquisition, these tenant spaces offer a fertile harvest. California has 2.8 million homes in buildings with five or more units, most of which have never been treated under any efficiency effort. Additionally, because of the split incentive barriers in this market, few of the funds spent in tenant spaces can be considered spent on free riders.

An array of issues was encountered in delivering this program, the most important of which include lighting quality, marketing gas-related measures, and ensuring an equitable allocation of scarce resources, each of which is discussed below.

Lighting Quality

The biggest issue identified in this evaluation was the need to work with contractors, property owners, and lighting manufacturers to increase lighting fixture and lamp quality in order to increase the retention rate for installed lighting measures. The on-site inspections conducted as part of this evaluation revealed that a large number of the lighting measures installed in 2002 were being removed or were failing after installation. As shown in Table 1, the verification process found that a significant number of claimed screw-in CFLs were no longer in use. Retention rates were much higher for hard-wired fixtures. For all of the larger HVAC equipment, 100 percent verification ratios were obtained.

The interviews and survey of property managers also reinforced the prevalence of quality issues for lighting measures. As Table 2 illustrates, more than one-third of the property managers interviewed had concerns with the program. Virtually all of this dissatisfaction may be linked directly to poor quality lighting fixtures and lamps.

Measure Description	Verification Ratios By Utility					
	PG&E	SCE	SCG	SDG&E		
CFL – 13 watt	100% (55)	61% (95)				
CFL – 16 watt	74% (144)	73% (202)				
CFL – 20 watt		99% (216)				
Outdoor Hard-wired Fixture – 13 watt CFL	96% (278)	94% (446)				
Indoor Hard-wired Fixture – 27 watt CFL	91% (141)	70% (160)		99% (69)		
Programmable Thermostat		96% (24)	100% (3)			
Occupancy Sensors	40% (5)	60% (5)				
Photocells		87% (15)				
Low-Flow Showerhead			89% (18)			

 Table 1. Verified Electric Measures with Less Than 100 Percent Verification Ratios

 Table 2. Overall Satisfaction with Program and Its Components by Utility

		Total			
	PGE	SCE	SCG	SDG&E	Totai
Not Completely Satisfied	7	20	6	24	57
Completely Satisfied	17	35	21	20	93
Percent Satisfied	71%	64%	78%	45%	62%

There are a number of reasons why lamps that were reported installed under the program were not found when inspectors visited the apartments six to 12 months later. These reasons include:

- Lamps were never installed;
- Lamps were in place but inspectors may not have identified them;
- Lamps burned out, and were not replaced;
- Lamps were removed by the property owner or tenant because they did not meet the needs of the tenant; or
- Lamps were removed by the tenant because they were relocating.

Each of these reasons suggests different solutions for improving lighting retention; we summarize below specific recommendations as to how the program can improve the situation.

Improving Lamp Lifetime Reliability

From the survey of property managers and discussions with contractors, it appears that the most important reason for lamps being removed is that the lamps are not achieving the expected lifetimes. This was an unexpected and troubling development; a solution to which lies beyond the purview of this program. The program relies on the ENERGY STAR label as the specification standard for lamps and fixtures and, although the ENERGY STAR rating originally covered only the energy efficiency of the lamps, ENERGY STAR has just recently been forced to de-list some lamps because their reliability is below the expected lifetime range. ENERGY STAR is using the Program for the Evaluation and Analysis of Residential Lighting (PEARL) to help de-list poor quality product. However, PEARL is currently only examining lamps sold at retail outlets and not those sold directly to contractors, which constitute most of the lamps installed in the MFRP. The MFRP program acted quickly to ensure that any de-listed lamps do not receive rebates in the future. Unfortunately, the continued existence of less reliable products will continue to exist since no specification or standard exists that completely eliminates lamps with poor reliability.

Thus, the MFRP cannot be responsible for ensuring that all lamps purchased are reliable. This is the responsibility of the contractors and the manufacturers who supply them the product. Furthermore, the results of this on-site inspection and property manager survey may have been the first indication to the program and many of the contractors that lamp reliability was a serious issue.

Further development of these types of efforts, outside of the formal evaluation process, is encouraged. MFRP can facilitate a more positive relationship between the property managers, contractors, and suppliers in the following ways:

- Empower the landlords with more information and education so that they can be more selective in the selection of lighting products offered by contractors. Because landlords receive the materials for free, they have typically had little stake in the results other than complaints from tenants about poor lighting results.
- Build awareness of product warranties and enforce product warranties. The biggest incentive for contractors to install quality products is to avoid costly returns for replacement or repair. The program needs to leverage existing product warranties by educating the property owners/landlord to require that contractors fix any products they install that fail before the warranty is completed.
- De-list contractors and manufacturers with poor performance records. If quality issue continue to be a big issue, then it may be necessary to move to greater control of contractors, and away from the rebate model. At that point, the use of performance bonds, withholding of portion of payment, and/or delisting of contractors who continue to have issues may be needed.

Lamp/Fixture Quality Issues

Shorter than anticipated lamp lifetimes is only one of the causes of the lamp removals. Our surveys and interviews also revealed that some landlords and tenants removed lamps because the lighting quality or the fixture aesthetics were inadequate. When users complain about the quality of a lamp, they are most often complaining about the lighting level, although complaints may also reflect the color effects or lamp flickering. There were also concerns voiced about the aesthetic qualities of the fixtures and the sloppiness of the installations. The MFRP is not in a position to institute any policies that control these types of quality issues; rather, it has to be the responsibility of the property managers to control these issues. Unfortunately, property managers often do not understand the issues involved in selecting lamps and fixtures, they are unaware of the various options available, and they are unaware that they have some choices in the types of product that can be installed in their apartments. Again the following recommendation can be done by MFRP to address lamp quality issues.

Lamps Removed When Tenant Relocates

Property managers indicated that, in some cases, retention rates were low because tenants leaving the properties took some of the lamps. Lamps that are removed and placed in new locations in the same utility service area continue to save the utility energy, but tracking this type of movement is difficult, if not impossible. If the tenant removal issue is significant, it may suggest that MFRP should rely more on fixtures, and less on screw-in lamps.

Lamps Were Never Installed

The best way to ensure that lamps have been installed is to increase the number of utilityconducted in-field inspections of program rebate applications. These verifications confirm that measures are installed. These inspections are in addition to the applicants supplying invoices for the purchase of measures.

Challenges with Gas Measures

One of the issues identified early in the evaluation was the relative difficulty experienced in the marketing of gas-related efficiency measures. Research was therefore conducted to explore the reasons for this, the results of which identified several important issues related to ensuring success in the promotion of gas measures in the MF sector. These issues, as well as salient recommendations, are summarized below.

As a percentage of overall program expenditures, the amount spent on marketing in 2002 was quite low. With the noticeable exception of SCG, utility budgets spent less than one percent of available funds on program marketing. Program awareness was also found to be quite low. Although the market is aware that the utilities offer efficiency programs, awareness of this specific program is low. One essential recommendation, therefore, is to commit to more extensive marketing of the program.

Recommended channels for marketing to eligible contractors focused on workshops cosponsored with manufacturers or supply houses, as well as direct mail and telephone contacts. For property owners, direct mail was preferred. Among large property managers, e-mail is also a preferred mode of communications. The research also indicates that property managers rely upon contractors a great deal for information and advice; especially on more complex, more expensive gas equipment.

Contractors and distributors generally favored raising rebate levels for gas water heaters, furnaces, and programmable thermostats. Rebates are viewed as useful, when set at levels perceived as sufficient to influence a market that is very first-cost sensitive. Some trades, such

as plumbers, feel that the present rebate levels did not provide enough incentive to make it worth their while to promote the program.

It was also noted that property managers placed greater decision-making emphasis on first cost and quick execution of a job, rather than energy efficiency. Program participants may have differed from the rest of the market in this respect; there is some information suggesting greater interest in energy cost reduction and facility improvement among these property managers. The data also suggested that first cost is a somewhat less dominant consideration for measures installed in tenant spaces than in common areas.

This research also examined effective programs that are operating elsewhere in the country which appear to offer more comprehensive services. These services include technical review and advice, incentives in the form of cash rewards and sometimes reduced rate financing, and facilitation of customer access to other funds. Additional services may include coordinating participants' access to other services within the sponsoring organization; employing current analytical tools to assist project owners understand opportunities for saving energy, and providing support for the implementation of recommendations—as needed—during the construction process.

Several programs included in our review emphasized distributors / suppliers as a key link to providing customers and contractors with good information and design support. Some programs are working with suppliers to bring manufacturers' representatives to contractor meetings to ensure that contractors learn the advantages of new equipment and learn best practices for installing and maintaining this equipment.

As a result of this research, it was recommended that the gas element of the MFRP should be structured to target replacement decisions rather than retrofit decisions. In contrast with lighting measures, where the costs of retrofitting an existing system can be very cost effective from the consumer's perspective, the cost of retrofitting an existing water heater or boiler is often prohibitive. Consumers therefore typically defer replacement until such time as the units fail or have reached the end of their useful life. The provision of incentives to encourage early retirement of these units would be very costly and incentives are therefore usually too low for this type of market activity to occur. Gas efficiency incentives are therefore most relevant to consumers at the time that they need to replace equipment. Importantly, the design of programs that target replacement opportunities is in many ways fundamentally different from programs that target retrofit opportunities.

Moreover, the evaluation suggested that, to influence replacement decisions, the program will likely need to increase marketing efforts with property managers, contractors, and distributors. Even if the gas market remains limited to equipment replacement opportunities only, there are more than sufficient replacements each year in each utility service territory to fill each utility's gas-measure goals. The program suffers from low awareness by property managers and contractors. Even those aware do not have sufficient information to easily opt for participation at the critical moment when a decision about equipment replacement must be made. This report suggests numerous avenues for building awareness and access to needed applications and information.

Other potential areas of focus for the gas element of the MF program include:

• Providing additional support and services beyond rebates—to ensure proper implementation of rebated measures—through a single program in each sponsor's territory;

- Reviving relationships with distributors and suppliers as means of reaching customers and contractors with information on new technologies, products and program services;
- Encouraging distributors/suppliers to work with equipment manufacturers to provide contractors with best practices training on new equipment; and
- Supporting training at an accessible level for building maintenance staff on the important aspects of operating and maintaining new, energy-efficient equipment.

Hard to Reach Customer Issues

In 2002, the CPUC encouraged the utilities to attract participants from classes of customers who had not traditionally participated in utility-sponsored energy efficiency initiatives. The CPUC established the following categories of residential customers as being HTR: (1) primary language spoken is other than English, (2) customers who fall into the moderate income level (income levels less than 400 percent but greater than 150 percent of federal poverty guidelines), (3) multifamily and mobile home tenants, (4) residents of areas other than San Francisco Bay, San Diego, Los Angeles Basin, or Sacramento, and/or (5) renters. While virtually all of the 2002 MFRP participants are renters and therefore may be considered HTR, the utilities instituted a secondary priority in reaching the more rural and moderate income areas of their services territories. One goal of this study, therefore, was to assess the extent to which these criteria were being met through program implementation.

Using a geographic information system (GIS), we are able to identify the exact location of each participant and assign the average characteristics of the underlying census tract within which that address is located. Through this process, we are able to identify the likely economic and demographic characteristics of the participating households.

The results of the GIS analysis are shown in Figure 1. As this figure indicates most of the areas of the state have not participated in the program. A little over five percent of the state's census tracts show any program activity. The results also indicate that participation has been higher in rural areas than might be expected, possibly as a result of the utilities' encouragement to contractors to find buildings within the more rural zip codes.

The 2002 Evaluation, Monitoring, and Verification (EM&V) studies are the first set of evaluations to assess the HTR efforts of the program. Importantly, the results of the GIS analysis identify issues and suggest how the implementation of the HTR efforts can be improved. Some issues derive from the specific methods chosen to set the goals, implement the efforts, and measure the results. While addressing some of these program-specific issues, it is important to tie the individual program effort to the overall CPUC goal of reaching HTR customers. The discussion below builds from program-specific issues to issues needing modifications in the overall CPUC policy.



Figure 1. GIS Analysis of Program Activity Census Tract

The Goal of Promoting Emphasis in Rural Areas is Counterproductive

The analysis above shows the problems a single program encounters when it individually tries to address all HTR issues simultaneously. The MFRP cannot deliver effectively and efficiently a multifamily program targeted to multifamily customers while at the same time focusing on rural areas because this is not where the bulk of multifamily households exist.

While it would be ideal with respect to meeting HTR goals to target the energy-efficiency programs to customers who are simultaneously rural and non-English-speaking and non-white and of moderate income, the fact remains that there are few such individuals possessing all four of these characteristics. *In setting the HTR goals for a specific program, it is necessary to match the sub-set of HTR criteria to be addressed by the program with the characteristics of the customers for whom the program is designed to address.*

The Emphasis on Secondary Goals such as Rural or Moderate-Income Targets Detracts from the All-Important Goal of Reaching Multifamily Units

Reaching the multifamily market is a worthy goal in itself. The entire multifamily segment has long been underserved as a result of recalcitrant, embedded market barriers that are fundamental to this market segment. The MFRP is one of the first programs that has succeeded in bringing any type of program benefits to the tenants in these complexes, and the goal should be to reach the broadest possible market of multifamily customers. There are areas of each service territory with large concentrations of multifamily households that are receiving no benefits from MFRP. Many of these areas have low involvement because they are farther away from the existing group of contractors who are driving program interest. While targeting moderate-income areas is okay, (targeting rural is less appropriate as noted above), this should not be the exclusive concern. The program more importantly needs to build coverage across these other underserved areas.

Recommended Changes to CPUC Policy

The CPUC's concern for reaching groups of customers who are traditionally not participating in the utility programs is laudable. There is strong justification for the design of programs and initiatives within programs to offer to and attract HTR households. As the current efforts mature, there are two guiding principles the CPUC should consider in implementing HTR efforts. HTR achievement needs to be designed and assessed at the portfolio level. Additionally, data on participation should be collected and assessed to design programs and redefine the exact composition of those who are HTR. Below is a detailed discussion of these two points. The CPUC is encouraged to consider these two points in addressing future HTR policy.

HTR Achievement Must Be Assessed at the Portfolio Level

The current CPUC emphasis of setting goals for individual programs and measuring achievement at the program level should be reassessed. The real measure of success must be how well the overall portfolio of programs reaches all segments of the population. Three important concepts are missing from the current CPUC policy approach.

- To reach HTR sub-groups effectively will require programs tailored to attract that specific group. These programs will not be universally applicable to the broader set of utility customers. If the group reached by the program is indeed HTR, then the program is effective.
- Each utility's accountability in addressing HTR should be assessed at the aggregate level and not by individual programs. The utilities themselves may set HTR for each program manager, but those goals should be drawn to bring the entire portfolio into compliance and not to try to make every program HTR neutral. Each utility should be developing a portfolio of programs that fairly distributes PGC funds across the entire class of customers. A good portfolio may contain some programs that are not very attractive to the HTR groups (new construction for example); as long as there are others included that specifically target these groups. Assessing each program individually ignores the

purposeful targeting that is needed. In fact, as is the case here, it discourages programs from identifying underserved niches and marketing to them directly. Broad HTR goals applied across all programs individually will not create the type of targeted programs that will be most effective.

• There should be a balance between requiring each program to have a HTR goal and having programs exclusively designed for HTR. While in some program cases, it will be cost effective to serve HTR and non-HTR segments together due to economies of scale, in other cases programs may need to be specially designed for HTR. It may even be that such exclusive programs may be piggybacked on existing general population program.

Data on Participation Should be Collected and Assessed to Design Programs and Redefine the Exact Composition of those who are HTR

The analysis demonstrated here will give utilities important information on the distribution of benefits across the customers in their service territories. As these data become available, it is important that the definitions of HTR be refined to reflect the reality of who is and who is not participating. Over time and with better data, the CPUC and the utilities will be able to better define the HTR segments so that what now may be "all multifamily" may eventually be "moderate income, non-white occupied units," or units in specific census tracts. As the group is better defined, so too should the program design and marketing become more specific in its reach to these audiences.

Summary

The MF market presents significant opportunities for capturing energy efficiency resources. Moreover, within this sector, lighting end uses represent an area of tremendous opportunity. However, measure retention is a critical issue in ensuring the persistence of savings, and such retention is directly related to lamp quality. This speaks to the need for active monitoring of the market and the establishment of appropriate controls that will ensure that these measures remain in place. Marketing gas energy efficiency measures in this sector requires a more concerted effort to work with trade allies. This is because, unlike lighting measures, gas end uses (e.g., furnaces, water heaters) are long-lived and replaced less frequently. Trade allies are very close to the decision-making process, both in timing and influence. Finally, GIS provides a very powerful means of understanding and evaluating market reach. With this added information, goals for reaching hard-to-reach customers need to be established with greater understanding of what truly constitutes hard-to-reach and how to best reach these customers.

References

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