MARKET TRANSFORMATION:REAL PROBLEMS, REAL ANSWERS

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OVERVIEW

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Energy efficiency programs are in a period of transition. Over approximately 20 years they have transitioned from government funded information programs, to utility rebate programs, to an uncertain future. In recent years, demand side management (DSM) programs have experienced a decline in funding. In New York, for example, DSM spending by the investor owned utilities fell from about $280 million in 1993 to about $75 million in 1996.

Many policy makers are promoting a concept dubbed market transformation (MT) as the cornerstone of a new generation of market driven energy efficiency programs. Market transformation is defined as a reduction in market barriers resulting from market intervention, as evidenced by a set of market effects that lasts after the intervention has been withdrawn, reduced or changed (Eto, 1996).

A program correctly labeled market transformation is an initiative or set of initiatives specifically designed to cause permanent structural and behavioral changes in the marketplace. Any direct or indirect initiative that encourages people to take a desired action could be considered an element of a market transformation program. This might be as simple as one person telling a friend about the virtues of energy efficient lighting or as complex as a group of electric utilities offering a $30 million prize to appliance manufacturers to produce a super energy efficient refrigerator.

Proponents contend that initiatives designed to reduce market barriers to purchasing energy efficient products and services and to ultimately transform the market will result in impressive energy savings benefits at a lower cost than traditional rebate DSM programs. While there is strong conceptual support for MT, the track record of MT programs is still inconclusive.

This is a critical time for energy efficiency programs, as stakeholders including regulators, corporate managers, stockholders and lawmakers are asking tough and legitimate questions about MT. How do we know if the program design is right? Will it work? Is it cost effective? How can we quantify impacts?

The future of MT depends on designing the right programs and proving their effectiveness. Regulators and corporate managers must totally rethink conventional DSM program designs and evaluation techniques. In the world of market transformation, evaluation may not be viewed as simply an exercise in counting kWh but as a serious examination of the marketplace before, during and after program intervention. Overall program performance will have a higher priority than in the past. It may be more important to focus on indicators such as dealer stocking patterns than actual kWh savings. (We have a great deal of kWh data anyway!)

After I reviewed more than 50 programs labeled MT and talked to several utility officials and policy makers, it became clear that additional guidance was essential for cultivating successful market transformation efforts. For example, I analyzed several programs labeled MT that lacked solid program design and viable evaluation plans. Specifically, little to no market research was conducted, and long and short term program and evaluation goals were absent or unclear.

Among New York utilities, for example, there is some confusion over exactly what constitutes a market transformation program and how it could be evaluated. One utility executive commented that we can not effectively evaluate MT because the results would be too "squishy." Another utility manager declared that MT could not be evaluated, period. Regulators in other states have heard similar comments.

Ultimately, regulators, corporate executives, and policy makers will require high quality on-going evaluation in order to have confidence that MT programs are achieving the desired results. The objective of this paper is to offer a framework for evaluating MT efforts from the design stage through the program's conclusion. Specific guidance is provided. The paper also places a strong emphasis on methods of cultivating useful data quickly and at low cost. This is critical because of the often heard concerns that MT programs are difficult and expensive to design and evaluate.

The Evaluation Challenge-It Begins With Program Design

Evaluation is needed to determine whether market imperfections exist, and if so, where; to guide the application of any intervention strategy; and to suggest when to withdraw from the market. (Feldman, 1995) Lacking a powerful incentive such as a large cash rebate, the program design becomes even more critical. Careful planning in the design phase will increase the likelihood of program success and the likelihood that evaluation problems will be reduced or eliminated.

Even more than traditional rebate programs, a market transformation program must consider all the major

elements of today's marketplace. A key to program success is initial research to understand targeted markets in detail and identify the specific points where intervention is likely to be most effective. An MT program should be designed as a cost effective strategic intervention to remove market barriers to energy efficiency. In most cases it will consist of several coordinated elements to address the complexities of a multifaceted marketplace.

Under market transformation, the evaluation process changes and becomes increasingly more challenging. As the number of program variables increases, the precision of the evaluation results may decline. Unlike traditional rebate programs where evaluators could track the number of rebates for specific products, MT program impacts will likely be more diffuse and difficult to document especially regarding impacts within a utility territory or state. The final program results may not be known for years. Stakeholders will look to evaluators to provide evidence that the program design is realistic and cost effective and on-going evaluation will be required to ensure that the program stays on course. Even the best program designs will need refinement to improve performance and keep pace with a changing marketplace. Stakeholders do not want to invest in a program for five years only to discover it doesn't work!

Without evaluation research upfront, it is difficult to have confidence in the program design. Without short and long term goals, the evaluator will not know exactly what needs to be evaluated. What is the benchmark? Based on experience and the critical link between evaluation and program design, I have outlined guidelines that should form the core of all market transformation programs. It is clear that quality evaluation research is needed to provide critical guidance to program managers. The key guidelines are outlined below.

Direct Investment at MT Programs Only When There is a High Likelihood That The Program's Will Produce A Net Benefit To Society

Programs must be targeted where the potential for reducing market barriers is good and the potential for energy savings is significant. Specific product or service characteristics would include:

--short customer payback,
--low market penetration,
--low risk technology, and
--clearly definable market barriers.

Assemble A Comprehensive Package Of Initiatives

Simply piquing customer interest in an energy efficient product may result in short term sales and efficiency increases, but fail in accomplishing the major objective of market transformation: permanent change. Program designers must consider all market actors (e.g., consumers, manufacturers, distributors, installers) and examine the entire range of potential market barriers (e.g., high product cost, limited product availability, knowledge gap).

Since all or most of the market place elements are linked, a failure to identify and address all of these elements will likely limit market transformation. For example, an effort to encourage distributors to promote energy efficient heating equipment may fail if distributors sense that the public is apprehensive about product cost and reliability. Vendors may be reluctant to encourage customers to buy energy efficient products if technicians lack the necessary training to install the equipment.

Develop Measurable Short Term and Long Term Goals

Provide a clear statement of program goals and objectives, including an exit strategy. The statement should include a detailed accounting of what the program is designed to achieve, in precise and measurable terms. Program time frames should also be clearly articulated. An evaluation plan may need multiple goals with goals changing from year to year. The first year of a program to promote the purchase of horizontal axis washing machines may involve acquainting the consumer with the technology and increasing product availability, the second year may target actual customer purchases and future years focus on achieving permanent market change.

Establish Realistic Program Parameters

Establish an action plan to achieve program goals and objectives. The plan must contain sufficient detail to explain the "who, what, when and where." What will likely be needed to reduce or eliminate the targeted barriers? What is the level of enthusiasm among industry? Consumers? When will markets be moved by a simple bill insert? When is it necessary to spend millions of dollars to achieve the desired results? Is the cost justifiable? Focus groups would be an ideal way to gain insight. It is also important to develop a method of monitoring the program on an ongoing basis to make necessary adjustments to ensure that the program responds to changes in the market place and economic conditions.

Institute a Good Communications Plan

The keys to effective evaluation are good planning, reliable data, timely applicable analysis, and a positive working relationship among major participants. All parties need to be flexible and realistic and strive for balance between the need for accuracy and a reasonable budget and time frame. This is especially true as we enter an environment of tight budgets and experimental programs.

Use Good Program Design To Help Reduce Evaluation and Program Risk

By reducing risk through good program design, the impact of the limitations of evaluation methods may be reduced. A classic example is free rider measurement. If a program designed to discourage free ridership results in

free rider rates of less than 5 percent, a potential 15 percent error rate in the free rider measurement technique is less of a problem in estimating net impacts than if the free riders represent 65 percent of program savings. As utilities acquired more experience with DSM, program design improved to the level that free rider rates tended to represent a relatively small percentage of program participants. In some programs they were virtually non-existent (i.e., less than 5%).

A well designed program may help to reduce other evaluation problems. For example, if the program has established a partnership with trade allies, it has a greater likelihood of obtaining meaningful sales data.

Establish Realistic Evaluation Budgets

Evaluation efforts and budgets will, in most cases, need to represent a percentage of program funding similar to or higher than the evaluation of more traditional DSM programs, at least during the start-up phase. Market transformation programs are new, which means that time must be devoted to designing new evaluation methodologies. Evaluation of market transformation is in many ways more complex than of traditional DSM. Obtaining sales data from trade allies, establishing baselines and determining causality will continue to present serious challenges. It is "penny wise, pound foolish" to skimp on evaluation. Evaluation budgets could require fewer resources in the future, but only as more experience is gained.

The unfortunate reality is that evaluation funding has declined. Program research is essential but funding is scarce; long range planning is critical, but the future is clouded. There is a strong need for cooperation among the key players, but the emerging competitive environment discourages cooperation. As traditional DSM rebate programs fade, there is a desire to get MT up and running without endless studies.

As a response to these concerns and declining evaluation budgets,I offer several suggestions for meeting the challenge. The focus is on market research.

Market Research: An Important Tool

For hundreds of years people have been trying to transform marketplaces. Virtually every man, woman and child in this country is impacted in some way by billions of dollars spent to influence the marketplace. A constant swirl of activity encourages us to have cleaner clothes, more fun-to-drive cars and healthier looking hair; if only we would buy the "right" product. A key ingredient in this activity is market research.

Market research is also a critical ingredient to the success of market transformation programs. Many lessons can be learned from the world of marketing. Market research cannot guarantee success but it can increase the odds of making successful decisions. Coca-Cola has established an impressive record of marketing its soft drinks, enjoying a dominant position in markets worldwide. Nike used marketing to become a multi-billion dollar corporation (1996 sales of approximately $8 billion) and helped elevate the lowly sneaker from a commodity to a status symbol. Market research is a powerful tool, but it is not infallible, as Coca-Cola found out when it tried to change the formula for Coke. In the company's attempt to attract teenagers with a sweeter tasting cola, it alienated many older customers. The experience with "New Coke" is often cited as one of the major marketing blunders of recent years.

Secondary Research Can Lead To First-Rate Results

One method of acquiring high quality data quickly and at reasonable cost is to examine secondary data. According to one expert, "secondary research is... the closest thing to an all-purpose market research tool, in that virtually every project will make some use of secondary data and almost any decision stage may incorporate some kind of secondary research." (McQuarrie,1996).

A world of marketing research, widely available today at little or no cost, could provide meaningful insight and a source of ideas and guidance for future research. Admittedly the research may not be perfectly pertinent, but it should offer useful information, especially assuming the marketing of energy efficiency products is similar to that of other consumer products. Consider the following insight gleaned from recent issues of the Journal of Advertising Research.

Recall

People over 34 have trouble remembering advertisements. Since most homeowners and business executives are over 34, what might this finding suggest about the efficacy of an advertisement campaign to promote energy efficiency? (Dubow,1995)

Customer Segmentation

People who buy luxury cars are notably diverse when broken down by their personal values and the types of luxury cars (American, European, Japanese) they purchase. For example, the authors of one study found that owners of German luxury cars considered "fun-enjoyment-excitement" more important than did owners of American or Japanese luxury cars; the owners of German or American luxury cars considered both "self-fulfillment" and "sense of accomplishment" more important than did owners of Japanese luxury cars.(Sukhdail,1995) How diverse are purchasers of energy efficient lighting? Do some buy because they're thrifty? Others because they are environmentalists? Should a separate type of marketing be established to appeal to each segment?

Brand Loyalty

Some products encourage strong brand loyalty. Mayonnaise, for example, is a product with a high degree of brand loyalty.(Meer,1996) Are there energy related products that show similar loyalty? How would this impact the marketing approach? If budgets are limited, would it make sense to pursue products with high brand loyalty? In contrast, to what products and brands do customers have relatively little loyalty? Would it be more effective to direct the effort at the manufacturer under the theory that customers are loyal and will follow the lead of the manufacturer?

Attribution

A major dilemma in an MT program is attribution of program effects. If you don't know the impact of your action, how do you know if it is worth doing? According to a merchant of nearly one hundred years ago, John Wanamaker, "half the money I spent on advertising is wasted, and the trouble is that I don't know which half." Research by Information Resources Inc. in the 1980s corroborated Wanamaker's intuition, noting that only 49% of all advertising has any impact on sales. Unfortunately, techniques used in the study could predict the advertising impact only about half the time. Celestial Seasoning, Inc. and others have uncovered research techniques that effectively screen ads before their use. Using these techniques, the "wasted budget" should fall well below 50% (Mondello, 1996). Careful testing of advertising and information used in MT could help to maximize the impact and increase the effectiveness of the program.

Short Term Indicators

MT programs need both short and long term goals. How important is the success of short term goals to long term success? An analysis of "conventional wisdom" in advertising /marketing literature found that long term impact is a result of successive short term sales effects. If there is not a short term effect, there will not be a long term effect. The research "rejects the possibility of a sleeper effect--the supposed build-up of a campaign which does not work immediately and only causes sales to rise after a prolonged period of media expenditure." (Jones, 1996)

Infomercial

Research tells us that consumers who watch infomercials are more convenience seeking, brand conscious, price conscious, variety seeking, innovative, and risk accepting.(Donthu, 1996) Sounds like they might be a potential audience for innovative energy efficiency products.

Fictional Characters

What about the effectiveness of fictional characters to represent products such as Keebler cookies(elves), Pillsbury (the doughboy) and RCA (Nipper, the dog)? Could a kilowatt character be an effective way of promoting energy efficiency? In one study all the respondents claimed that they notice and watch ads featuring fictional characters more than other ads. (Callcott, 1996)

There is also a wide array of useful secondary data beyond marketing and advertising journals. Most are easily obtained at low or no cost. Their potential is limited only by the researcher's lack of ingenuity. A few ideas include:

U.S. Census

U.S. Census data is an excellent source of information about people and business. For example, in establishing criteria for a New York State pilot program targeted at the farm sector, Census data proved invaluable by presenting the number, size, type, net cash return, and energy use of farms in all of New York's 63 counties.(Census data is now available on the world wide web.)

Private Sector Data Firms

Private sector data research firms(e.g., Equifax, Dunn & Bradstreet, Polk, Acxiom) are valuable resources. Acxiom, for example, has available approximately 350 terabytes of consumer data.(A terabyte equals 1,000 gigabytes, or the equivalent of 500 million pages of single spaced text.) The company has some or all of the following facts on 195 million Americans: age, estimated income, home ownership, cars owned, occupation, children, education, buying habits, types of credit card used, height and weight.(Novack,1996) The cost of the data varies based on quantity and complexity.

News Media

According to Bloomberg News Service, GE's effort to promote a high end appliance line called Monogram never took off because the company did not cultivate relationships with dealers and designers. New efforts to sell high-end products require sales training and a dealer commitment to sell a preset number of machines. GE realized that a "different approach" is required in selling high-end equipment.(Bloomberg News, 1997) The Boston Globe reported that Amana Home Appliances plans to invest $2.5 million marketing its new high-end refrigerator. (High end refrigerators represent only 3 percent of a $4.45 billion wholesale market for residential refrigerators). The company is attempting to portray the refrigerator as a status symbol. (Boston Globe, 1996) Since appliances are frequent candidates for market transformation programs, this real world experience suggests strategies and pitfalls.

Looking Back to See The Future

In the early days of DSM programs, there was a big push to understand the customers, markets and product technologies. The 1986 ACEEE Summer Study featured an entire volume on marketing issues. Articles analyzed diverse topics such as the participation of the elderly in energy programs, residential marketing segmentation, de-

cision making processes in the commercial sector and marketing energy efficiency in North Carolina public housing.(ACEEE,1986) The research ultimately translated into better energy efficiency programs. One article captured a key point of the volume when it proclaimed "that substantial benefits are gained by careful program planning and an intimate knowledge of the marketplace." (Kreitler,1986)

In the 1980s, there were numerous articles about the impact of human behavior on energy conservation. Researchers analyzed thermostat management, why people don't weatherize their homes, and residential hot water consumption patterns. The latter study actually timed showers for each resident of the sample homes! The customer investment decision process was also a prominent topic. In October 1992 American Psychologist published three articles dealing with the relationship of psychological research and energy policy. One article concluded that " By improving marketing of energy-efficient technology, psychological research can help make the difference between success and failure in conservation programs." (Stern 1992)

This type of research is critical to the design of market transformation. A replication (with enhancements) would be an important and relatively low cost step. Most of the research was based on relatively simple surveys and basic social science research techniques. Some of the findings from these early studies may still be relevant today.

Good Data Under Your Nose

There are literally thousands of pages of evaluation research data on DSM programs. Some data may not be transferable, some may be obsolete, but a portion may be invaluable. Free rider data, for example, ultimately translates into consumer behavior. Which participants were influenced by the utility incentives and which were not? Research suggests that participant knowledge, building type, demographics, equipment efficiency standards, rebate levels, product market share, economic conditions and trade allies all influenced free rider rates. This type of data may offer valuable insight into market transformation. If free rider data were cross-tabulated with demographic and other types of data, useful profiles would likely be uncovered. For example, what types of business were more likely to be influenced by utility programs (large companies with low energy use, small companies with high energy use, mom and pop stores)? What were the characteristics of non-free riders? This type of data may already be in utility databases.

Moreover, the library of data on energy savings attributable to specific measures (e.g., kWh savings of T8 lighting) could be used to reduce evaluation costs. This would free up resources to more fully explore other mysteries of market transformation.

Conclusions

MT evaluation must look at total program performance, beginning with the program design and continuing through the program conclusion. Under this approach, success is not exclusively linked to net kWh savings, but to program achievements. An assessment of the quality of the program design, the completion of various tasks (e.g., distribute literature, train vendors) and the accomplishment of various goals(e.g., dealers increase stock of product by 10%) should all be part of the program evaluation.

A working version of this strategy is currently being negotiated with a utility. Rather than assess the program exclusively on a kWh goal, the standard would be based on the achievement of performance points. For example, the first year program requirements may be the development of a rigorous and comprehensive program design and acquainting trade allies with a certain product. Achievement of these goals to pre-agreed standards would translate into program success for year one. The level of success would be ranked by performance points(e.g., 100 points for meeting all goals, 90 points for achieving all goals except that fewer trade allies were contacted.)

The process of establishing performance points for the various components of the MT program helps stakeholders focus on the quality of the program design. The ability to earn points for various objectives allows flexibility. If something isn't working the utility can forfeit points for the underperforming area and earn additional points by doing more of something that works more effectively.

While evidence strongly suggests that traditional rebate DSM programs helped transform markets, the main goal of the program design was rarely market transformation. The primary focus was to encourage individual customers to take a specified action that would translate into energy savings. The most common incentive was financial. Program design required identifying cost effective energy services and products, the appropriate target audience, and a reasonable incentive level to encourage enough net energy savings to justify the program costs on an annual basis.

Market transformation programs will likely require a more complex program design and present a greater evaluation challenge than did traditional DSM. As a result, evaluation and program managers must focus on being more creative and innovative. Fortunately, efforts to move markets have been with us hundred of years. There is much that can be learned from the world of marketing. Does anyone want to buy a new and improved MT program?

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