Building the Case for a Residential Behavioral Efficiency Measure

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ABSTRACT

The research described in this paper estimated the energy savings that would result from a program promoting coldwater detergent as a means of enabling consumers to wash more of their laundry in cold water. Coldwater detergent has the potential to open up an area of substantial residential natural gas savings, a market for which sources of new DSM gas savings have been difficult to find, at least in California. The study quantified the extent to which consumers presented with cold water detergent and information promoting the benefits of washing laundry in cold water (1) will switch laundry loads from warm or hot to cold water and (2) will continue that behavior in the future. The study was undertaken by three California utilities in coordination with a major consumer laundry detergent manufacturer, and initially included more than 2,300 control group and treatment group respondents.

The purpose of the study was to determine the extent to which customers change their laundry water temperature-setting habits, once they try coldwater detergent and are encouraged by the utility to wash in cold water. First, we describe the details of the study, including its methodology and findings. Then, we discuss how the collaborative approach taken by the utility sponsors of the study and a private manufacturer to achieve both their mutual and individual goals might serve as a template for such cooperation. Finally, we raise some important policy questions that emerge when considering behavioral measures such as coldwater detergent.

Summary of the Study

Navigant Consulting, Inc. (NCI) conducted a market test on behalf of Southern California Gas Company (SCG), Pacific Gas & Electric Company (PG&E), and San Diego Gas & Electric Company (SDG&E) in late summer/fall 2008 to assess the value of promoting the use of coldwater detergent as a means of reducing water heater energy consumption among California residential customers. NCI also enlisted the participation of the only major manufacturer of a coldwater detergent at the time, Procter & Gamble (P&G), in the study. A controlled experiment was conducted, comparing the washing machine-temperature-setting habits of a Test Group, which was provided with coldwater detergent, with those of a Control Group, which was not. The actions of the Test Group was to serve as a surrogate for actions of participants in a potential utility program that would promote coldwater detergent and washing in cold water.

Study results showed that the Test Group saved a significant amount of energy used for washing laundry (Navigant Consulting, Inc., 2009), while changes in the Control Group were not statistically significant. Further, the Test Group could be divided into two segments, based on the behavior of those who eventually ran out of the coldwater detergent they tried during the study:

- Those who would continue to use coldwater detergent ("repeat users, about 40% of the group)
- Those who would not continue to use coldwater detergent ("non-repeat users," about 60% of the group).

Both of these Test Group segments reported having changed their attitudes toward washing in cold water. Both also washed significantly more loads of laundry in cold water than prior to the study, though fewer than they did while they were first "trying out" the coldwater detergent.

In the context of a utility program that might promote coldwater detergent and washing in cold water, those who would choose to use coldwater detergent on an ongoing basis (repeat users) would likely be tracked as participants of the program, and their energy savings calculated based on the number of bottles of coldwater detergent they purchased. However, the energy savings of those who would not choose to use the detergent again (non-repeat users) would be very difficult to track, except possibly through after-the-fact evaluation efforts. Yet, all indications are that this latter group would yield a substantial level of energy savings at least for a period of time, suggesting a significant spillover effect for such a program.

Study Design

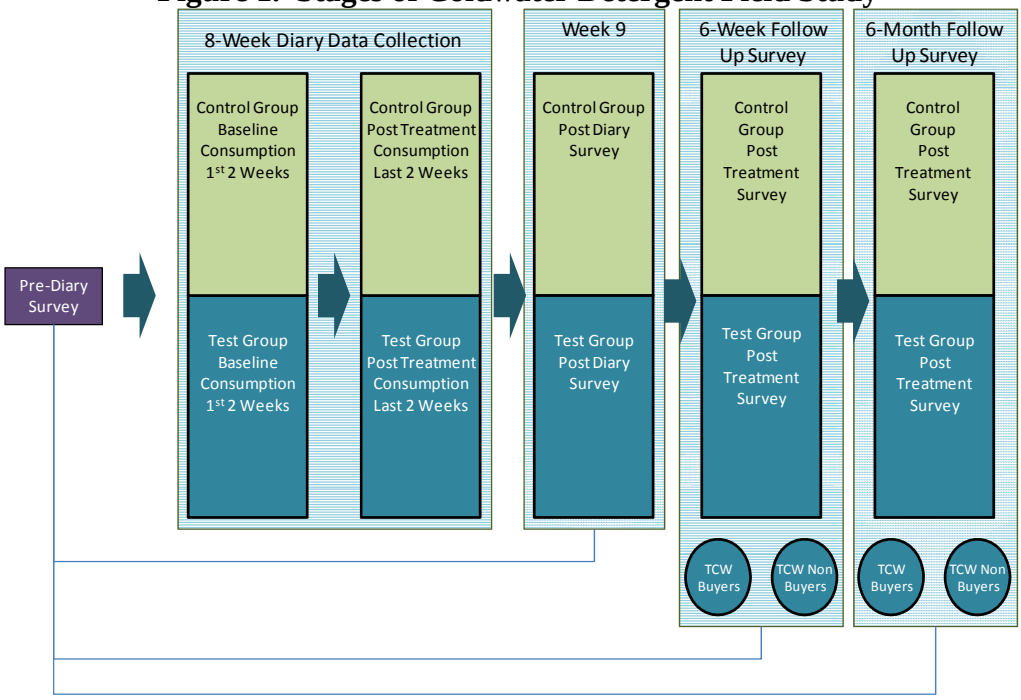
The study used a time-series, cross-sectional design. During the recruitment process, more than 2,300 households were surveyed about their laundry behavior. Those who chose to participate in the study were then assigned to either the Test Group or the Control Group and required to keep diary logbooks of every laundry load they washed over an 8-week period. Data from the first two weeks of this period, based on more than 1,000 study participants, confirmed the earlier survey-based baseline. After the first two weeks, Test Group respondents were provided with Tide Coldwater® detergent, a detergent specially designed to clean in cold water. They also were sent several small mailings sponsored by the three utilities and promoting the benefits of switching laundry loads from warm or hot water to cold water. The diary data from the first two weeks of the 8-week period were compared to diary data from the last two weeks. All respondents also were surveyed at the end of the 8-week diary period, six weeks after the diary period, and, finally, six months after the diary period.

Figure 1 illustrates the various data collection periods of the study and the key data comparisons that were made.

Study Results

The study's Test Group participants reduced the energy they use to heat water for washing laundry by about 58%, as measured six months after the 8-week diary period was over (6-month follow-up survey). Savings were even higher at the end of the 8-week diary period when participants were first trying out the coldwater detergent. Comparing the diary data for the last two weeks of washing activity with those of the first two (baseline) weeks of the study, the Test Group reduced energy usage by 72% on average during this initial period.

Figure 1. Stages of Coldwater Detergent Field Study



Source: Navigant Consulting, Inc., 2009

At the end of the 8-week diary data collection period, the control group's 5% savings were statistically insignificant (i.e., not statistically different from zero). As a result, no adjustment was made to the savings estimate derived for the Test Group. In each of the three surveys following the diary period, control group respondents were peppered with questions about washing in cold water, which raised the risk of having the survey activity contribute to respondents washing more loads in cold water. The results of the 6-week and 6-month surveys showed savings of 3% and 9%, respectively, neither of which was statistically significant.[1]

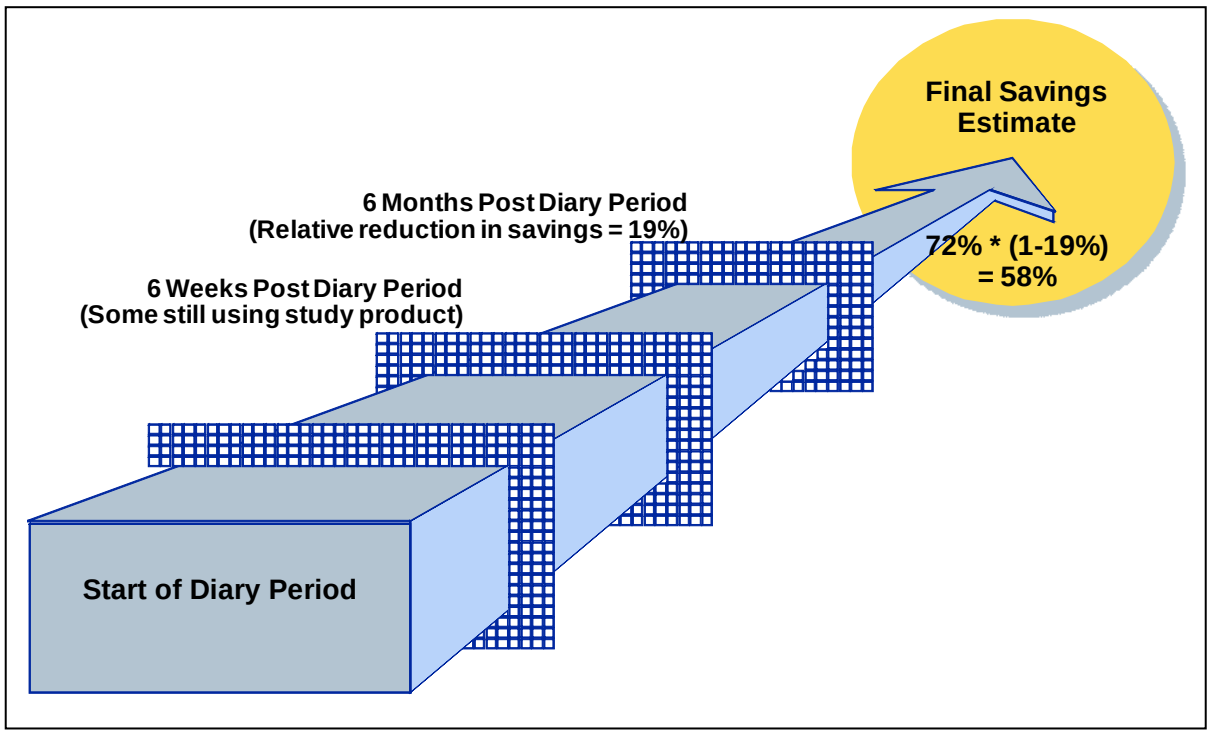
Based on the study results, one would expect that the purchase of the first bottle of coldwater detergent in the context of a utility program might reduce washing machine-related water heater energy consumption by 72% and additional coldwater detergent purchases would yield 58% reductions. In addition, among those who purchase the detergent once but do not purchase it again, one would expect ongoing savings at the 51% level at least for a period of six months following their initial purchase. Based on the survey findings, this latter group might comprise 57% of all first-time coldwater detergent buyers.

Savings per bottle of coldwater detergent were conservatively estimated at 58%, counting only the 6-month follow-up survey-based savings associated with buying the coldwater detergent and not counting savings resulting from those who continue to save but without buying the detergent.

Figure 2 below illustrates the savings achieved at different time periods in the study.

[1] The savings calculations for all groups were based on an average therms used per load for the entire reporting group at each survey, not simply the subset that had remained in the study all the way until the final 6 month survey.

Figure 2. Initial and 6-Months Follow-up Energy Savings Estimates



Source: Navigant Consulting, Inc., 2009

As shown above in Figure 2, there was a reduction in energy savings of about 19% in the six months after the end of the diary period. This reduction was calculated as follows. The diary data were viewed as the highest quality data in the study, because they were with respect to every individual load washed and rinsed. However, having study participants maintain diaries of their load-by-load laundry experience is time-consuming and very expensive. Launching another diary data collection effort was, therefore, not cost effective and also not necessary. The change in energy consumption per load between the baseline (pre-diary) period and immediately after the diary period ended – as reflected in surveys conducted of the study respondents – was compared to the change observed in the diary data for the same period. The results were very similar – statistically significant savings of 65% for the Test Group and no statistically significant savings for the control group). This initial change in consumption was then compared to the change in consumption between the pre-diary period and the six months post-diary period – both using data again collected via study participant surveys. The relative change in energy savings was 19%. That 19% change in energy savings was then applied to the original diary-based savings estimate of 72%, to obtain the 58% "persistence" energy savings estimate.

The 8-week diary data savings estimates were adjusted based on results from 30 study washing machines that were monitored. Based on the monitoring results, study participants slightly over-estimated the amount of hot water used in the loads they did. As a result, an adjustment factor of 92% was applied to account for this over-estimate.

All of these savings percentages are based on the change in the mix of hot, warm and cold wash loads done by study participants, with savings resulting from an increase in the relative percentage of cold water used in these loads. A standard engineering algorithm was used to estimate the therm consumption of each load of laundry for customers in the territories of each

of the three sponsoring utilities, differentiating between utility territories based on the average temperature of the water entering water heaters in each territory. Colder inlet water temperatures, such as those that exist in the PG&E territory, result in greater therm consumption per-gallon to heat the water to its outlet temperature and therefore greater energy savings if this greater consumption is reduced.

Based on these inlet water temperature differences and the change in the mix of laundry loads done by study participants, NCI calculated the therms/load direct energy savings estimates shown below in Table 1. The following estimates are presented in the table:

- Savings associated with the first bottle of detergent (savings observed during the 8-week diary period)
- Savings estimated six months after the diary period, among those who bought coldwater detergent in the six months after the end of the diary period (the most long-term persistence estimate developed in the study, and the only persistence estimate that included the entire Test Group).

Savings are based on the therm consumption associated with all loads of laundry done by the respondents, including those done at all temperatures and regardless of whether coldwater detergent was used. Essentially, the study's estimate of savings answered the following question: *How does the average water heating energy used per load of laundry change when consumers are provided with coldwater detergent and told of the potential benefits of washing in cold water?*

Table 1. Direct Energy Savings Per Load, By Utility

	8-Week Diary Period (First Bottle) Savings (Therms/Load)	6-Month Follow-up Survey Savings (Therms/Load)
PG&E	0.047 (72%)	0.038 (58%)
SCG	0.045 (72%)	0.036 (58%)
SDG&E	0.045 (72%)	0.036 (58%)

As noted earlier, savings also accrue from those who used the detergent once and reduced their energy consumption, and then, while not purchasing the detergent again, continued to wash more in cold water for at least six months. This group represented 57% of the Test Group respondent population surveyed six months after the diary period. Even among this group the study's survey results indicate that such respondents continue to save about 51% for a period of at least six months (the time of the last follow-up survey). That is, using the 6-month follow-up survey results, one might expect that for each first bottle of Tide Coldwater® detergent purchased, 57% of these purchasers save 72% on the loads washed while using that bottle and 51% on the loads washed over the course of the following six months and possibly longer. While it is not likely that such savings could be counted by utilities toward their savings goals, due to the inability to easily identify such customers, Table 2 below indicates the magnitude of the savings. Electric energy and peak demand savings were not estimated, due to the overwhelming penetration of gas water heating relative to electric water heating in California.

Table 2. Indirect Energy Savings Per Load, By Utility

	8-Week Diary Period (First Bottle) Savings* (Therms/Load)	6-Month Follow-up Survey Indirect Savings (Therms/Load)
PG&E	0.047 (72%)	0.033 (51%)
SCG	0.045 (72%)	0.031 (51%)
SDG&E	0.045 (72%)	0.032 (51%)

*Already accounted for as direct savings

A Change in Attitudes

Laundry detergent is a basic consumer household cleaning product. Consequently, the continued use of coldwater detergent is likely to be affected by the level of marketing and advertising, special discounts, and other price- and non-price-related actions taken by the product's manufacturer, retailers and the manufacturers of competing products. As a significant shift in consumer behavior, much greater use of coldwater in washing laundry will likely require ongoing reinforcement for an extended period of time, if persistence of savings is to be assured. However, the short-term (six-month) persistence results – 58% ongoing savings from repeat "purchasers" and 51% ongoing savings from non-repeat "purchasers" – are very promising. These results suggest that common purpose might be found in combining the marketing activities of manufacturers, retailers and utilities, to achieve mutually desirable ends.

The study's survey results provided additional information about the behavior and attitudes of the study participants. Results of surveys conducted after the 8-week diary period indicate that study respondents see the major advantages of washing in cold water to be keeping clothes looking new longer and keeping colored items looking bright. Primary disadvantages include concerns about eliminating germs and bacteria from the laundry and, to a lesser extent, other cleaning performance issues. However, those in the Test Group showed a significant decline in concerns about cleaning performance after the 8-week diary period, presumably as a result of having used the detergent.

The survey results also suggest that the marketing messages most likely to motivate the behavioral change of switching to cold water are the ones that focus on saving money and energy, especially if accompanied by confirmation from trusted sources about the cleaning performance of coldwater detergent. The most trusted sources of this information are friends and family. However, 13% of the Test Group, which knew of the utilities' sponsorship of the study, indicated that utilities are also a trusted source of this information. The most preferred approach for the utilities to take to influence washing behavior, according to study participants, is to provide rebates on the cost of the coldwater detergent.

Resulting Pilot Program

Based on the strong indication from the study that a program promoting coldwater detergent could yield significant therm savings in the residential sector, Southern California Gas (SCG) filed Cold Water Laundry Detergent (CWLD) work papers with the California Public Utilities Commission, and a new and innovative measure was added to the company's residential energy efficiency portfolio. SCG launched a cost-effective, customer-friendly point-of-sale pilot program promoting the measure. During one week with only one retailer, 3,384 CWLD units

were rebated at $2.50 per 170-ounce (88-load) bottle, gaining more than 10,000 therms in savings for the SCG residential program (projects to an annual savings of more than half a million therms). The cost per therm is estimated at $0.67-$0.77, depending on the level of administrative costs assumed. Technical potential is estimated at more than 25 Megatherms per year for the 3.4 million SCG customers who have gas water heating and use top-loader washers in their homes. Savings are highest, of course, for those having the coldest incoming water.

A Template for Utility-Private Sector Cooperation

Key to the success of the study was a sustained collaboration between California utilities and the private sector. Lessons learned from the study effort regarding successful cooperation between regulated utilities and the private sector are described below.

Identify What Each Party can Bring to the Table

Both parties – the utilities and the manufacturer – brought two important strengths to the effort – their intellectual capital and a passion for seeing what they could learn from the joint study. Each of the parties identified up front the resources they could bring to the table and the constraints they faced. In addition to study funding and the services of a technical study consultant, the utilities brought a deep understanding of ways to save energy, and generally how to influence their customers to do so. However, they could not favor or endorse one manufacturer over another in such promotion, but rather would have to promote coldwater detergent and washing in cold water, in general. From the manufacturer's point of view, of course, this was a constraint.

The utilities also brought to the table objective credibility. They are constrained by being a regulated body that must work in the public's interest. As a result, they have considerable value as an objective, trusted advisor. This credibility would be potentially very valuable in quickly deepening penetration of coldwater detergent in the market.

The manufacturer has established sustainability goals and saw coldwater detergent as a key means to achieve these goals and for consumers to benefit through their brands. It wanted to ensure that this effort could support its goals while yielding adequate return on investment to the company. It was therefore important to know that the utilities were serious about promoting coldwater detergent, if the study showed positive and cost-effective results. In addition to financial and technical resources, the manufacturer brought to the table a deep understanding of the consumer market place, including the following insights about changing consumer habits:

- There must be a tangible reward for consumers. The manufacturer had learned from its own efforts, and from watching the efforts of other manufacturers, that consumers want to participate in sustainability and environmental benefits, but they need tangible benefits – e.g., money savings, labor savings, high-quality performance.
- Multiple messages are needed. While tangible benefits are needed, additional positive messages (e.g., positive environmental impacts) help "close the deal," giving the consumer that extra incentive to make the purchase.
- Saving money and energy is important, but not at the expense of compromising on quality. The consumer will not comply with product performance trade-offs. Ideally, it is

very helpful to have a trusted, independent third party certify quality (e.g., Energy Star) and/or endorse the product.

- Multiple exposures are needed. The message must be reinforced continually to ensure long-term success and message potency.

The manufacturer also brought deep knowledge of the technical aspects of laundry cleaning and consumer laundry product market place. And while it suspected it would benefit from the positive public relations fallout from promotion of coldwater detergent as a "green" product, it needed strong indication that this effort could yield financial benefits to the company. Key to building the case for financial benefits was knowing that the utilities were serious about promoting coldwater detergent if the study showed positive and cost-effective results.

Find the Common Ground

The participating organizations found a common ground for their overall intentions. First, they would focus on what was best for the consumer/customer. All parties proclaimed this to be their ultimate common ground. Second, successful penetration of coldwater detergent in the market place would help the utilities achieve their energy savings goals and help the manufacturer to achieve its sustainability goals. This was clearly a win-win situation, though the utilities emphasized that their potential support of coldwater detergent could not favor one manufacturer over others, should others bring similar products to the market.

Third was a focus on the long term. While the utilities tend to think in terms of three year program cycles that are proposed and in some form approved by the CPUC, they also know they need to identify new DSM technologies and measures that can deliver savings in the longer term. Their Emerging Technologies effort, developed at the urging of the CPUC, is itself the vehicle for such long-term efforts. Further, the utilities face constraints due to their position as monopolies and stewards of ratepayer funds. This position necessitates public oversight (i.e., CPUC) and the extensive public vetting of associated utility actions. This environment typically forces changes to be made slowly.

In contrast, private sector firms clearly must have a short-term focus and be able to move quickly, addressing competitive threats, seeking out and achieving competitive advantages, etc. Still, some firms are committed to a long-term relationship with the consumer. In fact, in this case the manufacturer's long-term customer relationship focus may be more robust than that of utilities, in part because the utilities' decisions are not entirely under their control. They are subject to regulatory oversight.

A fourth area of common ground was that of product performance. All parties had a vested interest in maintaining high performance standards for any product to be promoted under a utility program. Both the utilities and the manufacturer had an interest in the customer having a positive experience with the product being promoted. As noted above, the utility industry, based on experience with other products in the past, knew the danger of putting its brand names behind products that did not meet customer expectations in terms of their performance (early CFLs and heat pumps). Promotion of such products by utilities had had a negative impact on the industry's ability to persuade some customers to purchase specific technologies, later. Customers who remembered these experiences understandably would meet utility promotion of other new technologies with a healthy amount of skepticism.

Further, the field test was conducted using a product that had delivered high-performance cleaning of laundry, and this high performance was integral to addressing a key customer

concern – can you really get laundry clean washing in cold water? The study results showing energy savings and persistence of those energy savings were based on a product delivering high-performance cleaning results. Therefore, the utilities needed any product being promoted by them as a "coldwater detergent" to meet a high performance threshold. Product approval would be based on testing conducted by a certified independent testing facility, using test protocols that relied heavily on a standard ASTM laundry cleaning performance test method. They worked with technical specialists to come up with a cleaning performance threshold that would not compromise laundry wash performance in cold water. The threshold meets the high cleaning performance achieved by the manufacturer's product but allows considerable flexibility in how this performance can be achieved. The testing protocol allows other manufacturers to develop coldwater detergents and have them qualify for utility rebates. And so the utilities were able to set and maintain an appropriate standard while not favoring one manufacturer over another.

For its part, the manufacturer already has a reputation for excellence in the market place. According to testing laboratories interviewed, Tide detergent is often the standard against which other detergent manufacturers want their products tested. During the study, *Consumer Reports* selected Tide Coldwater detergent for its "Best Buy" recommendation among laundry detergents. Ensuring that utility promotion of coldwater detergent included a high performance standard was clearly in the manufacturer's interest.

Be Willing to Take Risks and Learn.

Conducting research to demonstrate that cost-effective savings could be achieved from a behavioral measure was no small feat. For P&G, California was a relatively small part of overall operations. Investing time, effort and money in a pilot study in one state – even one as large as California – was a decision that had to be championed internally within the company, and was made only because of the company's willingness to learn.

The manufacturer had limited experience dealing with utilities and their regulators. As planning for the study progressed, it became clear that there were a number of uncertainties that the manufacturer had not had to deal with, previously. Each potential utility sponsor for the study was an independent market actor that could at any point pull out of the effort. Even if study results were very favorable from the manufacturer's point of view, they had to meet utility cost effectiveness criteria to garner utility support. Also, even if the study resulted in all three utilities giving the measure strong support, the CPUC could reject the measure.

Another risk the manufacturer took had to do with the utilities' ability to act quickly. With regulatory approval needed for any product the utilities would promote as an energy efficiency measure, there could be considerable delays in initiating a program, even if the study indicated positive results for coldwater detergent. Delays in the private sector can mean the difference between success and failure. As it turned out, there *were* considerable delays after the study results were known. Only SCG decided to initiate promotion early enough to leverage promotional efforts by the manufacturer, but the utility took the risk of implementing the program on a small scale without prior regulatory approval.

Primary among the risks taken by the utilities was the fact that coldwater detergent, even if shown successful through the study, would still be a behavioral measure. While marketing efforts have been approved by the CPUC for cost recovery as "non-resource" programs, they have not been approved as "resource" programs that deliver energy savings. The utilities would be seeking such an approval for promotion of coldwater detergent as a catalyst that leads to

washing machine-related hot water savings. Informal discussions with the CPUC had indicated possible interest in behavioral measures, because the "low-hanging fruit" of standard DSM measures has become increasingly depleted. Still, there had been no track record of any utility successfully obtaining approval to include such measures in a program in recent years.

Compounding the problem was that this behavioral measure does not fit the normal DSM measure profile. It has an extremely short measure life – shorter than weather-stripping, shorter even than a compact fluorescent lamp. A normal, 100-ounce bottle of detergent might last, on average, about 12 weeks (based on the study results). Measures with such a short lifetime are problematic to model in the E3 calculator that utilities are required to use for ascertaining cost-effectiveness. The format for presenting programs for approval to the CPUC assumes multi-year measure life and requires projected savings for a number of years (varies by measure). Coldwater detergent clearly does not fit the mold.

However, the fact that a private sector firm (one of the largest multi-national corporations in the world) also was willing to take a risk, was interested in working with the utilities to explore the measure, and could bring considerable resources to bear in promoting the product made it more palatable to the utilities. So did the fact that the potential savings could be very large and could give the large majority of residential customers the opportunity to save energy and lower their water heating costs. Because the "easy" DSM measures have already been tapped in the residential gas market, this opportunity became a strong driver to pursue unorthodox measures such as coldwater detergent. Still, were it not for strong support from key individuals within the utilities, the study might never have been undertaken.

Achieving regulatory approval for the measure was going to require constant educational effort – for utility upper management, for utility regulatory staff, for utility M&V staff, and for the regulators. Those seeking approval were going to need to explain over and over again why this measure made sense and why it was necessary to view it differently from other measures. As with any behavioral measure, the utilities would need to demonstrate that the program intervention in the market place caused the customer to make a different decision repeatedly and consistently. The study was designed to provide rigorous evidence that this different customer decision-making was occurring. This was done in several ways:

- The study included a control group whose changes in laundry washing behavior, if any, would be compared to that of study participants who had received the detergent.
- The study included a large number of Test Group and Control Group respondents, to enable higher statistical reliability of the results.
- The study included a data collection effort six months after the original observed behavioral change, to demonstrate the persistence of any observed changes in behavior.
- The study provided data on participant changes in attitudes, through surveys, to support the conclusion that the observed behavioral changes were real and likely to persist over time. These attitudinal data supported the program theory regarding how customers changed their behavior and why.

Policy Issues

The coldwater detergent study and resulting utility piloting of a coldwater detergent program in the market raises a few important policy issues. Chief among these is the need to find reasonable methods for assessing the viability of behavioral measures as the basis for DSM

resource programs (programs for which quantifiable energy savings may be claimed). As with early heat pumps and CFLs, early experience with some technology-related behavioral measures may have made California regulators reticent to adopt any type of behavioral measure (e.g., programmable thermostats).

The coldwater detergent study sought to address this concern through a careful analysis of actual use of the product by customers, in the context of an experimental design, rather than through an assumption of energy savings based on whether or not the customer purchased the product. The circumstance under which the study participants came to use the detergent was certainly artificial – they received the detergent free of charge as part of a research study. However, one might expect the impact of that artificial circumstance to bias the savings results downwards, assuming that people tend to take a product more seriously if they spend their own money on it. And while being part of a test group conceivably could bias one's decisions toward engaging in behaviors suggested by the product being tested, any such effect would probably have worn off six months after the study participants thought the "study" had ended. That was when the six-month follow-up survey, which became the basis of the estimated measure savings, was conducted.

Clearly, the coldwater detergent product and the study's minor promotion of the benefits of washing in cold water had a significant impact on the participants' behavior. And this was outside the context of a concerted, formal marketing campaign, either by the manufacturer or by the utilities, which would likely occur if the "measure" were part of a utility DSM program. As with any DSM measure, post-program impact evaluation would need to be used to refine the savings estimate. A relevant policy question: *Should such study results be considered sufficient proof to regulators of the energy savings achievable from a potential utility program promoting the detergent and cold water washing? If not, what burden of proof is both practical and achievable?*

Another issue raised by this effort is whether the regulatory process can be streamlined to enable swifter introduction of new behavioral measures into the market through utility DSM programs. As noted above, the time frame between successful study results and market introduction through SCG's pilot program, from the manufacturer's point of view, was exceedingly long. This places a barrier in the way of such utility-private sector partnerships. The private sector must act quickly or lose market share and competitive advantage, and waiting for utilities to be permitted to bring products to market is not conducive to that. This raises a second policy question: *If regulators want to facilitate market introduction of emerging energy efficiency technologies, including behavioral measures, and if they want to enable utility-private sector cooperation, how can the approval process for such measures be streamlined?*

Still, regulators must find a way to balance the risk of unwise use of ratepayer funds with the need to create an environment in which California's aggressive energy savings goals can be achieved. Under these circumstances, perhaps coldwater detergent is the ideal type of behavioral measure: low risk and broad applicability.

- For customers, the incremental cost is very low, and customer risk is therefore low.
- The total cost of the product is also very low, again, resulting in low customer risk.
- The product addresses the mass market, for which natural gas energy savings, especially in California, are not easily found.

This yields a third policy question: *Is this the type of behavioral measure that program developers should seek out and that regulators should support?*

Finally, an issue faced in fielding a coldwater detergent program and being able to leverage private sector resources is that of identifying program participants, those who purchase the coldwater detergent. This is also an issue for some market transformation programs. When using market forces to enable purchase of efficient products (e.g., point-of-sale rebates), retailers are very reluctant to provide data on the customers who purchase the rebated products. They (1) tend to view these customer data as extremely valuable, (2) may view sharing these data with utilities as an invasion of their customers' privacy, and (3) may believe that sharing customer data will cause their customers to mistrust them.

The driving force behind the need for these data, of course, is the regulatory requirement to demonstrate that those purchasing the product are customers of the sponsoring utility and to facilitate later evaluation-related research with these customers. Identifying purchasers through random surveys of the general population is prohibitively expensive, given the low penetration of such purchasers, especially for a new product. Having customers fill out a point-of-sale rebate coupon is unwieldy and for such a low-priced item, not very likely to occur. Further, while a partnership with one or more retailers may result in being able to obtain data at least on the pre/post-program change in sales of the product – based solely on reports from the retailer – one cannot develop such a relationship with all retailers who might sell the product. For utilities to move forward aggressively in developing and implementing this type of program as a mass market effort, they must have clear and practical guidelines regarding what regulators will accept. A fourth policy question is suggested: *Is there some combination of relaxing the evidence standards for evaluation and developing innovative ways to estimate savings for this type of program that can allow for a mass market approach without having to develop data-transfer relationships with every retailer that sells the product?*

Conclusion

The field test study described above clearly demonstrated that energy savings can be achieved when customers are provided with coldwater detergent and educated about the benefits of washing in cold water. Important to achieving the savings is high-quality product performance. The study also demonstrated a way for utilities to work cooperatively with the private sector, while maintaining the required neutrality regarding market participants.

A number of key issues still must be resolved before the potential savings associated with this product – which are very significant – can be captured. These issues generally have to do with the fact that coldwater detergent as a DSM measure is very low-cost, has an exceedingly short measure life, and is a behavioral measure (i.e., requires that customers make a decision to alter their behavior repeatedly over a period of time). Potential program evaluation and program attribution difficulties suggest that changes may be needed in how behavioral measures should be treated, from a regulatory perspective.

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