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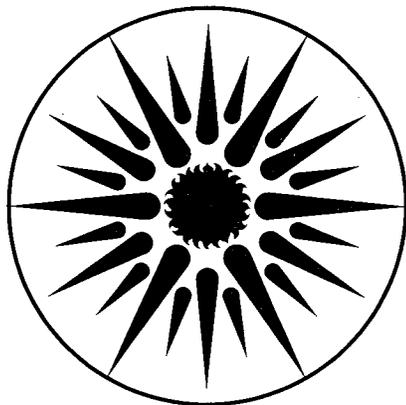
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Stimulating Utilities to Promote Energy Efficiency: Process Evaluation of Madison Gas and Electric's Competition Pilot Program

E. Vine, O. De Buen, and C. Goldman

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**STIMULATING UTILITIES TO PROMOTE ENERGY EFFICIENCY:
PROCESS EVALUATION OF
MADISON GAS AND ELECTRIC'S COMPETITION PILOT PROGRAM**

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Prepared for the Madison Gas and Electric Company and the Public Service Commission of Wisconsin

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EXECUTIVE SUMMARY

THE COMPETITION

On June 14, 1988 the Public Service Commission of Wisconsin (PSCW) authorized the Madison Gas and Electric Company (MGE) to encourage energy conservation and efficiency in the use of gas and electricity among its customers through an innovative program, the Energy Conservation Competition Pilot (hereafter referred to as the Competition). The Competition had the following primary objectives:

- Motivate MGE to improve its conservation efforts in terms of both the quantity and cost-effectiveness of conservation achieved.
- Provide an opportunity for the development of exceptional conservation services for utility customers by allowing conservation providers, in addition to MGE, funds to design and implement innovative and competing programs.
- Test how cost-effectively conservation services can be delivered through various marketing services, strategies, and providers.
- Test the usefulness of the Performance Score as a measure of cost-effective conservation achieved and its usefulness as a tool for pursuing a least-cost resource strategy.
- Test whether the Competition format is a regulatory strategy worthy of future pursuit.

During the Competition, MGE offered conservation programs of its own design to three targeted customer sectors: small commercial and industrial (C&I), large C&I, and the residential rental (multifamily) sector. The total budget of these programs was \$950,000. Simultaneously, three other firms chosen through a competitive bidding process offered their own conservation programs, each targeted to one of the three sectors: Honeywell in the large C&I, A&C, Inc. in the small C&I, and Building Resource Management Corporation (BRMC) in the rental sector. The total budget of these programs was also \$950,000. In each sector, MGE and its competitor competed to provide conservation services in each of the respective customer groups. At the end of the Competition, the competitor achieving the most energy conservation cost-effectively in each sector was to receive a cash incentive (bonus).

The administration of the Competition was overseen by a three-member Panel comprised of one MGE representative, one PSCW representative, and one independent third-party representative. Determination of policy guidelines, resolution of disputes, tracking of results, and other aspects of the Competition were the responsibility of the Panel. In addition, an independent Monitor, selected by the Panel, assisted in determining the performance of each competitor.

Delivery of conservation services under the Competition commenced in November, 1988. Competition in the small and large C&I sectors lasted nine months and ended July 1, 1989; the rental competition began on February 1, 1989 and lasted for a period of one year. At the end of the Competition, MGE won in the small C&I and rental sectors, but lost in the large C&I sector.

FOCUS OF THE EVALUATION

Lawrence Berkeley Laboratory (LBL) was asked by the PSCW and MGE to assess and evaluate four primary objectives of the Competition:

- Assess if the Competition format is a regulatory strategy worthy of future pursuit.
- Determine how conservation services and/or future such Competitions can be improved.
- Assess the usefulness of the impact accounting methodology used in the Competition.
- Compare the Competition with other regulatory strategies in promoting conservation.

In order to address these objectives, a variety of data sources were used: written materials, in-depth interviews with key project participants and individuals outside of MGE, survey of trade allies (vendors) in the Madison area, survey of customers that participated in the Competition, and a data base of measures installed in the Competition. Using these sources, the process evaluation documents the history of the Competition, describing the marketing strategies adopted by MGE and its competitors, customer service and satisfaction, and administrative issues. We also discuss initial information on program impacts, including estimates of program savings, the distribution and type of installed measures, and estimates of free riders. We next examine the impact of the competition on MGE, its competitors, and other Wisconsin utilities. Finally, we compare the Competition concept with other approaches that PUCs have used to motivate utilities to promote energy efficiency and discuss its applicability and transferability to other utilities.

EVALUATION FINDINGS

The principal findings of this study are:

1. The Competition influenced MGE to be much more aggressive in developing and implementing conservation service programs to its customers, a key objective of the Competition. Structural,

procedural, and perceptual changes occurred during the Competition to facilitate the design and implementation of energy-efficiency programs; some of these changes were short-term and some were of a more permanent nature. Key short-term impacts included the following: a more autonomous Marketing Department with clearer goals and objectives, a faster internal process of program development and approval, conservation programs implemented more quickly in all sectors, and expanded and improved marketing efforts. Longer-term changes that have occurred as a result of the Competition include: a more autonomous Marketing Department, more vendors hired, improved program design, and more targeting of measures and mailings. Although these changes might have occurred at MGE naturally over time in the absence of the Competition, many of these changes were accelerated by the program.

2. Despite the success in making MGE more aggressive in developing and implementing conservation service programs to its customers, the Competition had mixed success in getting the commitment and support of key MGE personnel to promote energy efficiency more than they were before the Competition. Top management and some field representatives were not motivated explicitly and additionally by the Competition; lower and upper management stated that they were motivated more by professional and organizational pride. The bonus did not motivate MGE management or staff and had a mixed influence on MGE's competitors.
3. The Competition was viewed negatively by several other Wisconsin utilities: as a stick that could potentially be used by the PSCW to encourage energy efficiency programs. From a regulatory perspective, this was a positive impact because MGE's Competition motivated utilities to promote energy efficiency without experiencing the Competition and without incurring additional PSCW staff resources.
4. Many participants felt that the Performance Score (benefits squared divided by costs) had major flaws and was an inappropriate measure of performance. The Performance Score was not a stable indicator. The Performance Score magnified small differences in benefits, so that changes in the latter would lead to significant changes in the score. In addition, "cream-skimming" appeared to be a problem, particularly for measures designed to reduce electricity use. Benefits from long-lived measures were not fully captured in certain sectors. The Performance Score should be revised if a future Competition is held: the PSCW is currently using net benefits (benefits minus costs) for measuring utility performance.
5. The conduct of the Competition was considered to be fair by most of the participants. Perceived differences in fairness were mainly attributable to the incumbent advantages MGE possessed as the "home team" in the Madison area. As the local utility, MGE had name recognition, a presence in the marketplace, high credibility, trust, respect, and an excellent reputation for customer service. MGE also had pre-established customer contacts, a customer data base, and often knew who to contact in a specific building. Furthermore, MGE had good rapport with trade allies, who were

contracted to market MGE's services. These organizational advantages permitted MGE to have a significant competitive edge over its competitors in the small C&I and rental sectors, and a slight edge in the large C&I sector (Honeywell had the advantage of being a nationally well-known company, credibility, trust, respect, and presence in the Madison marketplace).

6. Participants felt that the winner in each sector won primarily because of its organizational advantages and the effectiveness of its marketing strategy. In the large C&I sector, a number of participants stated that Honeywell's marketing approach of targeting large customers, using rebates to enhance what it normally did, addressing all of a customer's energy-related needs, providing a full portfolio of services through its turnkey service operation, and guaranteeing savings for many of its customers was effective. In the small C&I sector, many participants felt that MGE's marketing strategy of a blitz approach (e.g., giving away setback thermostats, low-flow showerheads, and exit lights) and full portfolio of measures was superior to its competitor. In the rental sector, many participants believed that MGE won because it emphasized low-flow showerheads, offered high rebates, targeted good prospects, and worked well with trade allies.
7. Rebates offered in the Competition were critical in stimulating customers to invest in energy-efficiency measures. In the large C&I sector, rebates drove MGE's program; for Honeywell, while rebates contributed to what it was already doing, none of its projects would have happened during the Competition without the rebates. In the small C&I sector, MGE and A&C thought rebates represented a strong marketing tool and induced activity that would not otherwise occur. In the rental sector, MGE felt that rebates accelerated the market by at least a couple of years; BRMC also felt rebates were important but decided to reduce the cost of the measure upfront (as a subsidy) to the customer, rather than have the customer wait for a rebate after the measure was installed.
8. Customers participating in the Competition were also motivated to invest in energy efficiency equipment for non-financial reasons. In the large and small C&I sectors, comfort, improved operations, increased productivity, and convenience were important determinants. In the rental sector, compliance with code requirements was particularly important for property owners and managers.
9. With respect to marketing strategies, MGE relied on traditional marketing methods (e.g., advertising, bill inserts, newsletter, presentations, and direct mail), but also used more innovative methods (e.g., working with trade allies and using turnkey services) to win two sectors (the small C&I sector and the rental sector). Honeywell relied on its basic sales approach to convince customers to install energy-efficiency measures; combined with guaranteed savings and bundling of measures, Honeywell won the large C&I sector. Although they did not win their respective sectors, A&C's sales process and use of door-to-door cold calls and BRMC's use of one-stop shopping, bundling of measures, and 25/40% subsidy were effective in stimulating energy efficiency in the small C&I and rental sectors, respectively. Extensive personal marketing of customers, in addition to traditional mass marketing, should be emphasized in the future because it often was a critical factor in

- convincing customers to install energy-efficiency measures.
10. The Competition did demonstrate the amount of energy conservation that could be achieved in certain sectors over a specified time period (9-12 months) to the PSCW, MGE, and other utilities. The results of the Competition will be used by the PSCW as a yardstick for measuring and comparing the performance of utilities in Wisconsin. Instead of using the Performance Score, the PSCW will use net benefits as the measure of performance.
 11. Based on survey results, we estimate the average level of free ridership for all customers to be about 10-15%. However, the number of free riders was significantly higher for particular measures in specific sectors: e.g., low-flow showerheads in the rental sector and high-efficiency boilers in the large C&I sector.
 12. Overall, most customers were very satisfied with the Competition and with the different components of the program. Moreover, the competitors were able to provide the same level of satisfactory service as provided by MGE. Also, although expected to be a problem, there were few cases of customer confusion as a result of the number of competing vendors operating in the Madison area.
 13. The administration of the Competition ran relatively smoothly. The key administrative problems evident in the Competition were related to the Performance Score, the development and maintenance of the Competition's data base, and the roles of the Panel and Monitor. Many of these problems could be solved or ameliorated in a future Competition if sufficient time were given initially for designing the program.
 14. The Monitor's role as referee influenced the administration of the Competition. While some participants thought the Monitor did a good job in what was expected of him and was conscientious, several participants were critical of the Monitor's work. The Monitor was criticized primarily for being too slow (not timely) in preparing the energy-saving calculations, the Competition data base, and monthly reports, and in inspecting installations. Despite the guidance given in the RFP and the Monitor's contract, some participants felt that the lack of clear directions and priorities given to the Monitor at the beginning of the Competition may have caused many of the Monitor's problems. Similarly, some participants felt that the Monitor may have received undue criticism, since the Monitor was considered by many as the referee of the Competition, and unhappy participants wanted to "kill the messenger." Nevertheless, as the Competition progressed, dissatisfaction with the Monitor's work remained a source of contention among several participants.
 15. The Panel was responsible for administering the Competition and establishing the rules of the competition. Most participants believed the Panel to be fair to everyone by reasonably accommodating their interests and by making satisfactory decisions. However, several participants thought the Panel suffered the same problem that afflicted the Monitor: the Panel was too slow in making timely decisions on critical issues. The Panel's reluctance to direct the Monitor in the early part of the

Competition may have been a reflection of the dual management responsibility that was provided in the Competition: the Monitor and the Panel expected each other to provide the leadership. This reluctance might also have reflected the fact that the PSCW and MGE felt that it would be inappropriate for either of them to lead the Panel.

16. A future Competition should run longer than MGE's Competition: two years should be sufficient for running the programs, after a minimum period of 4-5 months for designing the Competition.
17. The bidding process for selecting competitors worked fairly well in the Competition: all participants thought the process of choosing competitors was fair, and the Panel was able to devise a satisfactory solution to the initial poor response in the rental sector.

An impact evaluation of the Competition is in progress and will determine the level of conservation achieved and its cost-effectiveness. The evaluation will compare estimated energy savings with actual customer bill savings, a task that will provide a level of quality control that was missing in the Competition.

The Competition was an innovative approach designed to motivate utilities to promote energy efficiency. Our evaluation suggests that there was a significant divergence of opinion about the relative merits of this approach among key participants. The PSCW staff viewed the experiment as highly successful in terms of motivating MGE and other Wisconsin utilities to increase conservation services; MGE staff were not enthusiastic about the basic approach, while other utilities reacted negatively. Despite the Competition's problems and limitations, the program clearly stimulated MGE to develop a broader menu of conservation services for its customers and to implement these programs more aggressively.

We also briefly compared the Competition with four other alternative regulatory strategies that are being implemented in various states to stimulate utilities to improve their DSM efforts: (1) DSM programs mandated by PUCs, (2) provision of financial incentives to utility shareholders, (3) collaborative planning processes, and (4) DSM bidding. These various approaches are not mutually exclusive, and in many cases are being pursued simultaneously by PUCs and utilities. The advantages and disadvantages of the various options were examined in terms of overall regulatory philosophy, implications for the roles of utility and third-party providers, as well as specific criteria and objectives used to assess utility DSM programs.

We found that the Competition, as a "stick," is just one of several approaches that can be used by PUCs. The appropriateness of each option, or the combining of several of the approaches, will depend to a great extent on a PUCs overall policy objectives, PUC organizational capabilities (e.g., large or small staff) and approach (e.g., proactive or mainly reactive), and consideration of a utility's specific circumstances. Our analysis suggests that the Competition approach may have limited applicability in other states. The ability to transfer this approach may be limited because of reluctance by energy service firms to compete directly against well-established utilities in Competitions, given that other opportunities may

be more attractive and less risky for energy service firms in the current business environment. For example, utility-sponsored programs are expanding rapidly in several regions and utilities are contracting out much of this work to third-party providers. Moreover, ESCOs may be more interested in the long-term contracts that are offered through DSM bidding programs and the prospects of a less adversarial relationship with the utility. In addition, the feasibility of the MGE Competition was improved because of a unique combination of factors including the long-term working relationships established between the PSCW and utility staff as a result of Wisconsin's Advance Plan process, the geographic proximity of the utility and PSCW staff, and the distinctive characteristics of MGE and its customers.

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CHAPTER 1. INTRODUCTION

This report describes the process evaluation of the design and implementation of the Energy Conservation Competition Pilot (hereafter referred to as the Competition), ordered by the Public Service Commission of Wisconsin (PSCW) with a conceptual framework defined by PSCW staff for the Madison Gas and Electric (MGE) Company. This process evaluation documents the history of the Competition, describing the marketing strategies adopted by MGE and its competitors, customer service and satisfaction, administrative issues, the distribution of installed measures, free riders, and the impact of the Competition on MGE, its competitors, and other Wisconsin utilities. We also suggest recommendations for a future Competition, compare the Competition with other approaches that public utility commissions (PUCs) have used to motivate utilities to promote energy efficiency, and discuss its transferability to other utilities.

1.1. COMPETITION OVERVIEW

MGE is an investor-owned combination gas and electric utility, serving the City of Madison, Wisconsin, and surrounding territory in three counties. In its Order of June 14, 1988 (Docket number 3270-UR-102), the PSCW authorized MGE to encourage energy conservation and efficiency in the use of gas and electricity among its customers through an innovative and experimental program, the Competition. The Competition was to have the following primary objectives:

- Motivate MGE to improve its conservation efforts in terms of both the quantity and cost-effectiveness of conservation achieved.
- Provide an opportunity for the development of exceptional conservation services for utility customers by allowing conservation providers, in addition to MGE, funds to design and implement innovative and competing programs.
- Test how cost-effectively conservation services can be delivered through various marketing services, strategies, and providers.
- Test the usefulness of the Performance Score as a measure of cost-effective conservation achieved and its usefulness as a tool for pursuing a least-cost resource strategy.
- Test whether the Competition format is a regulatory strategy worthy of future pursuit.

During the Competition, MGE offered conservation programs of its own design to three targeted customer sectors: small commercial and industrial (C&I), large C&I, and the residential rental (multifamily) sector.* The total budget of these programs for MGE was \$950,000. Simultaneously, three other firms chosen through a competitive bidding process offered their own conservation programs, each targeted to one of the three sectors: Honeywell Building Services in the large C&I, A&C Enercom in the small C&I, and Building Resource Management Corporation (BRMC) in the rental sector.** The total budget of these programs was also \$950,000. In each sector, MGE and its competitor competed to provide conservation services to the same group of customers. At the end of the Competition, the competitor achieving the most energy conservation cost-effectively in each sector was to receive a cash incentive (bonus).

The administration of the Competition was overseen by a three-member Panel comprised of one MGE representative, one PSCW representative, and one independent third-party representative. Determination of policy guidelines, resolution of disputes, tracking of results, and other aspects of the Competition were the responsibility of the Panel. In addition, an independent Monitor, selected by the Panel, assisted in determining the performance of each competitor.

Delivery of conservation services under the Competition commenced in November, 1988. Competition in the small and large C&I sectors lasted nine months and ended July 1, 1989; the rental competition began on February 1, 1989 and lasted for a period of one year. At the end of the Competition, MGE won in the small C&I and rental sectors, but lost in the large C&I sector.

1.2. EVALUATION OBJECTIVES

Lawrence Berkeley Laboratory was asked by the PSCW and MGE to address four primary evaluation objectives of the Competition:

- Assess if the Competition format is a regulatory strategy worthy of future pursuit.
- Determine how conservation services and/or future such Competitions can be improved.
- Assess the usefulness of the impact accounting methodology used in the Competition.

* The residential rental sector was limited to buildings with five or more dwelling units.

** At the time of the Competition, A&C Enercom was called A&C Consultants, Inc.; in this report, this company is referred to as A&C.

- Compare the Competition with other regulatory strategies in promoting conservation.

The following research questions were identified for each objective:

Objective 1: Is the Competition format a regulatory strategy worthy of future pursuit?

- 1.1. Did the Competition motivate MGE to improve its conservation services to its customers, and if so, in what sectors did this improvement occur? And who was motivated at MGE: upper management? program staff?
- 1.2. Although difficult to disentangle, to what extent were improvements due to the Competition itself, rather than the increased regulatory presence engendered by the Competition? For example, was being "Number 1" in a competition a sufficient incentive?
- 1.3. Did the Competition motivate any other Wisconsin utilities to improve their own conservation services? And, if so, in what areas?
- 1.4. What were the unintended consequences of the Competition: for example, "cream-skimming" (installing short payback measures while excluding other measures), ineffective use of funds, or decreased morale on the part of participants?
- 1.5. If unintended consequences did occur, how seriously did these affect the success of the Competition in meeting its objectives?
- 1.6. Could such unintended consequences be controlled in future competitions?
- 1.7. Was the competition reasonably fair to all competitors, and what, if any, improvements could be made in this regard?
- 1.8. Did the Competition demonstrate that the long-term level of innovation in DSM programs can be increased through the participation of competitive non-utility entities?
- 1.9. Did the Competition demonstrate conclusively whether or not it is possible to cost-effectively administer such a competition between a utility and an outside entity? Where did extra costs and cost-savings occur? (Program cost-effectiveness will be examined in the impact evaluation.)
- 1.10. Did the Competition format show promise as a yardstick, by demonstrating to the utility the level of energy conservation that was feasible to achieve in the near-term within budget levels?

Objective 2: How can conservation services and/or future Competitions be improved?

- 2.1. How were the competitors selected? What kind of bidding process was used, and what criteria were used for selecting bidders? How could the bidding process be improved?
- 2.2. What caused each winning competitor to win, and what were the general determinants of the efficacy of various strategies?
- 2.3. How successful were the various marketing strategies used by the competitors in promoting customer investment in conservation? And how did these strategies vary by sector?
- 2.4. What was the quality of service provided by MGE and its competitors, as measured by reported customer satisfaction, breadth of customer service, and quality assurance reviews by the Monitor?
- 2.5. How did the tactic of assigning the same territories to both MGE and its competitors work out? Did customer or staff confusion result, and are there better alternatives?
- 2.6. How did the use of the performance score affect the actions of competitors?
- 2.7. What administrative problems occurred in the Competition and how could they be solved in future Competitions? Were these problems limited to program development and approval? Where did these problems occur: in MGE, PSCW, between MGE and PSCW, and/or between PSCW and the competitors? Were these problems unique to the Competition, or standard administrative problems?
- 2.8. Did the performance bonus provide an incentive, and, if yes, was the size of the bonus appropriate? If not, would a larger bonus have been an incentive? Whom did the bonus affect: upper management? program staff?
- 2.9. Did any innovative ideas, strategies, or tactics result from the Competition? Did bundling of energy-conserving opportunities occur (e.g., grouping of low-cost and high-cost measures, or technologies with short, medium, and long-term pay-backs)?
- 2.10. What should be the proper amount of time for implementing this kind of program: one year? two years? etc. If more than one year, should the competitors and sectors remain the same, or should new competitors and sectors be introduced?

Objective 3: How useful was the impact accounting methodology?

- 3.1. Was the performance score a reasonable measure of overall performance, and how could it be improved?
- 3.2. How much of the conservation achieved by each customer would have occurred naturally in the absence of the Competition (e.g., estimation of the occurrence of free ridership and lost conservation opportunities), and were there any significant differences between competitors in this regard?
- 3.3. What technical and methodological principles should be followed in the forthcoming impact evaluation of the program?

Objective 4: How effective was MGE's program compared to other demand-side management programs in promoting conservation?

- 4.1. How innovative was the Competition, compared to other DSM programs in the U.S., in promoting energy-efficient technologies (program delivery and marketing strategies) and in the type of equipment installed?
- 4.2. In addition to MGE's program, what other approaches can regulators use to promote the development of an energy services industry?
- 4.3. In addition to MGE's program, what other approaches can regulators use to motivate utilities to improve and expand DSM opportunities?

1.3. METHODOLOGY

In order to answer the above research questions, a variety of data sources was used: written materials, in-depth interviews with key project participants and individuals outside of MGE, survey of trade allies (vendors) in the Madison area, survey of customers who participated in the Competition, and a data base of measures installed in the Competition. Several sources of written material were examined for the preparation of this report: (1) published papers on the Competition written by some of the key participants in the Competition; (2) written minutes summarizing monthly Competition meetings; (3) promotional literature from MGE and its competitors showcasing their programs and energy-efficiency products and services; (4) rate case testimony by PSCW and MGE staff, and (5) papers on demand-side management programs outside of Wisconsin. Specific references are listed near the end of this report.

Interviews were held with three groups of Competition participants: (1) key participants from the PSCW, MGE, the other competitors, and other Wisconsin utilities; (2) trade allies (vendors); and (3) customers who participated in the Competition. Prior to the start of the process evaluation, a list of key participants was prepared, based on a review of available documents and discussions with key PSCW and

MGE staff. Twenty-eight individuals were identified and interviewed (i.e., nobody refused to be interviewed); the interviewees are listed in Appendix A. The interviewees included individuals from the PSCW, MGE, the three competitors, and three Wisconsin utilities (Wisconsin Power and Light, Wisconsin Electric Power Company, and Wisconsin Public Service Corporation), as well as the Monitor and the independent third-party member of the Panel. The interviews were conducted in-person or by telephone during the period January-March 1990. A structured questionnaire was used, and interviews lasted approximately two hours. The questionnaire used in the interview is shown in Appendix B. The key topics addressed in the questionnaire corresponded directly with the research objectives and questions described previously.

Because of the importance of trade allies (vendors) in the Competition, phone interviews were conducted with those vendors that were the most active in the Competition. The top dozen most active vendors were taken from a list of vendors that worked with MGE in the Competition. Seven interviews were conducted (the list of trade allies interviewed is shown in Appendix C); three of the vendors sold energy-efficient heating, ventilation, and air-conditioning (HVAC) equipment (such as boilers, furnaces, air-conditioners, and radiant heating systems and controls), two sold energy-efficient lighting equipment (e.g., optical reflectors, screw-in fluorescent bulbs, and exit lights), one sold energy-efficient residential appliances (e.g., refrigerators and freezers), and the last vendor sold an array of energy-efficient equipment to both residential and C&I customers. The remaining vendors were not interviewed because they did not respond to messages left on answering machines, or because they do not sell products (e.g., a property management company was inadvertently included in the list of vendors). A statistical sample was not drawn; the purpose of this survey was to obtain a general understanding of how trade allies perceived the Competition and what impact the Competition had on their business. Telephone interviews were conducted in March and April 1990. A structured questionnaire was used, and interviews lasted approximately twenty minutes. The questionnaire used in the interview is shown in Appendix D. The key topics asked in the interview included the following: knowledge and familiarity of program, initial contact with program, perception of MGE's marketing strategies, satisfaction with program, impact of program on trade ally, suggested improvements to MGE's relationships with trade allies, and free riders.

A telephone survey was conducted between April 9 and May 2, 1990 with a sample of customers that participated in the Competition. The details of the sampling design are described in Appendix E, and the questionnaires used in the survey are shown in Appendix F. Overall, 449 interviews were completed, representing 82% of the sampled participants. A structured questionnaire was used, and interviews lasted approximately seven minutes. The key topics asked in the interview included the following: experiences with the Competition, importance of factors affecting customer's decision to install energy-efficiency measures, free ridership, and the level of customer satisfaction with specific installed measures. Where possible, descriptive statistics are presented in the report to indicate any evidence of statistically significant differences among the six groups of participants (MGE and its competitor in each of the three

sectors). For nominal-level variables (e.g., Yes/No), the Chi-square test was used as a test for independence. For interval-level variables, the T-test was used to statistically compare means for two groups and the F-test (analysis of variance) for more than two groups; standard deviations are also presented. Those variables judged to be statistically significant had probabilities of 0.05 or less.

The Monitor and MGE jointly created a data base to keep track of the performance of the utility and its competitors in the Competition (hereafter referred to as the Competition data base). This data base was used in the process evaluation for selecting the sample for the customer survey and for examining the distribution of measures installed by customers participating in this survey.

1.4. ORGANIZATION OF REPORT

Chapter 2 provides the context of the Competition by examining Wisconsin's regulatory culture and the distinctive characteristics of both MGE and the City of Madison. In Chapter 3, the design of the Competition is briefly presented in the discussion of key program components, such as the Panel, the Monitor, and the selection of competitors. Program strategies of MGE and its competitors form the basis of Chapter 4, while Chapter 5 examines possible reasons for explaining the success and failures of the winners and losers of the Competition. Customer service and satisfaction and the role of trade allies are also discussed in this chapter. Administrative issues are the focus of Chapter 6, especially those dealing with budgetary concerns, performance measurement, and the roles of the Monitor and the Panel.

In Chapter 7, we examine information on program impacts, including estimated savings, and the distribution of measures installed in the Competition. Using the results from the customer survey and personal interviews, the important issue of free riders is also analyzed in this chapter. Chapter 8 reviews the impact of the Competition on MGE, its competitors, other utilities, and customers from a motivational perspective. In Chapter 9, we suggest changes and refinements that could improve the Competition if it were repeated, and we compare the Competition with other approaches that have been employed by PUCs to get utilities to promote energy conservation programs. The concluding chapter summarizes the findings of this evaluation.

CHAPTER 2. CONTEXT OF COMPETITION

Prior to describing and evaluating the Competition, it is important to understand the Wisconsin context in terms of the existing regulatory environment (i.e., the activities of the Public Service Commission of Wisconsin (PSCW)), the utility environment (Madison Gas and Electric (MGE)), and the geographic area where it was implemented (Madison). This information will be helpful not only for gaining a better understanding of the Competition, but also for determining the transferability of this program to other utilities in Wisconsin and the U.S. (as discussed later in this report).

2.1. WISCONSIN'S REGULATORY CULTURE

The PSCW order mandating the Competition reflected Wisconsin's regulatory culture (Nichols, 1989). The Wisconsin regulatory environment is distinguished by the following characteristics (Nichols, 1989):

- an integrated planning framework within which utility conservation investment is nurtured;
- precedents for formal and informal utility and commission staff communication relating to demand-side activities;
- a capably staffed conservation division at the PSCW;
- a social or total resource cost perspective for assessing utility conservation program investment; and
- cost recovery procedures ensuring utility recovery of prudently invested conservation expenditures.

The first three features (which overlap greatly) are discussed below in more detail.

Wisconsin has a long and activist regulatory tradition. The pre-approval requirement for construction of new power facilities in 1931 marked a major step towards energy planning and, in the mid-1970s, the siting of nuclear power plants became the critical energy planning issue for the PSCW. Energy planning became an issue in itself in 1975, when a central planning process (the Advance Planning Process, APP) started. As the APP has evolved, the PSCW has encouraged end-use efficiency investments by energy utilities (such as the Competition) in a context of integrated energy resource planning. At the same time, the PSCW has become more involved in utility issues and programs. In sum, there has been over 15 years of joint planning between utilities and the PSCW.

The PSCW has developed a proactive approach to regulation and rarely uses incentives to influence utilities to promote energy conservation, because the Commission sees incentives as short-term remedies

and variable in influence in motivating utilities to promote energy efficiency.* Consequently, the PSCW staff have developed a variety of formal and informal mechanisms for closely monitoring utility demand-side management. Most monitoring is conducted by PSCW staff. If an issue cannot be resolved, it goes to the Commissioners.

The PSCW staff are seen by both utilities and the PSCW Commissioners as skeptical, yet very proactive and involved (not just proposing) in the areas of planning, program design and implementation, rates, and regulation. As a result, the PSCW has earned a reputation as being one of the most aggressive and innovative regulatory commissions in the country. The PSCW believes that their ability to review assumptions used in initial program development makes it easier for them to agree with the conclusions of policies and programs proposed by utilities. According to PSCW staff, when the PSCW is involved early in the process, they play fair with the utilities: they do not blame utilities and do not try to second guess them after reaching an agreement with them. Thus, the PSCW feels that they buy into an utility's information and decision making processes, while the utility buys into the PSCW's point of view. As a result, decisions are often accepted without being disputed (most decisions at the PSCW are unanimous with little dissent), and each side develops greater trust of and respect for each other. A good example of this process is the recently completed work on transmission systems in Wisconsin: after some tumultuous years at the beginning, the approval process on transmission lines is now relatively smooth.

While some utilities agree that there is a good working relationship with the PSCW, other utilities are not enamored with the approach taken by the PSCW. For example, one senior utility manager thought the PSCW staff had an "insatiable appetite" for energy conservation: they always want more energy conservation programs to be developed. A more general concern raised by some utilities was that the PSCW was interfering with the management of utilities rather than regulating them. Specifically, some utilities thought: (1) the PSCW staff spent too much time on details at the technology level (rather than on policy), and, therefore, were not using their resources efficiently; (2) the PSCW staff did not trust utilities' numbers and, therefore, spent too much time reviewing these numbers; and (3) the PSCW did not have sufficient resources to "micromanage," so that the PSCW staff's commitment and hard work resulted in a frustrated workforce at the Commission. In conclusion, these utilities felt that the PSCW's emphasis on monitoring and evaluation made the PSCW regressive, not progressive.

The PSCW Commissioners believe they have a strong staff and have developed considerable trust in their staff. The Commissioners feel that a strong staff is important for preserving the PSCW's institutional memory and continuity, as Commissioners come and go. Wisconsin utilities, however, are concerned that the Commissioners and administrators of the PSCW have given too much power to individual staff members: the latter are seen as leading "crusades" without being controlled by their superiors. In

* Despite its reservations, the PSCW has used incentives more often than most public utility commissions.

fact, these utilities feel that the PSCW staff, rather than the Commissioners, are issuing orders. Consequently, these utilities see the Commissioners dealing with individual staff members who have lots of opinions and favorite programs (such as the Competition); as a result, they feel that a cohesive policy by the PSCW is missing, and utilities do not know which direction the PSCW is going.

In summary, from a utility perspective, there is an adversary relationship between the PSCW and utilities in which each party has adapted to each other. While the PSCW is considered a powerful organization, it is now seen by some utilities as having lost influence and direction due to the Commissioners' reliance on staff and their emphasis on management (rather than regulation) of utility affairs. From the PSCW perspective, the relationship between the PSCW and utilities is not adversary, but an "accommodating relationship" in which each party respects and helps each other in providing the best service to the state's ratepayers. Thus, the evaluation of the Competition reflects this tension in the viewpoints of both the PSCW and its regulated utilities.

2.2. MADISON GAS AND ELECTRIC

MGE is an investor-owned combination gas and electric utility, serving the City of Madison, Wisconsin (population of 176,000 (in 1986; U.S. Bureau of the Census, 1987), and surrounding territory in three counties. In its dual service capacity, MGE provided electricity service in 1988 to 109,487 customers and natural gas service to 82,015 customers (MGE, 1989a). MGE's gas service territory is larger than its electricity service territory. In 1988, electric sales were 2,190 GWh with a system hourly peak demand of 517 MW, and gas sales were 169 million therms with a system peak day demand of 1.4 million therms (MGE, 1989a). Approximately 60% of its \$210 million annual revenues is derived from MGE's electric operation and 40% from its natural gas distribution (DeForest and Berkowitz, 1990). MGE owns and operates one plant and is a co-owner of another plant.

MGE's conservation programs are similar to those of other Wisconsin utilities. In the residential sector, MGE offers residential audits, the Weatherization Assistance Program (WAP), and the Gas and Electric Space-Heating Conversion Program (MGE, 1989b). In the commercial sector, MGE provides services under the Commercial Energy Efficiency Program and the Large Commercial and Industrial Analysis Services Program. In the rental sector, MGE offers the Rental Unit Energy Information Program (MGE, 1989b). Financial incentives (rebates, loans, and guaranteed savings) are offered in all of these sectors (MGE, 1989b). MGE spent \$6.7 million on conservation programs in 1990; this amount represented about 2.5% of their gross operating revenues, an increase from the 2.0% level in 1987 (similar to other Wisconsin utilities, but lower than the 4% level currently being spent by utilities aggressively promoting energy efficiency in the Northeast where capacity problems are more serious than in Wisconsin).

The following features differentiate MGE from other Wisconsin utilities:

- Relatively small in size (the smallest of the big utilities in Wisconsin, see Table 2.1): enabling it to have more control over the work of its field representatives and more direct involvement of top management in operations, compared to larger utilities.
- Small, compact, and urban utility service area that is centrally based: easier for MGE to deliver conservation services, communicate with its customers, and respond quickly to customer needs and problems.
- Poor load factor (54%) for electric utility operations: MGE has the lowest percentage of industrial (manufacturing) and agricultural customers in Wisconsin. The commercial sector is heavily institutional (State government and University of Wisconsin). A number of high technology firms are located in the service area, and MGE does have a greater percentage of retail and leased space than other Wisconsin utilities.
- Highest percentage of rental customers in Wisconsin: the rental sector has endemic institutional barriers that hinder investments in energy efficiency.
- Unique customer base in terms of demographics and attitudes: high level of education (highest in the U.S.) and environmental and energy conservation awareness, favoring investments in high-efficiency products.
- One of the highest electricity rates among utilities in Wisconsin: making customers more aware of energy-efficiency opportunities.
- Conservative and traditional upper management historically—regulators questioned MGE's interest in promoting demand-side management activities.
- Innovative Marketing Department: known for their good customer service, innovative gas rates, and detailed customer data base.
- Located in same city as the State Government: keeping MGE in the public eye.
- Located in same city as the PSCW: making it easier for the PSCW to monitor MGE's programs.

Table 2.1. Wisconsin Utilities*

Utility	Customers (000's)	Revenue (\$000's)	Sales (MWh)
Madison Gas and Electric Company	109	126,477	2,195,656
Northern States Power Company	200	219,501	4,246,898
Wisconsin Electric Power Company	840	1,076,655	18,867,549
Wisconsin Power and Light Company	325	371,082	6,933,253
Wisconsin Public Service Corporation	307	360,834	6,802,115

* Top five Wisconsin utilities in 1988 (EIA, 1990).

2.3. MADISON

Since MGE is the primary provider of electricity and gas services to the residents of Madison, most of what has been said about MGE's customers is true of Madison (Wisconsin Power and Light, based in Madison, serves customers outside the city limits of Madison). The University of Wisconsin has a strong effect on the community: the residents have a high education level and tend to be more liberal, socially responsive, and environmentally aware than residents of most other communities in Wisconsin. Therefore, people are more amenable to participating in energy-efficiency programs (such as the Competition) and often install measures on their own.

One important characteristic of Madison that is open to debate is the level of "infrastructure" that existed in Madison prior to the Competition. A number of people thought there was not a shortage of contractors and consultants in the Madison area, as evidenced by the numerous HVAC contractors and trade allies (70) in the area. In addition, some MGE staff thought that there was not a shortage of expertise in the rental sector, because the market was not large and MGE was able to meet existing needs. Similarly, in the C&I sectors, MGE thought that there was not a shortage of expertise, because there were enough consultants. On the other hand, a number of people thought that there was a shortage of full-time energy conservation professionals in the Madison area, especially in the rental and small C&I sectors. They assert that although trade allies and engineering consulting firms are available, energy efficiency is not their sole business.

CHAPTER 3. COMPETITION DESIGN

The Competition was conceived in Madison Gas and Electric's (MGE) 1988-89 rate case. The idea was generated and developed by staff of the Public Service Commission of Wisconsin (PSCW), presented in testimony in Docket No. 3270-UR-102, and adopted with some modifications in the PSCW's Order of June 14, 1988. This chapter reviews the objectives and design of the Competition.

3.1. OBJECTIVES OF COMPETITION

Three key questions underlying the Competition were: (1) was MGE the best medium for delivering programs? (2) did MGE have the motivation and enthusiasm to deliver energy conservation? and, if not, (3) would MGE be more motivated with a program like the Competition, or with more conventional PSCW regulation?

The PSCW staff were dissatisfied with the scale and quality of the existing demand-side management programs of MGE. According to PSCW staff, the basic problem was that MGE had good ideas and concepts, but was not implementing many significant programs; therefore, the PSCW staff and the Commission believed MGE needed to be motivated. Thus, as seen by the Commission and PSCW staff, the **primary objective** of the Competition was to compel MGE to install more energy efficiency measures in its service territory. Changes in attitudes and commitment to energy efficiency were not as important to some regulatory staff as the utility's actions and activities that led to reduced customer energy use. Some PSCW staff did hope that the Competition would motivate corporate management to give higher internal priority to its conservation services. In addition, some PSCW staff thought that motivating senior management at MGE would allow MGE's Marketing Department, the group primarily responsible for designing and implementing energy-efficiency programs, to do their job more effectively. Some PSCW staff also hoped that this priority would push the company to win the Competition and to make long-lasting changes within its organization. In summary, the PSCW staff saw the Competition primarily as a psychological incentive, rather than an attractive financial incentive.*

The PSCW staff felt the Competition had a number of other important objectives:

1. *Accelerate the pace of cost-effective conservation implementation.* Faster and more responsive energy conservation programs were needed in the commercial and industrial (C&I) sectors, in contrast to the rental sector in which MGE had been working for the previous year.

* Financial incentives had been used by the PSCW for other Wisconsin utilities, but with mixed success (see Chapter 10).

2. *Identify additional institutional resources for conservation promotion in the service area.* The PSCW wanted to improve the infrastructure in the Madison area for marketing and implementing energy conservation equipment. The PSCW felt that entities other than the utility might be able to offer better services, while also acting as "quality control" over utility actions. In addition, the PSCW felt that MGE was not willing to expand its demand-side management staff. In the Competition, the PSCW could assess the effects of private sector and utility conservation efforts given similar markets, budgets, and time frames. MGE did not see this as an important objective of the Competition, since the bonus and the length of time for implementing the Competition was not deemed to be sufficient for expanding existing businesses, or creating new businesses, in Madison.
3. *Help to identify and test innovative conservation delivery or marketing approaches.* The PSCW felt that a menu of diverse services was needed in the Madison area. These services were lacking because of the perceived poor conservation infrastructure noted in Chapter 2 and because there was not adequate staff in the utilities to do all of the work. Both the PSCW and MGE felt that there was a need to test ideas: to see what makes certain customers take action while others do not, and to see how effective different types of groups were in supplying energy conservation services. However, as the Competition ran its course, some participants felt that this objective became less important to the objective of winning the Competition.
4. *Ensure high levels of customer service.* This was a particularly important objective for MGE which prided itself on maintaining high levels of customer satisfaction.
5. *Determine ways to measure utility performance.* The Competition was seen as one way of measuring utility performance. A method of calculating performance was used in the Competition, although it was replaced by another formula after the Competition ended (see below).
6. *Test a new regulatory strategy (of competition between a utility and a vendor) in a conservation setting.* The PSCW staff was interested in exploring different alternatives for stimulating utilities to promote energy efficiency (such as financial incentives for shareholders and more regulation) and considered the Competition as one model to be used for other utility companies. Thus, the Competition should be viewed as an experiment that, depending on the results, might be tested in another location at another time.

3.2. COMPETITION DESIGN

The Order mandating the Competition provided only a skeleton framework for the Competition. The Order briefly described the sectors that were to be targeted, listed the spending limits for each competitor, defined conservation, described the makeup of the Competition Panel, provided the calculation for measuring performance and for calculating the bonus given to the winners in the Competition, discussed the competitor selection process, and presented how the Competition should proceed. These topics were clarified and expanded as the Competition progressed over time, and are described in greater detail in this chapter.

3.2.1. Sectors

The Competition was applied to three sectors: the large commercial and industrial (C&I) (more than 100,000 kWh, 25,000 therms, or 2,500 mBtus of any other fuel per year based on energy use from the last twelve months), the small C&I (less than 100,000 kWh, 25,000 therms, or 2,500 mBtus of any other fuel per year based on energy use from the last twelve months), and the residential rental (buildings with five or more dwelling units) sectors. While new construction was eligible, it was expected that the thrust of the programs in these sectors would be retrofit applications (Nichols, 1989).

The principal reason for selecting these sectors was the activity level and maturity of existing utility programs. According to the PSCW, MGE was not doing well in the small and large C&I sectors, despite the large savings potential (e.g., Wisconsin Electric Power Company had recently shown in its Smart Money program that considerable energy savings were possible in these sectors (Nichols, 1988)). Thus, the PSCW felt that MGE was not feeling a sense of urgency to promote energy efficiency through new programs in these sectors.

According to the PSCW, the residential programs were conceptually well-developed, but MGE had not implemented many programs in this area (although they had done a lot of preparation). The rental sector was also chosen because 25% of MGE's customers were in the rental sector (Table 3.1) and because it was felt that substantial expertise in designing and implementing programs was available for competing with MGE in this sector.

These three sectors were also chosen because (1) the PSCW felt that it was not a difficult problem for utilities to address these sectors, (2) utilities were experienced in working with the rental and C&I sectors, and (3) these sectors represented natural breakpoints for designing and implementing programs. While some customers were expected to fall in between small and large C&I (e.g., owners of both large and small commercial buildings), this problem was not considered significant and had been handled in other programs.

It was possible for one competitor to compete in all three sectors, but this did not occur. As discussed in the previous section, the PSCW wanted the competitors in the Competition to try different

marketing strategies and delivery systems; one competitor per sector would maximize the amount of innovation. This approach, however, was felt to be disadvantageous by MGE because they had to compete in all three sectors, while a competitor competed in only one sector. However, this disadvantage was counterbalanced by the advantage of flexibility: MGE could switch people from one sector to another sector during the Competition, depending on their resources and their competitive edge in each of the sectors.

Table 3.1. Number of MGE Accounts by Building Type

	Number	Percent
SMALL C&I*		
Office	2,289	30.4%
Restaurant	402	5.3
Retail	1,711	22.7
Grocery	150	2.0
Warehouse	529	7.0
Schools	44	0.6
Colleges	22	0.3
Health	232	3.1
Hotel/Motel	57	0.8
Miscellaneous	1,538	20.4
No SIC	552	7.3
<i>Subtotal</i>	<i>7,526</i>	<i>100.0</i>
LARGE C&I**		
Office	923	34.5%
Restaurant	235	8.8
Retail	234	8.7
Grocery	118	4.4
Warehouse	136	5.1
Schools	80	3.0
Colleges	190	7.1
Health	99	3.7
Hotel/Motel	61	2.3
Miscellaneous	543	20.3
No SIC	58	2.2
<i>Subtotal</i>	<i>2,677</i>	<i>100.0</i>
RENTAL (5 UNITS OR MORE)		
Rental	3,155	100.0%

* Small Commercial = <100,000 kWh and/or < 25,000 therms

** Large Commercial = > 100,000 kWh and/or > 25,000 therms

Source: Madison Gas and Electric, Customer Information Service, Nov., 1986.

3.2.2. Budgets

The Order specified budgets of equal magnitude for MGE and its competitor for each sector (Table 3.2). The budget numbers were developed by PSCW staff and were established based on MGE's budget request. The competitors had a total of \$950,000 to spend in the Competition. MGE received the same amount to spend in their three sectors, except \$75,000 of their total was to be specifically used for general administrative costs, rather than for direct incentives. The allocation of the funds by sector reflected the utility's existing allocations (percentages) of dollars among sectors and by fuel (electricity and gas). Of the rental budget, 65% was to be spent on gas technologies and 35% on electric technologies. In the other two sectors, 65% of the budget was to be spent on electric technologies and 35% on gas technologies.

No more than 75% of the budget for each fuel type (electric or gas) could be spent on one end use (e.g., air conditioning, lighting, space heating, water heating, and refrigeration). And no more than 50% of each sector's budget could be used for energy-efficiency measures that had a customer payback of less than one year (without including the incentive in the payback calculation). Incentives were limited to \$25,000 per customer in the small C&I and rental sectors and \$50,000 per customer in the large C&I sector.

Table 3.2. Competition Budget*

Sector	Expensed	Rate Based
Rental		
MGE Administration	\$60,500	
MGE Direct Incentives		\$132,000
Competitor		\$209,000
Small C&I		
MGE Administration	\$113,500	
MGE Direct Incentives		\$248,000
Competitor		\$392,500
Large C&I		
MGE Administration	\$101,000	
MGE Direct Incentives		\$220,000
Competitor		\$348,500
TOTAL	\$275,000	\$1,550,000

* MGE's budget does not include an additional \$75,000 from MGE's general conservation administration budget (PSCW, 1988).

3.2.3. Definition of Conservation

In the Competition, conservation was defined as it had been used in previous PSCW mandates: "To improve the efficiency of a customer's use of energy by reducing the amount of energy consumed by that customer for a specific end-use. Lifestyle changes such as thermostat set-back are included in this definition. Shifting of load, fuel switching to other nonrenewable fuel sources, and promotion of off-peak usage which may make more efficient use of generation or distribution facilities are not included in this definition. Conservation of gas and electricity is to be included."

3.2.4. Selection of Competitors

A competitive Request for Proposals (RFP) was used to select the competitor for MGE in each customer sector. The RFP and bid evaluation criteria were developed by the Competition Panel. One of the intents of the RFP process was to maximize innovation, a key objective of the Competition from the PSCW perspective. The RFP process tried to filter out the best kinds of programs by looking at program design and marketing plans. As a result, the RFP process replaced the need for the PSCW to develop guidelines for designing and marketing conservation programs.

As shown in the list of criteria used to select the competitors (Table 3.3), the effectiveness of the competitor's marketing approach was key to their being selected (25% of total points). The Competition Panel wanted viable competitors that would get energy conservation done, and they wanted diverse marketing approaches. The creativeness and innovativeness of their approach, their perception of needs, and the ways to address these needs (i.e., their marketing approaches) were the focus of the selection process. For example, MGE's competitor in the small C&I sector was chosen because their strategy of knocking on customer doors without previous notification ("cold calls") was considered to be a good idea and made a lot of sense: getting to know your customer better was a necessary precursor for marketing a program. Other criteria considered important included the proposer's experience as a company, staff, and experience in designing and implementing such a program.

The interview process was critical in making the final selections: face-to-face contact allowed the Panel to see the personalities of the people who were going to work with the PSCW and MGE, and who were going to run the Competition in the field. The importance of the interview process was exemplified by the fact that a vendor who had ranked second in the formal evaluation process was selected for the Competition because they did so well in the interview process.

MGE mailed the RFP to a list of potential bidders in August 1988, which was followed by a bidders' conference (hosted by MGE and attended by the Panel). Some two dozen firms were represented at the conference (Nichols, 1989). Seven large C&I sector proposals and six small C&I proposals were subsequently received. Bids were evaluated according to the criteria in the RFP. The Panel interviewed

the highest-ranked bidders and, in some cases, requested minor modifications. Competitors were selected by the Panel, and contracts executed between them and MGE.

Table 3.3. Criteria for Proposal Selection

Criteria	Points
Assurance of achieving a minimum level of conservation	10
Innovation and creativity in the technologies, marketing methods, and incentive options in the proposed conservation and energy-efficiency services	25
Likely cost-effectiveness of proposed approach	15
Thoroughness in exploiting conservation potential	15
Assurance that customers will be provided with high-quality services, products, and installations	10
Previous relevant experience of the bidder (technical competence)	15
Financial strength of the bidder	10
	<hr style="width: 50%; margin-left: auto; margin-right: 0;"/> 100

Following the ranking of bids and interviews with the highest-ranked bidders, the Panel selected Honeywell as the large C&I competitor, and A&C as the small C&I competitor. It is important to note that Honeywell did not have to pay for its administrative costs (labor, promotion, or overhead) from its Competition funds because it asserted that its planned work was part of its ongoing, normal activities. As a result, Honeywell had more money to work with compared to MGE and its other competitors which had to take administrative costs out of their budgets (i.e., the costs of promotion and labor were removed from their funds). The C&I Competition began as scheduled on Nov. 1, 1988, and concluded on July 31, 1989.

In response to the original RFP, only a few rental sector proposals were received, and, in contrast to the large C&I sector, none were satisfactory. This result reflected the insufficient amount of time devoted to publicizing the RFP and the poor marketing of the RFP to potential contractors with expertise in the rental sector. The Panel decided, however, to re-bid the rental Competition. At this point, another interested PSCW staff member assisted the Panel by networking in the conservation services field to locate potential bidders who might be interested in the opportunity represented by the forthcoming RFP.*

* This staff member also assisted the Panel in other activities: coordination and conflict resolution activities, background work leading to the Competition, design of the Competition, and program monitoring.

reflected the avoided capacity benefits. Though the PSCW includes benefits external to the utility's avoided costs in its criteria for utility conservation investment, no credits for externalities were included in the Competition.

In the rate case, the PSCW staff had proposed using participant's actual energy bill reductions as the measure of conservation value. MGE urged engineering estimates of savings be employed instead, and, in order to get the Order adopted by the PSCW, this approach was adopted in the Competition. The actual effects of the Competition and its component programs upon energy consumption and peak demand will be examined as part of an impact evaluation that is currently being conducted.

A **bonus** was established to reward winning competitors in each sector. The following sliding scale incentive was used:

$$Bonus = \frac{PS_{winner}}{PS_{loser}} * 10\% * Costs_{winner}$$

The maximum bonus was 30% of expenditures. Thus, the bonus ranged from 10 to 30% of the funds spent (up to the conservation budget limits) by the winning competitor in each customer sector, to go to the party winning the Competition in that sector. Thus, if the winner had spent \$200,000 and had a performance score that was twice that of the loser's, then the winner would receive an \$40,000 bonus. If MGE won all three sectors, the minimum bonus would be \$95,000 and the maximum would be \$285,000.

CHAPTER 4. PROGRAM STRATEGIES

This chapter describes the programs and marketing strategies of MGE and its competitors used during the Competition. The following chapter evaluates the impact of these strategies on the final outcome of the Competition, and Chapter 7 examines in detail the measures that were installed as a result of these strategies.

4.1. LARGE C&I

4.1.1. MGE's Approach

In this sector, MGE offered rebates to customers that purchased and installed qualifying energy-efficiency measures (MGE spent 80% of its Competition funds on rebates; the remaining 20% covered administrative expenses). Three issues affected the calculation of rebate levels: (1) how did the rebate compare with the utility's supply costs? (2) what rebate levels were necessary to motivate customers? and (3) how would the rebate affect the Performance Score? MGE's primary goals were to maximize the performance score *and* to get action (get customers to buy and install measures). To achieve these goals, MGE developed spreadsheets to calculate performance scores based on the unit energy savings of targeted measures, lifetimes, and likely penetration. Rebate levels (program costs) were varied to examine the tradeoffs between market penetration and performance scores. MGE tried to get the best benefit-cost ratio, although some low benefit-cost measures were included in order to get customer attention and involvement. Other measures with low benefit-cost ratios, such as high-efficiency air conditioners, were not promoted by MGE. MGE's approach in the Competition represented the utility's first energy-efficiency strategy that was goal-oriented (i.e., this was the first time that MGE's marketing program was organized to reach specific goals).

Prior to the Competition, most MGE rebates had been directed to electricity energy conservation (some rebates for gas had been provided in the rental and low-income sectors). However, in the Competition, the Conservation Value calculation valued and encouraged gas energy savings and, therefore, both gas and electricity conservation were promoted (as discussed in Chapter 7). In the actual distribution of rebates, gas and electricity measures were evenly split.

In this sector, a pre-calculated rebate was offered for each measure (e.g., \$/lamp, \$/ton, \$/horsepower). In addition, MGE offered a wide range of rebates under a "custom program" requiring pre-approval of rebates for any project which saved demand and energy. Rebates were paid at a flat \$/kW and \$/kWh basis, based on specific operating conditions of the facility and equipment. During the Competition, MGE's rebates ranged from \$10 to \$5,000, or 15 to 100% of measure costs (the upper range was for boiler controls). Pre-approval by MGE was required on all applications to control the flow of dollars and confirm estimated energy savings. The customer had to install the measure within 90 days of the

application. A percentage of the measures was later inspected by the Monitor.

As shown in Table 4.1, MGE used a relatively conventional marketing strategy to promote its program (*Power Plus*): e.g., direct mail, advertising, and utility bill inserts. For each marketing method, MGE designed a tiered approach in targeting technologies (Table 4.2). The three tiers were differentiated by market potential and benefit-cost ratio: Tier 1 targeted technologies with high market potential and high benefit-cost ratios, Tier 3 targeted technologies with low market potential and low benefit-cost ratios, and Tier 2 targeted technologies with characteristics between Tiers 1 and 3. Marketing strategies were selected that were most appropriate for each tier. MGE promoted Tier 1 technologies more heavily than Tier 3 technologies.

Table 4.2. MGE's Marketing Strategy

	Tier 1	Tier 2	Tier 3
Characteristics			
Market Potential	High	Medium	Low
Benefit-Cost Ratio	High	Medium	Low
Marketing Strategy			
Turnkey services	√		
Site visits	√		
Rebates	√	√	
Give away free items	√		
Information services	√	√	√
Market rate financing	√	√	√
Low-interest loans	√	√	√

Table 4.1. Marketing Approaches *

Category	Small C&I		Large C&I		Multifamily	
	MGE	A&C	MGE	Honeywell	MGE	BRMC
Trade allies	VERY IMP	Little used	VERY IMP	Not used	VERY IMP	Little used
Bundling	Little used	Little used	Little used	VERY IMP	Little used	Used
Turnkey services	Used	Not used	Used	Not used	Little used	IMP
Door-to-door (cold calls)	Little used	VERY IMP	Used	Not used	Not used	Used
Telemarketing	Not used**	Not used	Used**	Not used	Not used	VERY IMP
Guaranteed savings	Offered	Not used	Offered	VERY IMP	Not used	Not used
Direct (targeted) mail	IMP	Used	IMP	Used	VERY IMP	Used
Advertising	Used	Used	Used	Used	Used	Used
Bill inserts	Used	Not used	Used	Not Used	Used	Not Used
Presentations	Used	Not used	Used	Not Used	Used	Used
Newsletter	Not used	Not used	Used	Not used	Not used	Used
Handholding	Not used	Not used	IMP	VERY IMP	VERY IMP	Used
Blitz (free measures)	VERY IMP	VERY IMP	IMP	Not used	VERY IMP	IMP
Financing						
Rebates	VERY IMP	VERY IMP	VERY IMP	VERY IMP	VERY IMP**	VERY IMP
Market-rate loans		Not used			Offered	Not used
Low-interest loans		Not used	Offered			Not used
WHEDA loans		Not used	Offered		Offered**	Not used

* IMP stands for important

** Offered but nobody applied

MGE relied primarily on direct mail and trade allies to promote its program. In the direct mail approach, MGE sent special mailers to a selected group of customers. The mailer explained simple technologies; for other technologies listed in the mailer, MGE sent a larger packet of information upon request. A customer would tear off a coupon from the mailer, buy and install the qualifying equipment, and then mail the coupon with proof of purchase to MGE. MGE would send the rebate check to the customer. Neither pre-approval nor energy audits were required, if terms and conditions were met.* Although used previously by MGE, its direct mail efforts improved as a result of the Competition. By using a competitive bidding process for mailing and producing materials, MGE was able to save money; at the same time, this strategy became more effective with a more eye-catching format. In some cases, program marketing was followed by site visits for customers desiring an appraisal of the range of applicable measures in their premises. In other cases, MGE would use the customer's response to the mailer as a lead for door-to-door contacts (often resulting in audits, or "conservation calls"). And in a few cases, the utility provided low-interest loans and recommended the use of WHEDA loans.**

MGE extensively used trade allies as an extension of its sales force (as marketing representatives). At the start of the Competition, MGE organized a breakfast meeting for trade allies to hear about MGE's program; a second breakfast meeting was held when the Competition ended. The approaches used by trade allies differed by type of business. For example, some HVAC firms would tell customers about rebate programs when the customer entered the store. In contrast, some lighting firms were not as busy and had to go out and find customers: these firms would use the rebates as an important component of their marketing strategy to attract additional sales. In both cases, trade allies would help customers complete their application to MGE. Not all trade allies participated in MGE's program: some thought there would be too much paperwork and, therefore, decided not to participate. A more detailed discussion of trade allies is presented in the next chapter.

MGE experimented with two new and innovative marketing strategies: bundling and turnkey services. In bundling (which had not occurred before the Competition), MGE combined measures with low and high costs and/or benefit-cost ratios in custom projects (projects that did not fall into MGE's standard classification of projects, such as energy management systems and refrigerator controls). These custom projects typically occurred in the C&I sectors, but a few did occur in the rental sector. Bundling was customer specific, since it depended on what a customer needed, often based on a walk-thru audit. MGE

* Previously, a comprehensive energy audit was required of all customers, but this resulted in a low implementation rate and a cost of \$200-300. Beginning with the Competition, MGE no longer conducts a total audit. Instead, a MGE representative presents the program to the customer and spends 1/2 - 2 hours at the customer's facility. In response to mailers or advertisements, customers can call MGE for a detailed audit.

** Loans offered by the Wisconsin Housing and Economic Development Authority (WHEDA) help small to medium-sized businesses to implement energy conservation measures. For borrowers financing pre-approved energy-related projects between \$5000 and \$500,000, WHEDA subsidized loan interest rates by 3-5% for up to five years.

primarily bundled measures for marketing purposes. For example, air-conditioners and refrigerators had low benefit-cost ratios (based on incremental costs, not replacement costs) and, therefore, were considered "losers." But customers wanted them in MGE's rebate programs, because owners did not normally replace them until they broke. Therefore, MGE combined these measures with more cost-effective measures in order to get the attention of customers. Since the Competition, bundling continues to be used.

In turnkey services, MGE developed a list of competent contractors that would install specific measures for a specific price: after receiving bids for a common set of technologies, MGE would release the names of contractors to customers, or MGE would call these contractors for customers. Because customers did not usually have enough time to search for the right contractor, a number of customers took advantage of this service in the C&I sector. Since the Competition, turnkey services continue to be used.

MGE used personal contact (direct personal calls, visits, and technical assistance to major customers) in this sector. In this approach, the customer had only one person to call for questions, and the process was neither time consuming nor costly for the customer. However, while it was easy to meet the needs of the customer, this approach did consume considerable administrative time. MGE also offered guaranteed savings, but nobody took advantage of them.

In addition to these approaches, MGE used an assortment of marketing methods to publicize their program:

- advertising (newspapers, radio, and television);
- presentations to local organizations, professional trade allies, consulting engineers and contractors to describe application preparation, technical assistance requirements, and financial terms such as reimbursement for feasibility studies;
- utility bill inserts;
- newsletters (MGE published its own C&I customer newsletter);
- brochures describing products and their applications and benefits and stressing the ease of application; and
- fact sheets on recommended calculation procedures for specific measures.

In conclusion, MGE used more targeting of selected technologies and customers than before the Competition. In addition to experimenting with new and innovative approaches (e.g., bundling and turnkey services), MGE felt that its existing marketing methods became more effective in:

- determining appropriate rebate amounts;

- developing calculation forms for spreadsheets;
- selecting measures to promote;
- reducing rebate paperwork (rebate form was reduced from 11 pages to 1 page);
and
- developing new methods in sales, targeting, customer needs identification, and pricing.

4.1.2. Honeywell's Approach

Honeywell also offered rebates but integrated its rebate program into its existing marketing efforts to promote energy efficiency.* Honeywell prospected the customer first and then introduced incentives at the end to secure a contract (see below). As part of its strategy, Honeywell developed proposals for the installation of a package of heating, ventilating, air-conditioning, controls, lighting, and other applicable measures ("bundling"), based on a site visit (detailed audit) used to collect information and to market services. Honeywell targeted both gas and electricity savings, as well as peak and off-peak savings.

Honeywell calculated its rebate level based on its perceptions of the payback requirements of individual customers: measures had to have paybacks of three years or less (after including the rebate). The rebates were partially based on the specific operating conditions of the facility and equipment (\$/kW and ¢/kWh). On the average, the rebate covered 28% of the first cost of the measure. Thus, a measure that normally had a five-year payback would have a three to four-year payback when the rebate was included. As mentioned previously, Honeywell did not charge administrative expenses to the program, considering these activities as part of its normal business functions. Instead, Honeywell used all of its Competition funds to reduce the customer cost of the measures. In contrast, MGE and its competitors used funds from the Competition to cover their administrative expenses.

In contrast to MGE, the Performance Score, Conservation Value, and bonus did not significantly influence Honeywell. Honeywell decided to "let the chips fall where they would" and focused on the best applications for its customers. Honeywell continued to use its standard sales cycle in the Competition. Because the sales cycle normally took more than 6 months (sometimes up to 9 months) and the Competition ran for only 9 months, Honeywell was confronted with a timing problem. However, Honeywell used this potential problem to its advantage, as noted below. In the sales cycle, Honeywell would call a customer and conduct a preliminary survey. This would be followed by a verification call to develop a preliminary proposal with estimated costs and savings. Honeywell would discuss rebates only if the proposed

* Honeywell's Madison Branch of the Commercial Buildings Group had 24 technical employees involved in engineering and sales. Honeywell reallocated existing resources and added new resources to do its work in Madison.

work could be done in the two months following a "letter of intent" (needed for Honeywell to proceed). The limited time frame was called a "pending event". The time limitation gave the customer an incentive to move and shortened the sales cycle; customers found this strategy to be financially advantageous when faced with measures having paybacks of three years or less. In conclusion, Honeywell sold "solutions" rather than "technologies."

Pre-approval by Honeywell was required on all applications to control the flow of dollars and to confirm energy savings (customers were asked to apply early to guarantee funds). Pre-installation verification was required to review conditions, and applicants had 90 days to have the measure installed. As noted above, a letter of intent was required to proceed. Honeywell inspected all sites after measures were installed. In contrast to MGE's approach where the customer was responsible for getting the measures installed, Honeywell used its engineering staff and electrical and sheetmetal subcontractors to install measures for customers. Honeywell did not use trade allies for marketing its program.

Honeywell relied on personal contact to market its program, targeting high-level decision makers (usually owners) at large facilities and faithful customers. It was a top-down selling approach (rather than a bottom-up approach). Direct personal calls, visits, and technical assistance were used; case studies and articles were presented during sales presentations and featured innovative applications of targeted measures. This approach worked well with Honeywell's staff which not only had marketing skills but also were trained in the technical aspects of the job. In conclusion, Honeywell's approach was customer-oriented and consultant-oriented (i.e., the consultant was getting to know customer needs), although expensive to market.

For 70% of its projects, Honeywell guaranteed savings. When savings were guaranteed, any differences between estimated and actual energy use were refunded by Honeywell to the customer. This approach reduced the risk to the customer. For the other 30% of their projects, Honeywell used market-rate financing to generate positive cash flow. As noted above, bundling of measures was an integral part of Honeywell's approach: Honeywell examined all applications and promoted those measures with three to four year paybacks. The process of bundling measures was advantageous to Honeywell because it led the company to (1) discover new applications for its products (e.g., controls for hot water heaters), (2) learn new building-related areas (not just the ones in its area of expertise), and (3) expand the type of energy services offered.

Honeywell also experimented with two other approaches in promoting its program: test mailing of brochures (providing details and examples of products, applications and features, and stressing unique customer applications tailored to meet customer needs), and introductory letters to executives of businesses. These two marketing strategies, however, were not effective because MGE also offered a similar program. As a result, Honeywell focused on selling itself, rather than offering a rebate program similar to the one offered by MGE.

4.2. SMALL C&I

4.2.1. MGE's Approach

MGE's approach in the small C&I sector was very similar to the one used in the large C&I sector. In the small C&I sector, a pre-calculated rebate was offered for each measure (e.g., \$/lamp, \$/ton, \$/horsepower), and the customer had to install the measure within 90 days of the application. Custom rebates were also issued in this sector.

A distinctive strategy was pursued by MGE in this sector: MGE gave away low-cost items (e.g., thermostats and compact fluorescents) that had high benefit-cost ratios to stimulate greater action, and this approach resulted in great customer demand. MGE had not expected this approach to be a winning strategy prior to the Competition. However, once MGE recognized the attractiveness of this strategy during the planning of the Competition, MGE decided to spend a significant amount of money on this approach. MGE did try contacting customers without prior warning ("cold calls") through telemarketing, but this approach did not work well for the utility.

4.2.2. A&C's Approach

A&C's marketing strategy was to spend most of its time and money on contacting customers and determining customer needs.* A&C based its rebates on what worked in other places for A&C and on their impact on the Performance Score. A&C promoted all conservation measures with net benefits, and, because of the scoring system and the short time frame of the Competition, emphasized those measures with short-term benefits (such as energy-efficient incandescent lighting with a one-year life) and those measures with rebate levels leading to benefit-cost ratios of two or more.** Pre-calculated rebates were used for each retrofit item or standard unit (e.g., \$/lamp, \$/ton, \$/hp). Pre-approval was accomplished by site surveys during the cold calls. If a measure was applied for that had not been recommended during the site visit, a return visit may have been warranted (depending on the technology and size of rebate). Applicants had 90 days to have their measures installed. A percentage of the measures was later inspected by the Monitor.

As mentioned above, A&C spent most of its time and money on contacting customers and determining customer needs. This was primarily accomplished by contacting customers door-to-door without

* A&C, based in Atlanta, used its permanent staff to run the Competition; it did not hire additional staff to work in the Competition. Prior to the Competition, A&C had conducted over 10,000 audits in commercial buildings in the U.S., had been working with most of the utilities in Wisconsin, and had a Milwaukee office.

** Energy-efficient incandescent lighting was promoted where customers would not accept energy-efficient fluorescent lighting.

prior warning (3,000 customers were contacted).^{*} Once permitted to enter, walk-through audits were conducted: the audit focused on business problems and how they could be tied to energy efficiency. A detailed energy analysis was conducted if necessary, or if a customer wanted one. After a review of the conservation potential in the facility, the customer was provided with a free conservation product (setback thermostats, water heater blankets, or compact fluorescent lamps) and encouraged to purchase and install additional items for which they could receive rebates. In addition, A&C gave customers fact sheets and brochures (briefly describing its products, applications, and benefits, and the ease in applying for a rebate: "It's as easy as 1-2-3": (1) select and purchase, (2) install and submit application, (3) get your rebate check). Thus, A&C felt that about 80% of its work emphasized selling, and the remaining 20% stressed analysis.

Using the above information, A&C created a data base of good leads. After developing a list of promising customers, with a probability of closing a deal for a particular month, a monthly goal was determined and A&C contacted the key leads for more detailed discussion. This approach was new to A&C, and the company thought it was effective. A&C found that because the small C&I facilities were Mom and Dad type of operations, A&C was usually able to contact the right person (the owner or manager) at the time of initial contact.^{**} Thus, A&C's marketing strategy focused on direct personal contact with customers and provision of free conservation products. A&C chose this strategy because: (1) it felt people were not responding to rebates (i.e., rebates by themselves would not motivate customers, see Chapter 8) and, therefore, A&C needed to find out more about customers' needs and opportunities ("customer inventory"); (2) A&C did not have a customer data base like MGE, so A&C needed to develop basic customer information and good leads;^{***} (3) A&C wanted something more aggressive than MGE's direct mail approach: it was more efficient and effective to have the owner listen to a field representative if the person was at the customer's place of business than through the mail or telephone (it is easier to refuse a request on the phone or by not responding to a mail inquiry)^{****}; and (4) facilitated the development of long-term relationships with customers.

The cold call approach, however, had several limitations: (1) it was not useful for getting measures installed quickly; (2) the approach was costly (very labor intensive); and (3) it required labor that had to

^{*} A&C is currently using the third generation model of its cold call approach in its work with other utilities in Wisconsin.

^{**} A&C did not work with large retail chains because usually (1) the person onsite did not have decisionmaking capability, (2) the facility had already installed energy conservation measures, and (3) a national energy manager was responsible for energy conservation investments in the local stores.

^{***} MGE provided to A&C a subset of data (the name, address, and blocks of usage for each customer), but there was no contact name, phone number, or 12-month billing history. Also, the list contained some improper customer names, such as railroad crossings.

^{****} As a matter of last resort, A&C used a direct mail campaign targeted to large customers that had not been contacted previously.

be technically capable and experienced in sales. As a result, early in the Competition, some PSCW staff told A&C that it did not like A&C's performance because A&C was obtaining low benefit-cost ratios and was spending too much time and money on labor (cold calls and audits) and not enough on the installation of measures. At the same time, A&C decided to discontinue field surveys and devote more time to installing more effective measures, after determining that enough conservation potential had been identified to allow it to meet its goals.

A&C did "blitz" many small C&I customers by giving away setback thermostats and compact fluorescents (in addition to providing its energy services). Most trade allies stayed away from A&C because they did not want to jeopardize their relationship with MGE (see Chapter 5). The few cases where A&C did work with trade allies were successful: for example, A&C's lighting vendor was able to close 90% of its contracts with customers. Since small C&I customers usually buy one measure at a time, A&C rarely bundled measures. Turnkey services were not used in A&C's programs: the customer was responsible for choosing a contractor to install measures, and A&C did provide a list of contractors to help out its customers. Similar to MGE, A&C had custom projects and used custom rebates for these projects. No other financial incentives were used. A&C believed that shared savings and low-interest financing may overcome objections of customers, but did not motivate customers to install measures. In addition, A&C believed that customers would rather receive all of the savings from energy-efficiency measures, rather than receive a percentage of the savings as part of shared-savings contracts.

4.3. RENTAL

4.3.1. MGE's Approach

MGE's approach in the rental sector was very similar to the ones used in the other sectors (for example, a pre-calculated rebate was offered for each measure (e.g., \$/lamp, \$/ton, \$/horsepower)).* MGE's primary strategy in this sector was direct mail; this strategy was expected to be effective because MGE's program manager had been running the rental program for a year, and the customers were familiar with his periodic mailings. MGE also used personal contact (direct personal calls, visits, and technical assistance to major customers) in this sector. After the program was in the field for one year, the program coordinator paid personal attention to building owners or managers ("handholding"). Unlike the other sectors, MGE did not use turnkey services, because most owners were already working with contractors. In addition, only a few custom projects occurred in the rental sector.

* Before the Competition, a flat rebate had been offered to customers in the rental sector.

4.3.2. BRMC's Approach

BRMC's approach was shaped by the organization's four objectives in participating in the Competition: (1) establish a business (primary objective), (2) achieve \$700,000-800,000 worth of energy conservation (Conservation Value), an amount it estimated was sufficient to win the Competition (secondary objective), (3) make a profit, and (4) provide quality installation of energy-saving measures. Unlike MGE, winning the Competition was not BRMC's primary objective. For BRMC, the Competition was seen as a springboard to generate more business in Madison and other areas in Wisconsin.

BRMC's approach was also influenced by the people involved in the design of BRMC's proposal in the Competition: The Energy Collaborative (TEC) of Minneapolis wrote the proposal, targeted the \$800,000 Conservation Value, and designed BRMC's marketing program. TEC also provided energy audit services to develop customer proposals in the BRMC program (later in the program a local consultant was hired to conduct the audits) and promoted the audit component of BRMC's approach. TEC wanted to win the Competition in the first three months, a goal that was not shared by BRMC (see below). As the Competition progressed, TEC became less active and left most of the work to BRMC.

Like MGE and its competitors, BRMC offered rebates to its customers, however, BRMC decided to market its program with "subsidies" (the term used by BRMC) rather than rebates, so that customers would receive a discount upfront rather than wait for a rebate after the measure was installed. Thus, if a measure cost \$1000, then BRMC charged the customer \$900; a check would be sent from MGE to BRMC for the remaining \$100 upon receipt of an invoice. Using audit data, BRMC calculated rebates using spreadsheets and identified an array of cost-effective energy conservation measures. The exact rebate varied from building to building, depending on usage: larger subsidies were offered for larger buildings. The Conservation Value influenced the setting of subsidies throughout the program, however, MGE's marketing strategy in the program helped to dictate BRMC's response. MGE offered high rebates in this sector, forcing BRMC to match them. When MGE ran out of money in this sector and was forced to abandon the rental sector to BRMC, the latter's rebates dropped.* BRMC emphasized heating equipment efficiency improvements (e.g., setback thermostats, controls, and tune-ups). BRMC also offered free low-flow showerheads, which had a high Conservation Value and Performance Score. As in the other sectors, applicants had 90 days to have their measures installed, and a percentage of the measures was later inspected by the Monitor.

BRMC's initial approach was to have a comprehensive program. They intended to focus on: (1) multifamily buildings that were centrally heated with gas and had hot water distribution systems; (2) outdoor resets (10-12% estimated savings), cutouts, and low-flow showerheads; (3) the largest buildings with

* From April to early June, the vendor sold all of his showerheads, and MGE ran out of money for hot water use by the end of June (there were end-use caps in the Competition, see Ch. 6).

the highest energy use (so they could obtain larger energy savings).^{*} BRMC obtained a list of building owners from property records, and used brochures, slide show, advertising in a newsletter of apartment owners, telemarketing, direct mail, and a workshop with property owners to sign up people for audits. The workshop was considered a "disaster" by BRMC because the organization did not have sufficient staff to prepare for the workshop (such as setting rebate levels and preparing application forms).^{**} After the first workshop, a list of audits was generated from the mailings and the workshop, rebate levels were set, and application forms were prepared. BRMC needed a strong support service for assembly line processing of audits, however, this was lacking, so that there were delays in conducting and processing the audits. In the Fall, BRMC stopped the mailings, but continued to market its program at meetings at its office with a slide show (which generated some business).

During these first few months, BRMC spent approximately \$35,000 per month; however, the company did not obtain much energy conservation value for the measures that were installed. At the same time, MGE used up all of its Competition funds and was forced to abandon this sector to BRMC. Accordingly, BRMC changed its strategy in order to get a higher Conservation Value: BRMC offered a 25%/40% subsidy on all products, a strategy that promoted bundling of measures. If a customer installed all of the measures recommended by BRMC, the customer received a 40% rebate. If the customer installed some of the measures recommended by BRMC, the customer received a 25% rebate on those measures. Every measure in this program had a payback of 5 years or less (the simple payback was typically 2-3 years). BRMC also gave away free low-flow showerheads because they had a high Conservation Value. By mid-December, BRMC had \$40,000 remaining in its account, with one month remaining in the Competition. BRMC decided to go through its customer files and identified measures with high Conservation Value but had not closed a sale. BRMC offered to install free measures (except lighting) for these customers.

As noted above, quality control was a key objective for BRMC. BRMC felt that energy conservation in the rental sector was very difficult to achieve due to installation and operational failures of energy efficiency equipment. Thus, BRMC felt that a critical component of their program was a commitment to the maintenance and correct installation of technologies that are smart, nonobtrusive, and difficult to disable. Accordingly, BRMC offered a turnkey service (a one-stop shop) to its customers. BRMC installed measures itself and did not use subcontractors unless they were needed (e.g., lighting measures). BRMC felt that subcontractors did not perceive their work as important, incorrectly or improperly installed measures, and were slow.^{***} While BRMC was able to work with some trade allies, the latter were not used

^{*} BRMC avoided steam-heated buildings and tried to work with new multifamily construction, but never did work with the latter.

^{**} An administrative person was hired just before the workshop to help manage the paperwork at BRMC.

^{***} For example, BRMC knew of subcontractors who installed outside temperature controls in the wrong places: in the sun, or on the south side of a building, or with no free air flow around the controls. As a result, building managers removed the controls, so that no energy was saved.

extensively by BRMC and, as a result, BRMC lost a few sales because it was too busy to respond to demand.

As indicated above, BRMC used a variety of marketing methods, but telemarketing was the center of its program, since it was considered by BRMC to be cost-effective and generated a stream of work/audits. In this strategy, a telemarketer would call 15-20 customers per hour and would be able to reach 6-7 customers, and from this group, BRMC would obtain 2-3 good leads. A letter was later sent to these customers for follow-up.

BRMC offered no-interest loans to one customer, but BRMC stopped providing them because of problems associated with them. For example, BRMC had to find out what a customer's credit was, pay someone to send the customer a notice, and pay back the principal and the interest. Based on previous problems experienced with shared savings (e.g., a significant amount of time and overhead needed to prepare the contract), BRMC did not offer shared savings.

4.4. CONCLUSIONS

In summary, the PSCW staff and MGE and its competitors felt that a number of the strategies implemented in the Competition were innovative and successful (Table 4.3). In general, one strategy appeared to be particularly suitable for one competitor (Table 4.1). In a few cases, however, a strategy was successfully used by more than one competitor (turnkey services and bundling).

Table 4.3. Innovative Program Strategies

Program Strategy	Key User	Comments
Trade allies/vendors	MGE	
Blitzs (giveaways)	MGE, A&C	Thermostats, compact fluorescents
Removal of required detailed energy audit	MGE	
Turnkey services/one-stop shopping	MGE, BRMC	Innovative for Madison, but tried in other areas
Bundling of measures	Honeywell, BRMC	
Guaranteed savings	Honeywell	Especially when packaged with rebates
Targeting to special customers	Honeywell	Combined with detailed energy audits and offering of numerous measures
Door-to-door cold calls	A&C	
Telemarketing	BRMC	New for energy efficiency field
25%/40% subsidy option	BRMC	

While a competitive atmosphere existed in all three sectors during the Competition, not all participants consciously created strategies as a response to the strategies developed by their competitors. For example, in the large C&I sector, Honeywell was motivated more by its reputation and desire to serve its customers than to beat MGE; in effect, Honeywell was competing more against itself than against MGE.

In the small C&I sector, MGE did not initially compete consciously with A&C. However, an early score indicated that A&C had increased its Performance Score by 200% with a 30% increase in costs. As a result, MGE conducted a blitz: it gave away low-flow showerheads to many customers. To everyone's chagrin, the score for A&C turned out to be a scorekeeping error by the Monitor. On the other hand, A&C felt they were trying to do their best, and simply wanted to meet its goals, not to win or lose: "if we won, we won; if we lost, we lost." Moreover, A&C found no evidence of competition when visiting customers: customers were often not aware of MGE's program, and projects installed by MGE were rare. A&C's approach was to set up reasonable goals and be aggressive in reaching those goals (which they achieved). A&C did not feel it was competing with MGE, because each competitor had different goals. Instead of asking who was winning or losing, A&C was more concerned with how well its goal was being reached, whether the needs of its customers were being met, and making sure its reputation for quality and performance remained intact. A&C regarded its program in the Competition as a "Chamber of Commerce membership drive" in which each competitor tried to achieve specific goals and there were multiple winners (based on goal achievement).*

In the rental sector, each competitor wanted to get an edge in the market. For example, by using its name and good will, offering high rebates, and working with trade allies, MGE consciously tried to capture as much of the rental market as it could. In response, BRMC offered a full-service, one-stop shop for customers. Later, MGE offered a one-stop shop. As a result, MGE and BRMC's strategies merged, and forced BRMC to offer higher rebates to remain competitive.

4.4.1. Customer Survey

The customer survey conducted for this report provides additional information on the type of customers targeted by MGE and its competitors, and the sources of information used by customers in learning about the program. Based on the customer survey, the top three types of customers targeted in the C&I sectors were non-food retail/wholesale (43%), office (18%), and industrial customers (13%) (Table 4.4). Customers in the small and large C&I sectors were differentially targeted. In the large C&I sector, Honeywell targeted a few large customers in the office (38%) and other health services (19%) sectors compared to MGE which targeted more customers in the office (23%), non-food retail/wholesale (27%), and industrial (18%) sectors. In the small C&I sector, the market penetrations for each type of business

* In a similar but more humorous vein, one individual thought the Competition was more like "shooting at two different baskets and seeing what the referee (the Monitor) said the score was."

activity were generally similar for MGE and A&C (especially, office and non-food retail/wholesale sectors), except more industrial customers were targeted by A&C than MGE.

Most of the C&I customers participating in the Competition were owners, particularly in the large C&I sector (Table 4.5). Whether the customer owned or rented the facility did not appear to distinguish the marketing efforts of MGE and its competitors in the C&I sectors; one exception was Honeywell which, in contrast to MGE, did not target renters of large C&I property. Large C&I customers were "more established" than small C&I customers: the former had been at their present location significantly longer (average of 22 years) than the latter (average of 14 years) (Table 4.6); within each sector, there were no statistically significant differences among customers. Similarly, there were no statistically significant differences between MGE and A&C in the length of the lease for small C&I customers renting their facility (Table 4.7). In the rental sector, both BRMC and MGE targeted owners and managers in the same proportion (Table 4.8). With respect to the size of the rental customer, the customers targeted by MGE were significantly larger (number of residential units owned/managed in the Madison area) than those targeted by BRMC: 386 versus 182 (Table 4.9).

Most customers heard about the program through three sources (Table 4.10): MGE's direct mail brochure (34%), a contractor or equipment supplier (31%), and/or a MGE representative's phone call or visit (29%).^{*} MGE's bill insert (18%), MGE's newsletter (14%), a business colleague or friend (14%), and advertising through the mass media (newspaper, radio, or television) (8%) were less effective. There were significant differences in the use of these sources of information. For example, MGE's bill insert and direct mail brochure were surprisingly more effective in reaching customers contacted by A&C than for customers contacted by MGE in the small C&I sector; in the other two sectors, the brochure was more effective for MGE in informing customers about the program. In the C&I sectors, a phone call or visit by a MGE representative was very effective for MGE in informing customers about the rebate program. Similarly, information from a contractor or equipment supplier was effective for MGE's competitors in the three sectors. In summary, customers in the Competition benefitted from MGE's information delivery system as well as the personal contact from MGE's competitors.

^{*} Because A&C and BRMC used MGE's name extensively in the materials distributed to customers, it is possible that customers might have been confused in recalling sources of information.

Table 4.4. Main Business Activity of Small and Large C&I Customers

	Total N=283	Small C&I			Large C&I		
		Sub-total N=205	MGE N= 95	A&C N=110	Sub-total N= 78	MGE N= 62	Honeywell N= 16
Office	18%	15%	17%	14%	26%	23%	38%
Restaurant	4	3	5	2	5	6	0
Bar	2	3	2	4	0	0	0
Food - retail/wholesale	1	0	0	0	4	5	0
Non-food - retail/wholesale	43	51	52	50	23	27	6
Warehouse	2	3	5	1	1	2	0
Elementary/secondary school	2	0	0	1	5	6	0
College/trade school	1	1	1	1	1	2	0
Other health services	4	3	3	3	8	5	19
Hotel/motel	3	2	3	2	4	2	12
Industrial	13	12	6	17	17	18	12
Membership organizations (e.g., religious)	4	5	3	6	1	2	0
Parking ramp	1	0	0	0	3	3	0
Recreational facilities	1	1	2	0	3	0	12

Table 4.5. Small and Large C&I Customers: Own or Rent Facility?

	Total N=283	Small C&I			Large C&I		
		Sub-total N=205	MGE N= 95	A&C N=110	Sub-total N= 78	MGE N= 62	Honeywell N= 16
Own and occupy	55%	46%	47%	45%	79%	76%	94%
Own and lease	8	9	9	8	6	6	6
Rent	35	43	40	46	13	16	0
Manage (neither own nor rent)	1	1	3	0	1	2	0

Table 4.6. Number of Years At Same Location

	Total	Small C&I			Large C&I		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell
Sample size	280	204	94	110	76	60	16
Average	17	14	14	15	23	23	23
Std. Dev.	16	15	15	16	17	18	15

Table 4.7. Years of Lease

	Total	Small C&I			Large C&I		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell
Sample size	76	67	26	41	9	9	0
Average	5	5	5	5	7	7	N/A
Std. Dev.	4	4	4	3	3	3	N/A

Table 4.8. Rental Customers' Role With Property

	Total	Rental	
		MGE	BRMC
	N=166	N= 89	N= 77
Owner	39%	40%	38%
Manager	39	42	35
Owner and manager	11	8	16
Board/committee member	2	3	1
Maintenance supervisor	5	6	4
Co-op educator	1	0	3
Trustee	2	0	4
Previous owner	1	1	0

Table 4.9. Number of Units Owned/Managed in Madison Area

	Total	Rental	
		MGE	BRMC
Sample size	157	85	72
Average(*)	293	386	182
Std. Dev.	433	546	186

* Difference is statistically significant at the 0.05 level (T-test).

Table 4.10. Source of Information About MGE's Power Plus Program *

	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
	N=449	N=205	N=95	N=110	N=78	N=62	N=16	N=166	N=89	N=77
MGE's bill insert **	18%	16%	8%	22%	14%	13%	19%	24%	24%	25%
MGE's direct mail brochure **	34	28	23	33	36	39	25	41	45	36
MGE's newsletter	14	13	14	13	15	13	25	19	20	17
MGE representative's phone call or visit **	29	40	50	22	27	29	19	18	14	22
Business colleague or friend	14	13	18	9	12	13	6	16	22	9
Contractor or equipment supplier **	31	27	27	26	47	42	69	29	24	35
Mass media (newspaper, radio, television)	8	5	8	3	12	11	12	10	12	6

* Summation of columns may be over 100% because respondents could have more than one response.

** Differences are significant at 0.05 level (Chi-square test).

CHAPTER 5. WINNERS AND LOSERS

In the Competition, MGE won the small C&I and rental sectors, while Honeywell won the large C&I sector (Table 5.1). The final scores show that the program strategies used by MGE and its competitors were cost-effective from the utility cost perspective: the average benefit-cost ratio for the program was 6.5, ranging from a low of 2.7 in the rental and small C&I sectors to 9.5 in the large C&I sector.* These are preliminary impact estimates based on engineering estimates of savings; a detailed impact evaluation that will examine measured savings is in progress. The administrative expenses for MGE averaged 10% of total costs, while those for its competitors varied significantly (ranging from 0% for Honeywell to 37% for BRMC) (Table 5.2). In this chapter, we examine reasons why MGE and Honeywell won their respective sectors, based on an examination of the characteristics of the organizations and the perceptions of the participants interviewed in this evaluation.

Table 5.1. Competition Results

Competitor	Conservation Value	B/C	Performance Score	Bonus
<i>Rental</i>				
MGE	\$2,286,299	8.2	18,668,455	\$84,000
BRMC	\$760,035	2.7	2,063,046	---
<i>Small C&I</i>				
MGE	\$3,314,450	8.4	27,988,238	\$117,750
A&C	\$1,043,944	2.7	2,794,167	---
<i>Large C&I</i>				
MGE	\$2,857,554	8.3	23,550,301	---
Honeywell	\$3,304,160	9.5	31,327,040	\$46,251
Total	\$13,566,442	6.5		\$248,001

* The benefit-cost ratios reflect the utility cost test which does not include customer costs (e.g., buying and installing measures) (Krause and Eto, 1988). If the benefit-cost ratios included these costs, then the ratios would have reflected the total resource cost test. For example, Honeywell's average rebate averaged 28% of the cost of the measure, so that the benefit cost ratio reflecting the total resource cost test would be 2.7 instead of 9.5.

Table 5.2. Competition Expenditures

	Competition Budget *	Expensed Actuals
MGE - Rental		
Labor	60,500	11,234
Advertising	0	178
Direct Incentives	191,500	284,966
General Administration Costs**	26,000	44,944
Total	278,000	341,322
BRMC - Rental		
Labor	0	0
Advertising	0	0
Direct Incentives	196,400	188,710
Start Up Costs Budget	50,000***	
Other Expenses	83,600***	107,386***
Total	330,000	296,096
MGE - Small C&I		
Labor	113,500	71,250
Advertising	0	76
Direct Incentives	248,000	292,643
General Administration Costs**	31,000	41,726
Total	392,500	405,695
A&C - Small C&I		
Labor	0	0
Advertising	0	0
Direct Incentives	235,500	292,808
Other Expenses	157,000***	80,500***
Total	392,500	373,308

* Budget amounts for the competition ordered in Rate Order for UR102

** Represents approximately 10% of MGE's original Competition Pilot Budget.

*** Amount ratebased, but not direct customer incentive.

Table 5.2 continued. Competition Expenditures

	Competition Budget*	Expensed Actuals
MGE - Large C&I		
Labor	101,000	34,364
Advertising	0	76
Direct Incentives	220,000	267,995
General Administration Costs**	27,600	35,525
Total	348,600	337,960
Honeywell - Large C&I		
Labor	0	0
Advertising	0	0
Direct Incentives	348,500	366,962
Other Expenses	0	0
Total	348,500	366,962
Program Total	2,090,100	2,121,343

* Budget amounts for the competition ordered in Rate Order for UR102

** Represents approximately 10% of MGE's original Competition Pilot Budget.

*** Amount ratebased, but not direct customer incentive.

Source: MGE, 1990.

5.1. ORGANIZATIONAL ADVANTAGES AND DISADVANTAGES

As the local utility, MGE had name recognition, a presence in the marketplace, high credibility, trust, respect, and an excellent reputation for customer service. MGE also had pre-established customer contacts, a customer data base, and often knew who to contact in a specific building. Furthermore, MGE had good rapport with trade allies, who were contracted to market MGE's services. Thus, as the "home team," MGE had a household name and could enjoy the incumbent advantages. As a utility, MGE could market its programs and name in other sectors (e.g., agricultural) during the Competition, and MGE could move resources back and forth (e.g., when the large C&I was nearly over, MGE moved staff to the small C&I sector).

Honeywell enjoyed several similar advantages in the Competition. Honeywell had a presence in the marketplace, high credibility (built upon a national reputation), trust, and respect. Honeywell was very knowledgeable about customers in the Madison area and had its own customer data base. Furthermore, Honeywell had technical and sales expertise and vendor experience (proven sales strategies): it had intimate knowledge of its product and how it applied to specific customers, and it provided turnkey services.

In contrast to MGE and Honeywell, A&C and BRMC were not known in MGE's service territory, did not have extensive contact with MGE's customers, and lacked a customer data base. Furthermore, trade allies did not know A&C and BRMC and assumed both organizations would be in the area for only a short time. On the other hand, A&C felt that its skilled staff (salespersons and technical people), which were able to quickly implement an energy-efficiency program, represented its organizational strength. Also, MGE felt that A&C could quickly change incentive levels on efficiency technology options on short notice if necessary, while MGE needed more time to change the publicized costs of its measures.

Despite the above advantages, MGE staff felt that the utility had to overcome a number of serious organizational disadvantages. For example, MGE staff felt that its competitors were more experienced in marketing conservation programs in a competitive environment and would be more proactive, more customer-oriented, and able to start faster.* MGE's Marketing Department was relatively new and inexperienced in marketing under a competitive environment. In addition, MGE felt size was a critical factor: its competitors were smaller firms and, therefore, could presumably respond faster to change. In contrast, MGE was a large organization and a regulated monopoly that had an implicit obligation to market to all of its customers (instead of a few potentially attractive customers). Finally, until recently, MGE had been supply-side oriented and did not have the experience in demand-side management shared by its competitors.

* This did not occur in the sectors MGE won because its competitors did not possess the necessary customer contacts.

In conclusion, the advantages enjoyed by MGE as the "home team" and Honeywell as a nationally well-known company with a local branch gave these organizations a "lead" even before the Competition proceeded. In recognition of these problems, money was provided to BRMC to compete more effectively with MGE in the rental sector: BRMC was given \$50,000 start-up money and two months to open an office in Wisconsin. Nevertheless, one would expect the competition to be a more even contest in the large C&I sector than in the other two sectors.

5.2. MARKETING STRATEGIES

In general, the winner in each sector won primarily because of its organizational advantages mentioned previously and the effectiveness of its marketing strategy (see Chapter 4). For each sector, participants enumerated numerous reasons for the success of the winning competitor, in addition to the advantages mentioned in the last section:

In the large C&I sector, participants stated that Honeywell won because the company:

- effectively targeted its marketing strategy: they actively worked with large customers in installing a package of energy-efficiency measures;
- considered customer's needs over the long-term and tried to address all of the customer's energy needs;
- concentrated on its existing technical and business strengths: the rebate process was used to enhance what Honeywell normally did;
- was able to offer more attractive deals to increase business (because Honeywell did not have to use Competition funds for administrative costs, it had more money for rebates);*
- provided a full portfolio of services by offering a turnkey service operation; and
- was innovative.

In addition, some participants thought that MGE's strategy contributed to Honeywell's success: MGE spent its budget in the large C&I sector in the first 4 months, allowing Honeywell to monopolize the market. MGE's strategy was also less targeted and defined than Honeywell's: MGE's use of direct mail and reliance on trade allies permitted the installation of measures with lower Conservation Value.

In the small C&I sector, participants stated that MGE won because of its:

* Honeywell did not have to pay for labor, promotion, or overhead from its Competition funds. As a result, Honeywell had more money to work with compared to MGE which had to take administrative costs out of its budget (the costs of promotion and labor were removed from MGE's funds).

- blitz approach (measures given away for free);
- homework in selecting cost-effective technologies; and
- full portfolio (MGE could offer almost anything to a customer and install it at a reasonable price).

On the other hand, some participants felt that MGE won the small C&I competition by default: MGE did not win because it had an elaborate or innovative strategy, but because A&C's strategy of cold calls was a "to lose" strategy. A&C spent most of its money on labor (door-to-door contacts and audits) to determine the energy conservation potential of each customer, rather than on the installation of measures. A&C felt that helping customers determine the benefits of energy-efficient technology (e.g., cost savings, comfort, and productivity) was a good long-term strategy. In contrast, PSCW staff and others felt that A&C did not effectively spend its time and money for winning the Competition.

In the rental sector, participants stated that MGE won because of its:

- "smart" marketing strategy:^{*} (1) emphasized low-flow showerheads which produced considerable savings at low cost, (2) offered high rebates, (3) worked well with trade allies, (4) obtained vendors, (5) got the trust of property owners, (6) targeted building owners that had facilities with significant energy-savings potential, (7) offered the appropriate measures and rebates, (8) produced high quality printed material, and (9) broadly marketed its program; and
- had a particularly capable program manager and staff (which did its homework).

On the other hand, some people thought MGE won because of its competitor's limitations, since BRMC had no relationship with property owners (owners did not know who BRMC was) and did not get "out of the gate" fast enough to create a lead in the Competition. In addition, several participants thought BRMC did not know what it was doing in the Competition: lots of indecision, delays, lack of knowledge and experience, and inadequate resources.^{**} Moreover, these people felt that BRMC was not strong enough to oppose MGE's strategy: BRMC tried to outcompete MGE and was not assertive after MGE ran out of money. Finally, BRMC's marketing strategy was thought to be inappropriate: BRMC tried to heavily subsidize its measures and emphasized a door-to-door approach and audit analysis that was time consuming.

^{*} The strategy is smart in the sense that it enabled MGE to win the Competition, but solely promoting low-flow showerheads is not usually considered the best strategy for obtaining substantial energy conservation; however, under the Competition's scoring system, this approach turned out to be one of the most attractive strategies.

^{**} As a reflection of these problems, it took 2.5 months to get a contract signed between The Energy Collaborative (TEC) and BRMC.

No matter who won the Competition based on Performance Scores, most participants felt that everyone involved in the Competition was a winner, in the sense that everyone learned something, most competitors obtained what they expected, customers received good service, and MGE and the PSCW obtained needed data for targeting customers in future programs. In addition to MGE improving its programs and winning two sectors, its competitors also benefited. A&C found out how to get by with little information, attained the goal it created in its proposal, and obtained a profit from its work. Honeywell won its sector, expanded its market and sales, and obtained a one-year contract with MGE for continuation of the same services it offered in the Competition. BRMC also gained valuable experience in a new market: BRMC is currently working with other Wisconsin utilities.

5.3. FAIRNESS OF COMPETITION

MGE and its competitors had diverse opinions on the fairness of the Competition. As discussed above, MGE and Honeywell had organizational features that gave them a clear advantage in the Competition. Thus, there was not a "level playing field" where everyone was "equal" in the Competition. On the other hand, most participants felt that, given this uneven playing field, the Competition was conducted fairly and did not favor the utility nor its competitors.

Some participants, however, felt that some parts of the Competition were unfair. For example, MGE, BRMC, and A&C felt that allowing Honeywell not to use its Competition funds to cover administrative costs was unfair to the other participants. Some MGE staff felt that the two PSCW members participating on the Panel often "voted" together against MGE (even though only one PSCW member officially voted). In addition, some MGE staff believed that the PSCW staff wanted to make sure MGE lost. Accordingly, some MGE staff thought the Panel changed the rules of the Competition as it ran its course in order to ensure MGE would lose.

For some measures, the Monitor permitted different sets of calculations in estimating energy savings. Some MGE staff felt that its energy-saving calculations were more realistic than Honeywell's estimates: energy use in MGE's calculations was based on historic energy usage and corrected by heating and cooling degree days, while energy use in Honeywell's calculations was based on heat loss calculations and unrelated to historic energy usage. As a result, some MGE staff felt Honeywell overestimated its energy savings for some measures, representing a significant disadvantage for MGE. On the other hand, Honeywell were confident in its estimates, as shown in its use of guaranteed savings contracts.*

* The impact evaluation of the Competition is examining the sensitivity of the energy-saving calculations to the engineering estimates used.

5.4. CUSTOMER SERVICE AND SATISFACTION

At the beginning of the Competition, MGE and the PSCW wanted to make sure that customer needs were going to be met. MGE's upper management was particularly concerned how the Competition would affect customer service: by allowing its customers to be served by other vendors, MGE questioned how customers were going to be treated in the short and long-term (when MGE would again be the only provider serving its customers). To reinforce this feeling, MGE believed that its competitors would not pay attention to long-term customer satisfaction since they were primarily participating in the Competition for monetary gain (to win the bonus). This expectation was not realized, since MGE's competitors also wanted to ensure high quality customer service as a foundation for developing or expanding their businesses.

At the end of the Competition, MGE and its competitors felt that customers were satisfied with the quality of service they received in the program (customer service problems were rare). This finding was confirmed in post-installation inspections conducted by the Monitor and in the customer survey conducted as part of this evaluation (see below). Finally, some competitors thought many customers received more attention than they received prior to the Competition.

The findings from the customer survey conducted for this project confirms the level of satisfaction associated with the Competition (Table 5.3). On a scale of 1 (not at all satisfied) to 5 (very satisfied), most participants were very satisfied with all aspects of the Competition (ranging from 4.27 to 4.74 for different factors), supporting the findings from the interviews conducted with key participants in the Competition. In decreasing order of level of satisfaction, customers were most satisfied with the rebate application process (4.74), followed by the size of the rebate (4.63), length of time to get the rebate (4.62), service received from MGE or its competitor (4.48), performance of measures (4.44), service received from the installer of the measure(s) (4.34), and energy saved from the measures (4.27). The last component was based on the customer's perception of energy savings or analysis of energy bills, since an analysis of metered energy savings has not been conducted by the PSCW, MGE, or any of the competitors (an impact evaluation of the Competition is in process).

In general, differences in customer satisfaction between MGE and its competitors were not significant: outside vendors could deliver services to customers with the same level of customer service and satisfaction as the utility. However, some statistically significant differences among MGE and its competitors were found for some of the program components. BRMC's customers were more satisfied with the rebate application process than MGE's rental customers (Table 5.3a). MGE's customers were more satisfied with the service received from their vendor in the small C&I sector than A&C's customers (Table 5.3d). MGE's small and large C&I customers were more satisfied with the performance of their measures and the energy saved from these measures than A&C's and Honeywell's customers, respectively (Table 5.3e and Table 5.3g). In conclusion, where statistically significant differences occurred, MGE customers generally were more satisfied than their counterparts in the small and large C&I sectors.

Table 5.3. Level of satisfaction with program components.
(from 1 (not at all satisfied) to 5 (very satisfied))

(a) Satisfaction with the rebate application process.

	Total	Small C&I			Large C&I			Rental(*)		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	274	76	36	40	70	55	15	128	66	62
Average	4.74	4.70	4.69	4.70	4.76	4.75	4.80	4.76	4.62	4.90
St. Dev.	0.71	0.79	0.82	0.76	0.72	0.76	0.56	0.66	0.87	0.36

(b) Satisfaction with the size of the rebate.

	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	279	76	39	37	72	56	16	131	68	63
Average	4.63	4.49	4.41	4.57	4.60	4.57	4.69	4.73	4.69	4.76
St. Dev.	0.82	0.83	0.93	0.72	0.98	0.97	1.00	0.69	0.61	0.77

(c) Satisfaction with the length of time to get the rebate.

	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	253	72	36	36	71	56	15	110	59	51
Average	4.62	4.57	4.47	4.67	4.59	4.61	4.53	4.67	4.58	4.78
St. Dev.	0.79	0.80	0.90	0.67	0.69	0.74	0.47	0.84	1.00	0.53

(d) Satisfaction with the service received from MGE or competitor.

	Total	Small C&I(*)			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	372	166	82	84	67	51	16	139	67	72
Average	4.48	4.38	4.66	4.11	4.51	4.57	4.31	4.58	4.63	4.54
St. Dev.	1.02	0.98	0.67	1.17	0.85	0.85	0.85	1.10	1.11	1.07

* Statistically significant differences (at 0.05 level) between MGE and its competitor in this sector (F-test).

Table 5.3 continued. Level of satisfaction with program components.
(from 1 (not at all satisfied) to 5 (very satisfied))

(e) Satisfaction with the performance of the measures.

	Total	Small C&I(*)			Large C&I(*)			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	423	195	90	105	76	60	16	152	84	68
Average	4.44	4.48	4.71	4.29	4.53	4.67	4.00	4.34	4.36	4.31
St. Dev.	1.01	0.97	0.65	1.12	0.72	0.54	1.00	1.16	1.08	1.25

(f) Satisfaction with the service received from installer of measure(s).

	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	258	93	50	43	59	43	16	106	49	57
Average	4.34	4.29	4.46	4.09	4.47	4.40	4.69	4.30	4.08	4.49
St. Dev.	0.86	0.89	0.90	0.91	0.79	0.84	0.58	0.89	1.05	0.69

(g) Satisfaction with energy saved from the measures.

	Total	Small C&I(*)			Large C&I(*)			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	316	148	71	77	68	55	13	100	63	37
Average	4.27	4.18	4.37	4.00	4.35	4.53	3.62	4.35	4.43	4.22
St. Dev.	1.10	1.16	0.98	1.27	0.90	0.76	1.08	1.13	1.12	1.14

* Statistically significant differences (at 0.05 level) between MGE and its competitor in this sector (F-test).

5.5. TRADE ALLIES

5.5.1. Perspectives of MGE and its Competitors

As noted above, trade allies were willing to work with MGE as part of its sales force in promoting MGE's rebate program.* In addition to generating more sales and helping customers to complete applications, trade allies were also important to MGE because they had been working in the Madison area for a long time: they had excellent relations with contractors and customers and good project experience, and they were able to use their own staff rather than utility personnel to do the work.

Most trade allies were reluctant to work with MGE's competitors because vendors did not want to make MGE angry and jeopardize their relationship with the utility. A few trade allies were willing to work with the competitors alone and/or work with both MGE and its competitors. If MGE had not participated in the Competition, trade allies might have been more agreeable to working with the other parties.

The reluctance of trade allies had a mixed impact on the competitors. In the small C&I sector, A&C experienced problems in getting trade allies to work with it and would have liked more cooperation. This was particularly disadvantageous to A&C because the small C&I sector was large (over 2,000 customers) and, therefore, required a larger sales force than A&C had available. The trade allies which did work with A&C were very successful: for example, a lighting vendor was able to close 90% of their jobs. In contrast, trade allies were less important in the Competition in the large C&I sector because Honeywell had fewer customers. Furthermore, Honeywell did not need nor want trade allies to market its program because it already had enough customers. In the rental sector, BRMC rarely used trade allies to market its program or to perform installations. When necessary, BRMC did not experience problems in getting trade allies. For BRMC, trade allies worked well for lighting measures, but not for heating measures: heating subcontractors did not like to install the measures BRMC preferred. In general, BRMC used its own subcontractors to control the quality of their installations. However, BRMC did lose a few sales because its subcontractors were too busy or not available.

Although trade allies offer a significant edge in marketing conservation programs, several problems may be associated with their use. Trade allies may: (1) aggressively promote their own products, which may result in an increase in free riders and cream skimming; (2) vary rebates, depending on the need of the customer: this could benefit the customer, but lead to confusion among customers located in the same geographical area; (3) have interests incompatible with the interests of MGE and its competitors; (4) only sell equipment with rebates and may not convince people to buy other energy-efficiency equipment; (6) be costly; and (5) create customer service problems. Except for the last problem (see above, regarding

* The marketing approach of trade allies varied: for example, some HVAC firms told customers about the rebate program when they entered the store, while others (such as lighting firms) were not as busy and tried to actively find new customers, using the rebates as a selling device.

HID lighting and programmable thermostats), MGE and its competitors believed that these problems did not occur in the Competition.

5.5.2. Trade Ally Perspectives

Based on the trade ally survey conducted for this evaluation, most vendors participating in MGE's programs were satisfied with the company's performance. Vendors thought MGE to be very helpful and cooperative (e.g., MGE placed phone calls to screen out interested customers and then would relay this information to the trade allies). Most vendors also thought the information provided by MGE on its programs and MGE's marketing strategies were sufficient for vendors in their interaction with customers. Finally, most trade allies were aware of MGE's excellent reputation in the area and thought MGE responded quickly to concerns raised by customers and vendors. As one vendor stated, MGE was "as good a utility to work with as you can find." In the future, most trade allies want MGE to expand its rebate programs and increase the level of the rebate.

In the trade ally survey, several vendors reported that MGE's program increased sales of high-efficiency equipment as well as increasing customer awareness of these products. However, some vendors noted that total sales did not increase, but a change in the composition of equipment sold did occur: a greater percentage of products sold were energy-efficient.

Trade allies were not always supportive of MGE's efforts. For example, some trade allies were angry when MGE's air-conditioning program was not allowed in the Competition (it was not considered to be cost-effective in the Competition), because they had counted on the program to last for several years. Another vendor thought MGE's rebates distorted the marketplace by allowing "fly-by-night" vendors to enter the Madison area and offering very low prices for their equipment. This vendor recognized that customers benefitted from these price strategies, but felt that his business suffered due to lower profit margins as a result of price cutting to be able to compete in the market.

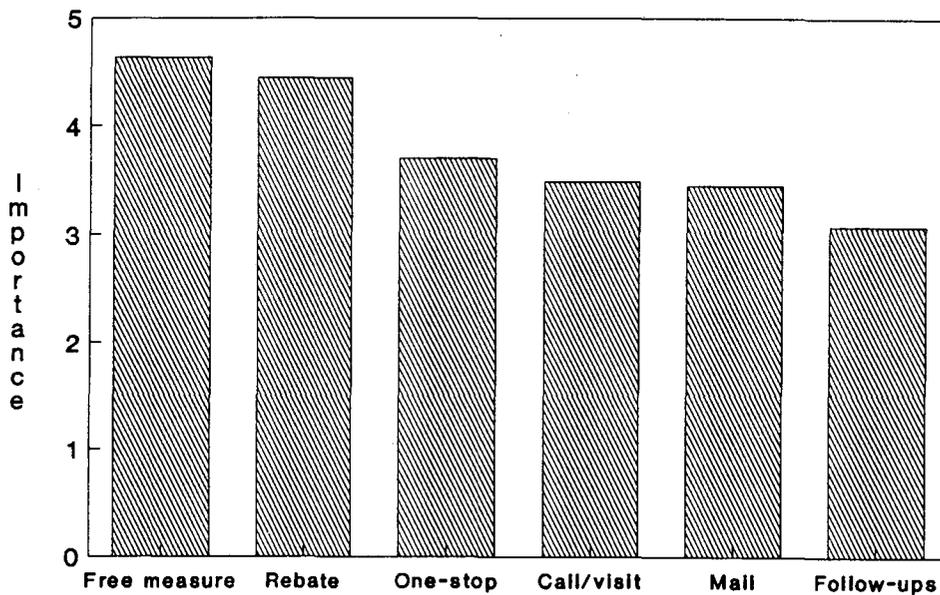
5.6. CUSTOMER DECISION MAKING

Based on the customer survey conducted for this evaluation, the principal reasons for deciding to install a measure during the Competition were, in relative degree of importance, the following: * (1) the fact that the measure was free, (2) the rebate, (3) having someone to select, finance, and install the measure(s) for the customer ("one-stop service"), (4) phone call or visit from the MGE representative or contractor (competitor), (5) written materials explaining the program mailed by MGE, and (6) repeated follow-ups by the MGE representative or contractor (competitor) (Fig. 5.1, Table 5.4). Within each

* Customers were asked to indicate the relative importance of individual factors affecting their decision to install energy-efficiency measures in the Competition; the scale of importance ranged from 1 (not at all important) to 5 (very important). Customers did not rank one factor versus another.

sector, the relative rankings remained the same, except in the large C&I sector where the rebate was relatively more important than the free measure and where written materials and phone call/visit from the MGE representative were more important than one-stop service. For each of MGE's competitors, the repeated follow-ups and provision of one-stop service appeared to be more important for their customers than for MGE's which were influenced more by the written materials mailed by the utility company.

Figure 5.1. Importance of Factors Affecting Decision-making



(5=very important; 0=not important)

Several statistically significant findings were found in the analysis of these factors:

Phone call/visit. In the rental sector, a phone call or visit from the contractor (competitor) was more important for BRMC's customers than for MGE's customers.

Repeated follow-ups. In the large C&I sector, repeated follow-ups by a company representative or contractor (competitor) were more important for Honeywell's customers than for MGE's customers. In the rental sector, repeated follow-ups were more important for BRMC's customers than for MGE's customers.

Rebates. In the large C&I sector, rebates were more important for Honeywell's customers than for MGE's customers.

Other factors. Statistically significant differences among or within sectors were not found for (a) written materials or (b) free measures.

**Table 5.4. Importance of Factors Affecting Decision to Install Measures at This Location
(from (1) not at all important to (5) very important)**

(a) Phone call or visit from company representative or contractor

	Total	Small C&I			Large C&I			Rental(*)		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	377	178	84	94	72	56	16	127	55	72
Average	3.49	3.54	3.65	3.44	3.46	3.32	3.94	3.45	2.73	4.00
St. Dev.	1.46	1.38	1.38	1.38	1.43	1.50	0.80	1.52	1.52	1.27

(b) Repeated follow-ups by company representative or contractor

	Total	Small C&I			Large C&I(*)			Rental(*)		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	328	138	62	76	70	54	16	120	52	68
Average	3.08	2.75	2.97	2.58	3.36	3.15	4.06	3.28	2.58	3.82
St. Dev.	1.52	1.55	1.61	1.48	1.35	1.42	1.09	1.56	1.58	1.52

(c) MGE mailed written materials explaining the program

	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	376	161	81	80	66	55	11	149	76	73
Average	3.45	3.47	3.43	3.50	3.52	3.62	3.00	3.42	3.55	3.27
St. Dev.	1.42	1.34	1.37	1.32	1.39	1.27	1.78	1.51	1.44	1.54

* Statistically significant differences (at 0.05 level) between MGE and its competitor in this sector (F-test).

**Table 5.4 Continued. Importance of Factors Affecting Decision to Install Measures at This Location
(from (1) not at all important to (5) very important)**

(d) Having someone to select, finance, and install the measure

	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	261	103	49	54	53	37	16	105	40	65
Average	3.70	3.70	3.80	3.61	3.40	3.24	3.75	3.85	3.48	4.08
St. Dev.	1.23	1.18	1.15	1.20	1.39	1.54	0.80	1.12	1.38	0.95

(e) The rebate

	Total	Small C&I			Large C&I(*)			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	323	96	40	56	77	61	16	150	76	74
Average	4.44	4.11	3.95	4.23	4.29	4.15	4.81	4.72	4.72	4.72
St. Dev.	0.92	1.27	1.43	1.12	0.84	0.89	0.53	0.58	0.48	0.67

(f) The fact that the measure was free

	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	147	122	66	56	2	2	0	23	20	3
Average	4.63	4.60	4.52	4.70	4.00	4.00	N/A	4.87	4.85	5.00
St. Dev.	0.93	0.93	0.79	1.01	1.00	1.00	N/A	0.83	0.48	1.86

* Statistically significant differences (at 0.05 level) between MGE and its competitor in this sector (F-test).

CHAPTER 6. ADMINISTERING THE COMPETITION

During the Competition, monthly meetings were held among MGE and its competitors, the Monitor, and the Panel to discuss the status of the Competition. Some of the major administrative and implementation issues that were discussed during these meetings and presented in this chapter include: customer confusion, financial constraints, calculation methodologies, and data base construction. In addition, we also examine the roles of the Monitor and the Panel, and the administrative impact of the program on MGE. We examine these issues in order to provide some suggestions for improvement for future Competitions. While the administration of the Competition encountered few problems, the development of the energy savings calculation methodologies was time consuming, and reflected the Monitor's and Panel's difficulties in making timely decisions.

6.1. CUSTOMER CONFUSION

Prior to the Competition, MGE was concerned about the possibility of customers being contacted by both MGE and a competitor, leading to customer confusion and dissatisfaction. MGE's concerns were particularly salient for the commercial sector in which there was no clear boundary line for differentiating large from small customers. As it turned out, this concern was proven later to be unfounded and, therefore, was not a significant issue in the Competition.* For example, Honeywell was aware of only three customers which were contacted by both MGE and Honeywell: in one case, Honeywell did the work (the customer was interested in heating and air-conditioning controls which were Honeywell's domain); in another case, a vendor did the work; and in the third case, the customer did not do anything. Because Honeywell focused on a small number of customers (19), the likelihood of confusion was small, and there was virtually no overlap between Honeywell's and MGE's customers. In summary, there was very little customer confusion in the Competition.

A few customers were confused, and these exceptions are noted below. In the small C&I sector, MGE sent a mailer to its customers before A&C began its operations. As a result, a higher proportion of customers was contacted in this sector by both MGE and its competitor than in the large C&I sector. However, both A&C and MGE thought the resulting confusion was minor (5% of the customers or less): one possible explanation for this is that, according to A&C, most people had thrown away MGE's mailer. Also, some customers who were contacted by both competitors enjoyed the additional attention and took advantage of the best offer.

* The lack of customer confusion may be due to the fact that customer service had been stated at the beginning as an important objective of the Competition and continued to be emphasized during the implementation of the program.

A second source of confusion for some customers was the degree of MGE identification used by the non-utility contractors in the small C&I and rental sectors (Honeywell did not have this problem, since it relied on its name for program marketing). In these two sectors, A&C and BRMC told customers (with MGE's concurrence) that they were working for MGE. When questions arose, customers sometimes called MGE even though the utility company had not contacted the customer. Again, the number of occurrences was small. MGE did receive phone calls from customers questioning the credentials of competitors. Suspicion of outside contractors was less of a problem in the rental sector, because MGE had been using an outside vendor (the Wisconsin Energy Conservation Corporation) for the last year, so customers were used to working with people other than MGE.

A third source of confusion was the type of rebate form and application used by MGE and its competitors. Because MGE, A&C, and BRMC used different forms, some customers were unsure which application to use and to whom it should be sent. As a result, some A&C applications were sent to MGE by mistake. A related source of confusion was that MGE published and distributed fixed rebates to its customers, while some competitors varied rebates for individual customers. Thus, some customers were initially confused with the presence of two different kinds of rebates and wondered which rebate they were eligible for; at the same time, the customer could take advantage of the most generous offer. In conclusion, while several sources of confusion existed, the amount of customer confusion was slight and was not a significant issue in the Competition.

6.2. FINANCIAL CONSTRAINTS

MGE and its competitors were faced with three types of budgetary constraints in the Competition: they could not spend more money than was allocated by the PSCW for (1) their programs ("budget cap"), (2) for a particular project ("project cap"), and (3) for a specific end use ("end-use cap").

6.2.1. Budget Cap

Because of the budget cap, MGE and its competitors were forced to evaluate their strategies and programs prior to implementation. This was the first time that a cap had been placed by the PSCW on MGE's energy conservation programs. Previously, MGE had been allowed by the PSCW to spend as much money as it needed to meet customer demand; however, MGE usually demanded that the total DSM budget stay within the total authorized limit (although individual programs could overspend if funds could be obtained from other programs that were underspent). In the Competition, however, it was "first come, first serve." The change in policy was due to two factors: First, the PSCW was not willing to let MGE write a blank check (unlimited funds) for the Competition. And second, the PSCW could not have adopted the Order mandating the Competition without a budget cap. The PSCW also used the cap to convey to MGE and its competitors that they should try to save as much energy as they could with a

given amount of funds.

The budget cap had differential impacts on MGE and its competitors. MGE ran out of money in the large C&I and rental sectors earlier than expected and could not continue to serve its customers in these sectors (the large C&I sector ran out of money after four months; the rental sector ran out of funds in less time, but, because this sector started later, the shortage occurred later in the year). As a result, Honeywell was able to monopolize the large C&I sector for most of the Competition. In addition, MGE experienced both customer service and staff problems and was forced to refer customers to its competitors. MGE disliked this referral service because it wanted to stay in touch with its customers, and MGE felt its inactivity represented a void in the marketplace. In addition, some customers and trade allies were upset with the program closures because they were not anticipated in the development of their long-range plans. Because MGE could not guarantee that there would be funds, a number of customers and trade allies called MGE during the Competition to see if its programs were still being funded.

According to A&C, the budget cap did not present a problem since it had planned for the cap in the beginning and based its goals on the amount of money available. However, the PSCW thought that the budget cap was a problem for A&C as a result of its strategy that consumed a significant amount of its funds on audits. As a result, A&C's funds were constrained quickly in the Competition, although it did fulfill its goals as proposed at the onset of the Competition.

BRMC was able to live with the budget cap, although it had to change its program strategy during the Competition in response to the cap. Initially, BRMC spent a lot of its money on consultants and audits, without installing many measures. As a result of the cap, BRMC changed its strategy so that all of its money would not be used in detailed audits of customers' facilities. The cap allowed BRMC to make reasonable arguments for changing its program strategy and for controlling its costs. Accordingly, BRMC decided to build up its work slowly so it could stay in the Madison area after the Competition (BRMC ran out of money on the last day of the Competition).

The budget cap did not impact Honeywell's programs. While Honeywell could have exceeded the budget cap, Honeywell designed its program strategy so that it would not exceed the budget cap.

The early shutdown of MGE's programs did provide unexpected advantages to the utility and its competitors: (1) MGE was able to shift personnel from the large C&I sector to the small C&I sector to meet large customer demand; (2) MGE was given time to examine existing data and strategically plan for its short-term future; and (3) after MGE stopped its program, its competitor was left alone and free to do what it wanted.

6.2.2. Project Cap

The PSCW wanted to make sure that all customers had a chance to participate. As a result, the amount of money for a specific project for a customer was limited (\$25,000 in the small C&I sector and \$50,000 in the large C&I sector), preventing customers from taking all or most of the funds available in the Competition. In general, the project cap was not a significant problem to MGE or its competitors. However, some projects in the large C&I sector were affected: for example, Honeywell was forced to defer two large projects (over \$50,000) until the completion of the Competition, since it was unable to go outside the Competition to fund these projects.

6.2.3. End-Use Cap

The amount of money that could be spent on one end use was limited, but this was not a significant issue in the Competition. As noted in Chapter 3, no more than 75% of the budget for each fuel type (electric or gas) could be spent on one end use (e.g., air conditioning, lighting, space heating, water heating, and refrigeration). And no more than 50% of each sector's budget could be used for energy-efficiency measures that had a customer payback of less than one year (without including the incentive in the payback calculation). This limit was intended to prevent MGE and its competitors from spending most of their money on quick payback measures for a particular end use, leading to cream skimming. The end-use limit was also expected to force competitors to examine a broader array of energy-efficiency measures. The end-use limit was an issue for MGE in the rental sector: one vendor for MGE extensively promoted low-flow showerheads, so that the water heating limit (for gas water heaters) was reached very quickly. A letter was sent by MGE to its customers indicating that rebates for this particular measure were no longer available. A second letter was later sent to customers announcing that the entire program had ended. The termination of this program led to confusion and dissatisfaction among some customers and trade allies. Aside from this example, the end-use cap did not present a problem to MGE and its competitors.

6.3. SAVINGS CALCULATION METHODOLOGIES

Methods for calculating the energy savings were defined for each DSM measure in order to ensure consistency among competitors. Initially, MGE and its competitors submitted a proposed approach to the Monitor that would be used as input to the development of a consistent methodology. The Monitor then investigated the various assumptions used by each party and proposed a comprehensive set of methods, which were distributed to each competitor. Although the negotiation process for establishing calculation methodologies required extensive effort, once determined, all competitors complied well with established procedures.

Honeywell was the only competitor that did not find problems with the methods used to calculate savings. Both Honeywell and the PSCW staff thought the calculations were fair to all parties: as long as they were the same for everyone ("you do this measure, and you get this amount of savings"), they felt there was no problem. In contrast, the Monitor felt that energy and demand savings for some measures (e.g., thermostats, HVAC improvements, and control systems) were overstated by MGE and its competitors, while savings for other measures (e.g., lighting) were relatively more accurate.

Overall, the development of common savings calculation methods proved to be more vexing and time consuming for all parties than originally anticipated. This outcome was primarily due to the lack of reliable data—especially in the C&I sector—to make informed estimates of energy savings. Many practical issues arose and had to be resolved during the process of developing standard savings calculation techniques, including: (1) the use of average default values or site-specific calculations for determining efficiency, (2) use of seasonal or annual efficiency values, (3) appropriate engineering methods, and (4) reliability of manufacturers' data. In addition, new calculation methods were devised by some competitors to estimate energy savings: for example, A&C constructed its own energy analysis model to predict energy use in buildings. As a result, estimates of savings for some measures (e.g., for pipe insulation) were considered to be inaccurate by several participants.

Much of the discussion on methods used to estimate energy savings centered around the following key issues: (1) default values, (2) sensitivity of methods, and (3) impact of methodologies on selection of measures. In the first two cases, the Monitor was asked to give the Panel his best judgement, and participants could bring their complaints to the Panel if they were dissatisfied with the Monitor's findings. In the third case, it was left up to each competitor to select measures that yielded the best results (in terms of Conservation Value and Performance Score). Because estimated savings calculations had not been worked out in advance, extensive discussion about these calculations occurred in the early months of the Competition.

6.3.1. Default Values

Disagreements about default values for energy savings were based on technical merit as well as concerns about the results being "gamed" to the advantage of one of the parties. Estimated energy savings and installation rates for setback thermostats and low-flow showerheads were particularly suspect. For example, A&C lost 25% of its savings because its estimated savings from thermostats were changed by the Monitor: A&C said it had submitted its calculations to the Monitor at the beginning of the Competition, but, according to A&C, the Monitor delayed his review of the calculations until the very end of the Competition. In another case, MGE's estimates of savings for low-flow showerheads were contested by BRMC, but the Monitor determined that MGE's values were accurate.

Installation rates varied by measure and thus savings estimates for each individual measure could affect the outcome. For example, MGE promoted compact fluorescents and low-flow showerheads, while

A&C promoted programmable setback thermostats and BRMC promoted low-flow showerheads. BRMC tested existing showerheads before installing them and made sure low-flow showerheads were really needed.* In contrast, MGE relied on vendors to determine where low-flow showerheads should be installed. However, MGE did not issue rebates until showerhead installations had been inspected by the utility.

As part of its quality control responsibility, the Monitor established a schedule of anticipated inspection rates at the beginning of the Competition to ensure adequate coverage of a wide range of project types and sizes. Additionally, this schedule clearly communicated to competitors the Panel's intention to verify saving claims. The Monitor conducted pre-installation inspections to (1) determine the type of existing equipment, (2) confirm the accuracy of engineering assumptions, (3) model the equipment, and (4) talk to the customer who was planning to install the new equipment. About 10% of all projects were inspected to verify installation and energy-saving calculations and to determine customer satisfaction. Some inspections were random and some were requested. A higher percentage of projects were inspected when the rebates were large (over \$5,000/customer); the schedule of inspections is shown in Table 6.1.

Over 2,500 measures were inspected by the Monitor in the Competition. According to the Monitor, with notable exceptions, measures were installed properly and energy saving claims appeared justified. The notable exceptions are shown in Table 6.2.

Table 6.2. Installation Rates for Selected Measures.

Competitor	Measure	Percent Installed
MGE	Set-back Thermostats	64%
A&C	Set-back Thermostats	55
MGE	Showerheads	38
BRMC	Showerheads	100
MGE	Compact Fluorescents	32

* BRMC felt that the installation of low-flow showerheads should not be counted in the Competition since a Madison ordinance required the installation of low-flow showerheads (verified at time of sale and building inspection) for rental property.

**Table 6.1. On-Site Installation Verification Table
Minimum Levels**

	Sector		
	Residential (Maximum: \$25,000)	Small C/I (Maximum: \$25,000)	Large C/I (Maximum: \$50,000)
Lighting			
\$ Value	to \$1,000	to \$5,000	to \$25,000
%	10%	10%	20%
\$ Value	over \$1,000	over \$5,000	over \$25,000
%	20%	20%	100%
HVAC			
\$ Value	to \$5,000	to \$5,000	to \$25,000
%	10%	10%	20%
\$ Value	over \$5,000	over \$5,000	over \$25,000
%	20%	20%	100%
Refrigeration			
\$ Value	N/A see appliances	to \$3,000	to \$25,000
%		5%	20%
\$ Value		over \$3,000	over \$25,000
%		10%	100%
Hot Water			
\$ Value	to \$1,000	to \$1,000	to \$25,000
%	5%	5%	10%
\$ Value	over \$1,000	over \$1,000	over \$25,000
%	10%	10%	100%
Building Envelope			
\$ Value	to \$500	to \$1,500	to \$25,000
%	10%	10%	20%
\$ Value	over \$500	over \$1,500	over \$25,000
%	20%	20%	100%
Appliances			
\$ Value	to \$1,000	to \$1,000	to \$25,000
%	5%	5%	10%
\$ Value	over \$1,000	over \$1,000	over \$25,000
%	10%	10%	100%

**Table 6.1 (continued). On-Site Installation Verification Table
Minimum Levels**

	Sector		
	Residential (Maximum: \$25,000)	Small C/I (Maximum: \$25,000)	Large C/I (Maximum: \$50,000)
Process			
\$ Value	n/a see	to \$2,500	to \$25,000
%	appliances	5%	20%
\$ Value		over \$2,500	over \$25,000
%		10%	100%
Controls			
\$ Value	to \$500	to \$1,000	to \$25,000
%	5%	10%	50%
\$ Value	over \$500	over \$1,000	over \$25,000
%	10%	15%	100%
Miscellaneous			
\$ Value	to \$1,000	to \$2,500	to \$25,000
%	5%	10%	20%
\$ Value	over \$1,000	over \$2,500	over \$25,000
%	10%	15%	100%

- Notes:
1. If one measure/category or vendor consistently shows problems, inspection rates are increased to level needed to remedy problem
 2. Applications/installations under \$250 for all measures not to exceed 5% random checking
 3. All applications over \$5,000, minimum 15% inspection
 4. All applications over \$10,000, minimum 20% inspection
 5. All applications over \$15,000, minimum 25% inspection
 6. All applications over \$20,000, minimum 50% inspection

In the case of programmable setback thermostats, some customers reported that this equipment was incompatible with their system, or that they "just hadn't gotten around to installing them." In the case of showerheads, BRMC directly installed these measures, thereby achieving a 100% installation rate. In contrast, MGE relied on a vendor to install showerheads. Upon inspection, installation rates for MGE were low: customers had purchased the showerheads but had not installed them. However, as noted previously, MGE did not issue rebates until showerhead installations had been inspected by the utility. Also, non-installed showerheads were not included in the Performance Score.

6.3.2. Method Sensitivity

The methods used to calculate energy savings were particularly sensitive to the following inputs:

- hours of operation for lighting measures
- lighting levels
- efficiencies for furnaces and water heaters
- measure lifetimes
- minutes to take showers
- installation rate for thermostats and showerheads
- energy savings versus peak demand savings.

As an example, one person thought that peak load reduction measures would have been promoted more heavily if their credit was higher (the credit for kW savings was \$180/kW for the C&I sector; this one-time credit was for the amount of system peak savings over the lifetime of the measure). The Performance Score magnified small differences in benefits, as benefits were squared in the calculation of the score. For example, if a project was disqualified, it's Performance Score could drop significantly: MGE's Performance Score was reduced from \$42 million to \$23 million in a few weeks because a few projects were disqualified: some projects had been installed outside the time frame of the Competition, and fuel switching projects had been counted.*

6.3.3. Selection of DSM Measures

Some MGE staff thought that the Competition tended to promote measures with the best Performance Score, and not necessarily those that were best for MGE or its customers. For example, converting incandescent lights to fluorescent lights may result in a high Performance Score, but, without proper

* A project could be disqualified if (1) the project was outside the Competition's time frame, (2) the measure did not meet energy-efficiency standards, (3) the project was under MGE's gas marketing program, (4) the project used a loan without getting any rebates from MGE, or (5) a customer did not proceed with the project.

design, may not necessarily be good for customers. One customer converted a 60-watt incandescent bulb to a 40-watt fluorescent bulb, and lighting levels increased from 40-foot candles to 100-foot candles (approximating a 250-watt incandescent). In this case, a lower wattage for the fluorescent light would have been more appropriate. This case appears to be a fairly isolated example because most installations by this vendor were performed correctly, according to the Monitor.

Several participants noted that there were some measures that were requested by customers but were not offered by competitors because of their low Performance Score. For example, some customers desired high-efficiency air-conditioners, but the benefit-cost ratio of this equipment was not sufficiently high for MGE and its competitors to promote.

Many participants thought the Performance Score encouraged cream skimming (installing quick payback measures and low-cost or no-cost items), resulting in the promotion of such measures as low-flow showerheads and setback thermostats. Measures with longer lifetimes were not promoted because (1) they didn't get the full savings benefits over their useful economic life because of the cap put on measure lifetimes (15 years),* (2) savings for low-cost items were relatively high, and (3) rebates were higher for measures with longer lifetimes, decreasing the benefit-cost ratio. For example, MGE heavily promoted low-flow showerheads in the rental sector because the Conservation Value of a showerhead was \$450 for a \$10 investment (a 45:1 benefit-cost ratio).** On the other hand, some long-term measures were promoted when they were bundled with short-term measures.

6.4. DATA BASE DEVELOPMENT

The development of the data base for the Competition was a joint effort between MGE and the Monitor. Subsequent to data base development, modifications were made as requested by the competitors. All competitors submitted a copy of their data bases (spreadsheets) on a monthly basis, and these data bases were reviewed by the Monitor to identify questionable records and then were merged to form a single Competition data base (on dBASE IV). Due to the variability of submissions, integration of the data bases at the end of the Competition required three person-days and approximately eight hours of computer time.***

* According to PSCW staff, the cap was a compromise to partially correct for the fact that the formula did not use appropriate net present valuing in the large and small C&I sectors.

** The vendor promoting the showerheads for MGE bought the showerheads for \$4 and sold them for \$10; with a \$10 rebate, he was essentially giving them away for free.

*** For spreadsheets, MGE and A&C used rBASE, BRMC used dBASE, and Honeywell submitted hard copy (due to its small number of projects).

Data quality varied by competitor and was correlated to the number of records in the data base (Whitson, 1989): the larger the data base, the more errors likely to occur. Few errors were related to energy and demand savings; most errors were due to blank fields or keypunch errors in date, product count, or rebate level fields. Upon inspection of the installed measures, the Monitor discovered the following problems with MGE's and its competitors' data bases: (1) entries in the data base were incorrectly inputted; (2) measures had not been installed (particularly, setback thermostats, compact fluorescents, and low-flow showerheads); and (3) in one case, rebates were given for measures in an unoccupied building. In general, problems with the development and accuracy of the data base were minimal, although some participants did complain about the Monitor's ability in distributing the results in a timely fashion, as noted in the next section.

6.5. MONITOR

Although not responsible for administering the Competition, the Monitor's role as referee influenced the administration of the Competition. While some participants thought the Monitor did a good job in what was expected of him and was conscientious, several participants were critical of the Monitor's work. The Monitor was criticized primarily for being too slow (not timely) in preparing the energy-saving calculations, the Competition data base, and monthly reports, and in inspecting installations. As discussed below, several reasons may account for the slowness in the Monitor's work: (1) too accommodating to participants, (2) not assertive, or assertive in the wrong direction, (3) communication problems with the Panel, (4) sloppy work, and (5) overextended staff.

The Monitor was too accommodating by trying to respond and/or incorporate participants' concerns in: creating a data base (as mentioned previously, due to the variability of submissions, integration of the various data bases required extensive time); determining and negotiating calculation methods (the Monitor received four different versions of calculations); and verifying actual data that could replace default data (e.g., calculating the number of minutes for an average shower). These accommodations, compounded by the lack of sufficient lead time, led to scheduling delays.

At the beginning of the Competition, the Monitor asserted himself by refining calculation methods designed by MGE and developing quality assurance procedures. The former led to extensive negotiation while the latter was considered by some participants as too formal and bureaucratic and not as important as other responsibilities (like the development of the calculation methods and the data base, which was initially designed by MGE rather than the Monitor, and scorekeeping). As a result, the Monitor assumed a more reactive stance in responding to MGE's competitors' concerns. Subsequently, the Monitor was considered by some to be "wishy washy" and a person who needed to be continually prodded to complete his tasks. Furthermore, some participants thought the Monitor tried to avoid responsibility by relying on the Panel for guidance and for making key decisions (see below).

At the same time, some participants thought the Monitor was given too much responsibility without oversight from the Panel. Although it was the Panel's responsibility to direct the Monitor, the Panel did not assume this task because it thought the Monitor was capable of conducting his work without this supervision (see below). Consequently, quality control over the work of the Monitor was inadequate.

A few participants questioned the technical competence and work of the Monitor, such as the development of energy-saving calculations and the accuracy of input data. Data errors (changing numbers, careless errors (e.g., discounting measures twice), and duplicate records) were discovered late in the Competition and significantly influenced the final results. The impact of these changes was compounded by the fact that other features of the data base were also changing as decisions were made during the Competition: e.g, cost information, number of records, discounting of savings (discounting was used in the rental sector, but not in the C&I sectors), maximum lifetimes of measures, estimated savings of measures, and installation rates (if 50% of the measures were installed, then 50% of savings were obtained). These changes forced MGE and its competitors to change their data base files, a time-consuming affair. The affected participants thought some of these data errors should have been discovered and fixed early in the Competition, so they could have modified their marketing strategies. In conclusion, one competitor noted that it had to monitor the Monitor because it had no confidence in the Monitor's work.

Several participants thought the Competition was too much work for the Monitor; combined with his other work outside the Competition, the Monitor was viewed as overextended. This was particularly evident at the beginning of the Competition when the Monitor was getting organized, customer participation was increasing, and the demand for accurate scorekeeping was increasing.

Despite the guidance given in the RFP and the Monitor's contract, some participants felt that the lack of clear directions and priorities given to the Monitor at the beginning of the Competition may have caused many of the Monitor's problems. Similarly, some participants felt that the Monitor may have received undue criticism, since the Monitor was considered by many as the referee of the Competition, and unhappy participants wanted to "kill the messenger." Nevertheless, as the Competition progressed, dissatisfaction with the Monitor's work remained a source of contention among several participants.

6.6. PANEL

The Panel was responsible for administering the Competition and establishing the rules of the Competition; it was the ultimate referee of the Competition (participants could appeal the Panel's decisions to the PSCW, but this was never done). The Panel was needed for the entire Competition, especially at the beginning (for setting standards and policies) and at the end (for determining final scores).

6.6.1. Panel Members

Most people felt that the appropriate people were on the Panel: Claire Fulenwider from MGE, Wayne DeForest from the PSCW, and David Nichols as the third-party representative. Fulenwider played a multifaceted role. As a member of the Panel, Fulenwider was the principal writer of the RFP and the key contact person for the competitors, PSCW, Monitor, David Nichols, and the press. At the same time, she oversaw MGE's marketing strategy, monitored MGE's work, and informed top MGE management of how the Competition was proceeding.*

All participants commended Fulenwider for being objective and professional, and for doing an excellent job in her dual roles as Panel member and Director of Marketing. They also considered her to be the appropriate high-level person from MGE that was needed on the Panel. She compensated for her position in the utility by trying to be fair: while she was interested in MGE's outcome, she was careful not to favor MGE. Placed in a difficult situation, she was able to satisfy top management concerns, act as a neutral (unbiased) player in the Panel process, and actively work with both PSCW staff on the Panel and her own MGE staff.

Some staff in MGE's Marketing Department, however, found it difficult to relate to Fulenwider during the Competition: they could not figure out her role on the Panel - was she representing MGE's interests or acting as an unbiased Panel member in order to please the PSCW? This unclear role definition led to an awkward situation between Fulenwider and some of her staff: for example, some MGE staff felt that Fulenwider should have assumed an advocate role on the Panel and not an unbiased one. Fulenwider's insistence on neutrality was felt by some staff to inhibit her from forcing decisions (to look as if MGE was pushing something). If true, this could have affected Panel decisions being delayed and altered the timing of program marketing, design, and implementation.

DeForest was considered by most participants to be a good choice for the Panel: he asked the appropriate questions, made sure tasks were completed correctly in an expeditious manner, was very persistent, and was the right person from the PSCW's conservation staff. As an engineer, DeForest saw himself as the technical person on the Panel, whose problem-solving skills complemented the administrative skills of another PSCW staff member who participated, but did not vote, in Panel discussions. DeForest believed that two experienced people from the PSCW staff with different skills were needed for the Panel: the other PSCW staff member's skills as an administrator were needed for making the Panel more assertive (especially since the PSCW perceived that the Monitor was not doing his job), and DeForest's engineering skills were needed for reviewing the technical components of the Competition.

* Fulenwider did not have responsibility to operate MGE's customer programs under the Competition, nor was she involved in their management. This responsibility resided with other MGE staff.

Some MGE staff thought some PSCW staff were not as open-minded and objective as they should have been because they wanted to make the Competition work to the greatest extent possible and wanted to see MGE lose. Accordingly, some MGE staff felt that the PSCW members of the Panel spent too much time carefully reviewing MGE's calculations and micro-managing, which they felt the PSCW did not do with MGE's competitors. In addition, some MGE staff thought the results of the Competition were deliberately changed by the Panel to affect the outcome of the program: specifically, MGE felt that fuel switching was allowed in the Competition, but near the end of the Competition fuel switching was not permitted by the Panel and resulted in a lower score for MGE.* Finally, although DeForest was the only voting PSCW member on the Panel, the presence of two PSCW staff during Panel discussions created the appearance that they were voting together against MGE.

Not surprisingly, some of MGE's competitors thought they were caught in a political game involving MGE and the PSCW. As a result, some competitors felt that the PSCW was upset with them during the Competition because MGE was able to defeat two of the three competitors. Similarly, the Monitor had a difficult time in determining whether PSCW staff were speaking for the PSCW or for the Panel.

Most participants thought David Nichols, the third-party representative, played an important role in key stages of the Competition: he helped write the RFP for the Competition, participated in the bidders conference and the selection of the competitors and the Monitor, and was involved in the design and start-up of the Competition (developing the game rules). Once the Competition got underway, his participation tapered off: Nichols attended one meeting by phone and made one site visit. He was functionally in reserve, primarily serving as a sounding board on issues brought by the other panelists (when disputes or disagreements arose between the other two members). At the end of the Competition, Nichols was particularly active when disagreements needed to be resolved by the Panel on who won and what was to be included in the scoring. As the referee on the Panel, Nichols was considered by most participants to be the appropriate person for the job. Although most participants thought he was needed for the whole Competition to help negotiate technical, programmatic, and policy issues, and as a watchdog, Nichols himself thought he was not essential in administering the Competition.

Nichols was not immune to criticism by the participants. Some competitors considered him to be absent (a "nonentity") since he made very few comments publicly, rarely attended Panel meetings, was far removed from the day-to-day activities of the Competition, and was not informed about the activities of some of the competitors.** Several participants also thought Nichols to be costly, since he was located

* In a previous order on escrow accounts for conservation, fuel switching was not permitted by the PSCW.

** Most day-to-day activities of the Panel were decided between Fulenwider and DeForest; after they met, they often asked Nichols for his input. Nichols would have been more actively involved during the Competition if Fulenwider and DeForest had not been able to come to agreements on key issues. The PSCW was unable to get a local person who they felt would be a neutral party in the Competition. The PSCW did not want someone with ties to MGE. Accordingly, PSCW and MGE selected Nichols as the independent party.

in Boston, resulting in expensive trips to Madison. In response, Nichols thought that the formal role envisioned for him was that of a person who resolved disputes between PSCW and MGE; he could have played a more active role, but this was not what he was requested to do.

6.6.2. Panel Problems

Most participants believed the Panel to be fair to everyone by reasonably accommodating their interests and by making satisfactory decisions. However, several participants thought the Panel suffered the same problem that afflicted the Monitor: the Panel was too slow in making timely decisions on critical issues. As discussed below, delays in the Panel's work may be accounted by the following factors: (1) too accommodating to participants, (2) lack of leadership (indecisive and not assertive), (3) overextended staff, and (4) communication problems with the Monitor.

As with the Monitor, the Panel, in its concern with fairness, accommodated the needs of participants in order to make tradeoffs and compromises. Furthermore, the Panel used a consensus process to make decisions, and this process consumed considerable time (especially for determining the rules of the Competition, such as energy-saving calculations). Moreover, there was no game plan or contingency plan to handle conflicts (e.g., in estimating savings and agreeing on the calculations). As a result, the rules determining the energy calculations changed a number of times during the Competition, leading to changes in program approaches. Some participants thought the changes in the rules of the Competition were ridiculous because they were being asked to hit a moving target.

One basic feature of the Panel that led to some, if not all, of these problems was that there was no designated leader on the Panel. An explicit decision was made that it would have been inappropriate for either the PSCW or MGE to lead the panel. The MGE and PSCW members on the Panel were too busy with their other work and were unable to dedicate the amount of time needed for leading the Panel. This was compounded by the fact that funds were insufficient for conducting the Panel's work. While the Panel did meet monthly, there was no method of communicating effectively among the Panel members during the interim periods (e.g., teleconferencing).

For the first 5-6 months of the Competition (prior to April 1989), the Panel did not communicate with the Monitor. The Panel initially thought that it did not need to supervise the Monitor (the Monitor's monthly updates and reports were considered sufficient). The Monitor did receive instructions from both Fulenwider and DeForest, but these instructions sometimes conflicted. At the same time, the Monitor thought the Panel needed to specify more deadlines for monitoring and rulemaking. As noted previously, the Monitor had a difficult time determining whether DeForest was speaking for the PSCW or for the Panel. In general, the lack of communication resulted in unclear direction given to the Monitor. For example, at the urging of PSCW staff, the Monitor spent a significant effort in the early part of the Competition in developing a quality assurance procedure for competitors. However, the draft procedure did not meet the Panel's approval, and the Monitor was forced to substantially modify it. As a result, the

Monitor was not sure whether he should be reactive or proactive. As the Competition progressed, PSCW staff told the Monitor in May 1989 to be more proactive, especially in developing the Competition's data base. Subsequently, communication between the Panel and the Monitor improved towards the end of the Competition.

The Panel's reluctance to direct the Monitor in the early part of the Competition may have been a reflection of the dual management responsibility that was provided in the Competition: the Monitor and the Panel expected each other to provide the leadership.* This reluctance might also have reflected the fact that the PSCW and MGE felt that it would be inappropriate for either of them to lead the Panel. Also, this reluctance is not unique to the Competition, but is inherent in the regulatory process. To avoid unnecessary conflicts, regulatory decision-making process is typically slow and deliberative and strives for consensus whenever possible.

6.7. MGE

MGE thought that it, rather than the Monitor or the Panel, carried the burden of administering the Competition. MGE felt that laying the groundwork for the Competition consumed a significant amount of time and was underestimated when the Competition was proposed. Furthermore, MGE was involved in numerous activities during the Competition:

- administered both its own programs and the contracts with its competitors (and associated customer rebates);
- designed the RFP;
- contracted with the independent third-party representative and the technical monitor;
- provided information on its end-use energy patterns and its eligible customers to the contractors competing with it in the Competition;
- provided input to the savings calculation methodology development process;
- developed MGE's and the Competition's data base;
- wrote letters indicating that the competitor was working with MGE;
- attending monthly meetings and wrote the minutes of these meetings; and
- prepared monthly reports.

* The Panel's charge was not well-defined upfront: as noted in Chapter 3, the Order mandating the Competition provided only a skeleton of the Competition.

Finally, because the Competition was ordered across two test years, budget accounting for MGE was more complicated. In conclusion, MGE felt that the administration of the Competition was more burdensome than the administration of standard energy-efficiency programs.

CHAPTER 7. INITIAL INFORMATION ON PROGRAM IMPACTS

In this chapter, we discuss initial results on program impacts, including estimated savings, distribution and type of measures installed by customers responding to the customer survey conducted for this project, and estimates of free riders based on interviews with key participants and data from the customer survey. In addition, we highlight issues that participants identified as being particularly important for the impact evaluation of the Competition to address.

7.1. ESTIMATES OF PROGRAM ENERGY SAVINGS

Table 7.1 summarizes the reported electric and gas savings, based on engineering estimates, for MGE and its competitors in each sector.

Table 7.1. Final Results of Competition: Estimated Energy Savings*

	kW	kWh On Peak	kWh Off Peak	Therms On Peak	Therms Off Peak
Large C&I					
MGE	492	1,975,948	1,849,869	176,600	83,022
Honeywell	180	1,923,521	2,692,375	196,047	78,153
Small C&I					
MGE	303	747,235	413,125	400,654	126,350
A&C	145	365,625	270,854	128,213	23,992
Rental					
MGE	159	1,221,224	1,813,659	289,994	304,202
BRMC	51	110,576	326,206	71,962	171,162
Total	1,330	6,344,129	7,366,088	1,263,470	786,881

* Savings are calculated over the lifetimes of the measures, and peak savings refer to system peak savings.

While the impact evaluation of the Competition program will examine energy savings (estimated vs. actual results), costs, and cost-effectiveness in detail, in this chapter we offer some initial observations on these reported results. First, MGE is a relatively small utility and the results of the Competition should be viewed in the context of the utility's size and previous efforts. In 1988, MGE reported a peak demand of

517 MW and electric sales of about 2190 GWh. In its 1988 Annual Conservation Report, MGE reported estimated savings of 8.2 million kWh and peak demand reductions of 2.8 MW in these three sectors (MGE, 1989a). Reported gas savings were quite small - around 6,460 therms in the rental sector. Relative to efforts in the previous year, the Competition produced a huge increase in gas savings, significant increases in electric savings (13.7 million kWh vs. 8.2 million kWh), and a reduced emphasis on peak demand reductions.

Second, benefits from measures designed to reduce gas consumption account for about 56% of the total benefits in the first year. We did a simple calculation of the dollar benefits from the estimated savings in which electric and gas savings in the on-peak and off-peak periods were multiplied by MGE's respective avoided cost values. Gas savings are worth about \$735,000 in the first year, while electric savings are valued at \$577,000. Only in the large C&I sector did the dollar value of electric savings exceed gas savings. In our view, the significant gas savings resulting from installation of DSM measures (compared to the dollar value of the electric savings) is somewhat unique for combination utilities. The relative attractiveness of DSM options designed to reduce gas consumption could be related to the avoided costs used to value gas and electric savings (\$0.31-0.38/therm vs. \$0.03/kWh). It is also related to the predominance of gas used for heating and hot water in the market segments targeted by the Competition, particularly the rental market, and in the state in general.

Third, compared to its competitors, MGE appeared to place relatively more emphasis on promoting measures that produced demand reductions and electric savings during the peak period. The ratio of peak to off-peak electric savings is higher for MGE compared to its three competitors (e.g., the ratio for MGE was 1.07 vs. 0.71 for Honeywell).

Fourth, similar to MGE, Honeywell experienced increases in sales compared to previous efforts in the Madison area. In the large C&I sector, Honeywell estimated that sales increased three-fold from normal activities as a result of their participation in the Competition and ability to use the rebates to develop more attractive financial packages for new customers.

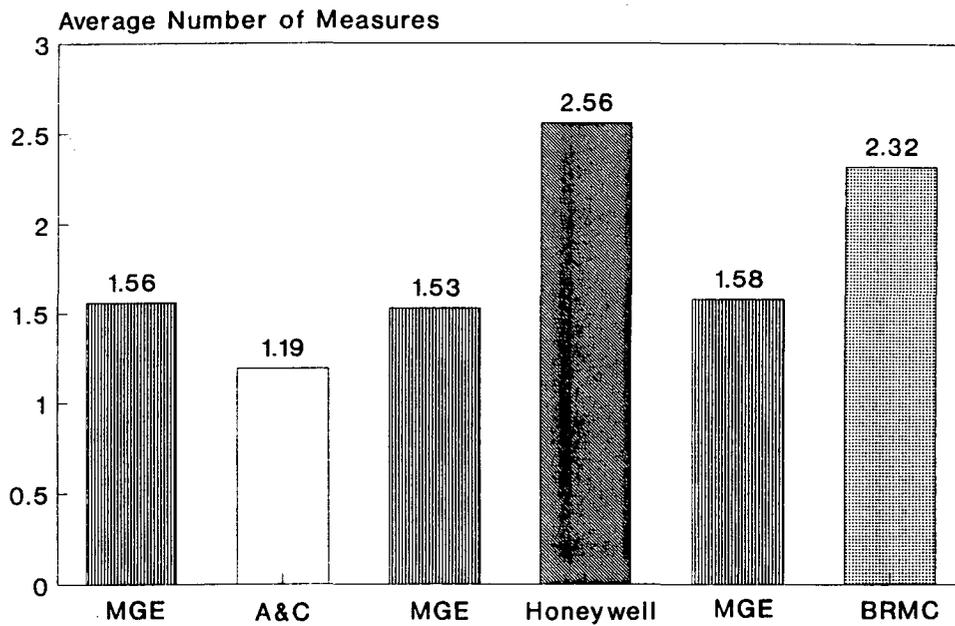
Fifth, integration of the information on estimated energy savings with the data on type and distribution of measures installed by customers allows us to develop a more comprehensive picture of the marketing strategy and approach of MGE and its competitors.

7.2. DISTRIBUTION OF MEASURES

The survey data base was used to estimate the distribution of measures installed in the Competition, although insufficient data limited the analysis. For example, entries in the data base indicate that a customer installed compact fluorescent lamps, but do not indicate the number of lamps installed in the building. In addition, a detailed breakdown of costs by measure and the type of equipment replaced was not available.

Figure 7.1 presents data on the average number of measures installed by MGE and each of the competitors in the total sample of 449 customers. On average, 1.6 measures were installed for all customers participating in the customer survey. The differences between MGE and its competitors are statistically significant in all three sectors. MGE's customers in the small C&I sector installed significantly more measures than A&C's customers. In the other two sectors, the average number of measures per customer installed by the competitors (Honeywell and BRMC) was significantly higher than MGE (about one measure more per customer).

Figure 7.1
Installed Measures per Customer



The three most common measures installed by customers in all three sectors were lighting, heating, and hot water system efficiency improvements; cooling system, motors, weatherization, and refrigeration measures were installed less frequently (Table 7.2, located at end of chapter). Tables 7.3-7.9 (located at end of chapter) lists each individual measure in the data base by category (heating system, lighting, motors, etc) and shows the relative frequency of installation for individual measures.* As Figure 7.2 shows, MGE's customers in the small C&I sector installed significantly more lighting measures on average than A&C's customers (0.8 vs. 0.5). Exit lighting conversions, which were offered free, were quite popular accounting for almost 70% of measures installed by MGE's customers and 30% installed by A&C's customers (Table 7.4). Other types of lighting measures were also installed frequently by A&C's

* For Tables 7.3 to 7.9, sample sizes (N) refer to number of measures, not number of customers.

small C&I customers: screw-in compact fluorescents, reflectors, and high-efficiency fluorescents. The average number of heating system efficiency improvements was comparable among MGE and A&C, although the distribution of low vs. high cost measures varied significantly.

Figure 7.2 Measures per Customer in the Small C&I Sector

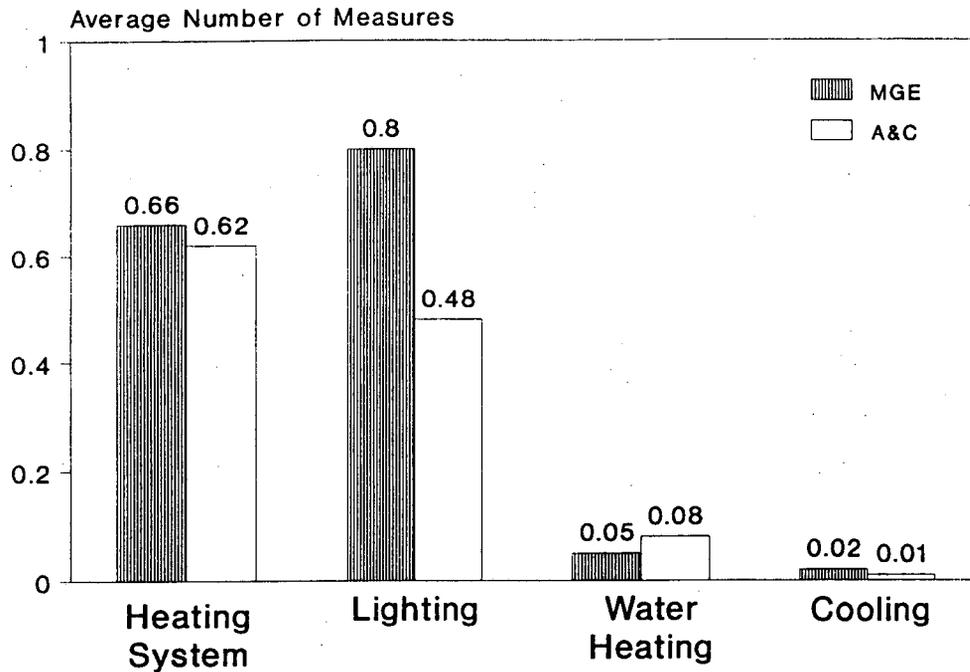


Figure 7.3 shows that 21% of the heating system measures installed by MGE's small C&I customers were replacements of existing equipment with new efficient boilers/furnaces, options with much higher first costs compared to installed heating system improvements (e.g., night-setback thermostats). Figure 7.4 shows the average number of measures installed per customer in the large C&I sector. The most striking difference between MGE and Honeywell is MGE's relative success in getting customers to install various lighting retrofits (0.9 vs. 0.3 measures/customer) plus the fact that MGE had many more installations in this sector than Honeywell (62 vs. 16 customers). Fluorescent lamps were installed by most of MGE's customers in this sector (see Table 7.4). However, Honeywell was more successful in getting its customers to install comprehensive retrofit packages that were designed to reduce electricity and gas used for heating (e.g., reset controls), cooling (e.g., economizers), motors, and water heating (e.g., setback controllers and efficient water heaters).

Figure 7.3 Low vs. High Cost Heating System Measures (Small C&I)

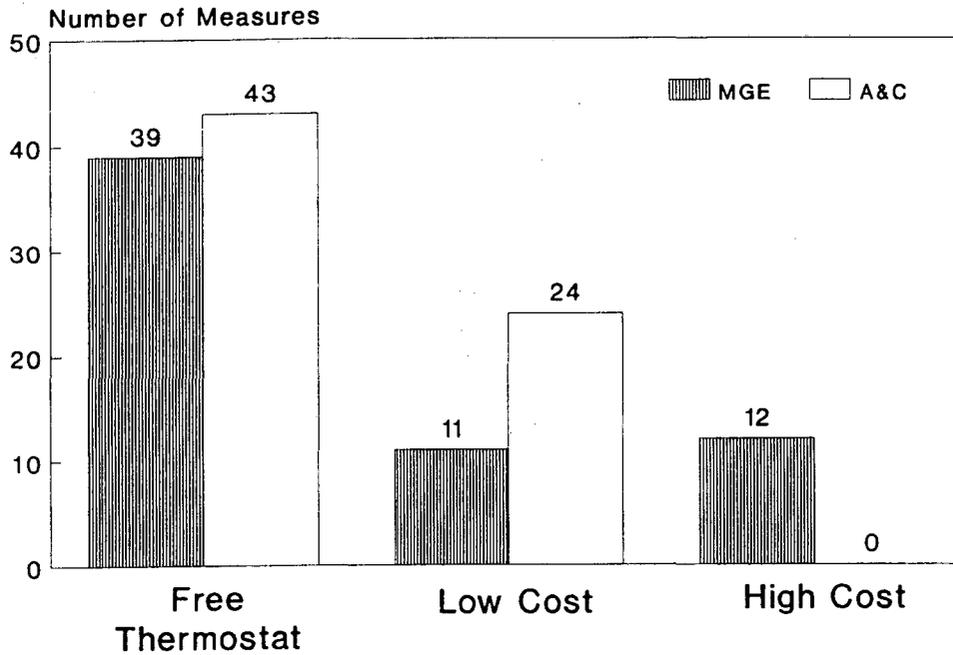
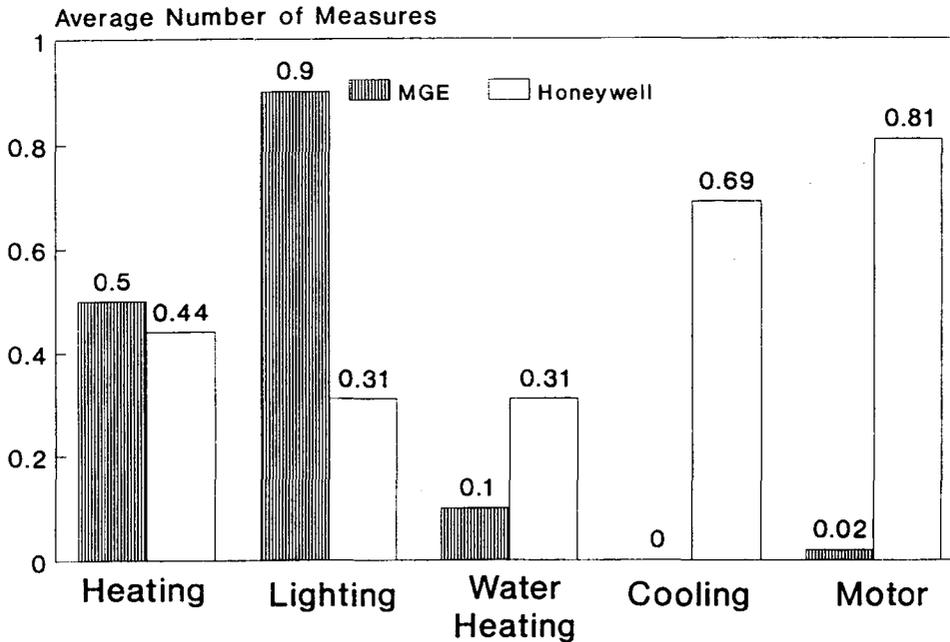
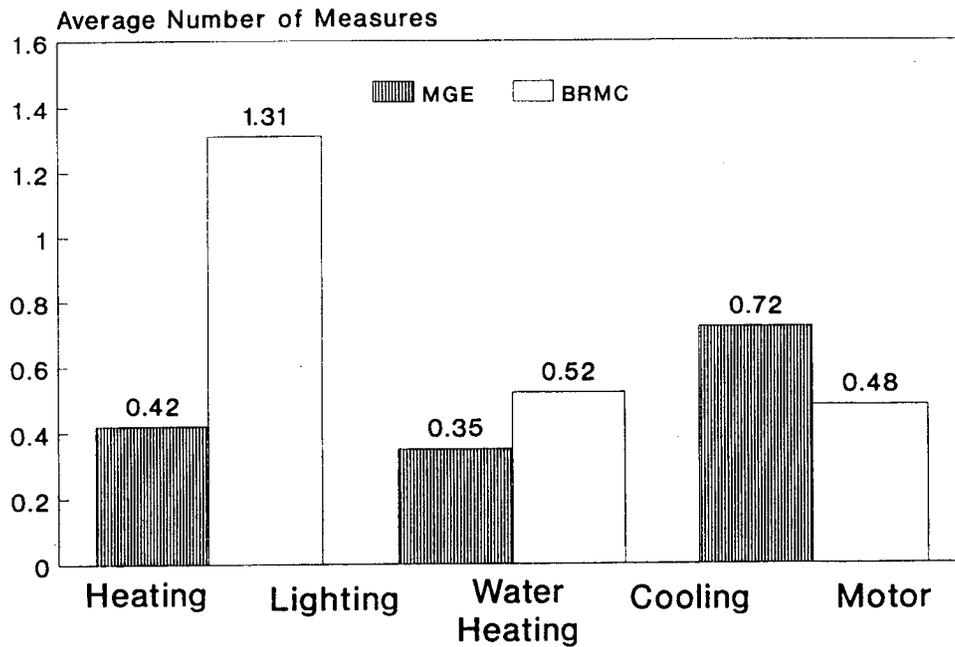


Figure 7.4 Measures per Customer in the Large C&I Sector



In the rental sector, BRMC's customers installed significantly more heating and hot water system measures than MGE's customers (see Figure 7.5), which were mainly low-cost measures (e.g., outdoor resets, cutout controls).

Figure 7.5 Measures per Customer in the Rental Sector



In contrast, MGE was more successful in getting its customers to install higher-cost heating system measures - about 20% of its customers that decided to install heating system measures replaced inefficient boilers and furnaces with efficient new equipment (Figure 7.6). These heating system replacements probably accounted for a significant portion of the estimated gas savings. Several types of low-cost measures were frequently installed by building owners in this sector, and these included setback thermostats, low-flow showerheads, and compact fluorescent lamps (Tables 7.4 and 7.5).

Figure 7.3 Low vs. High Cost Heating System Measures (Small C&I)

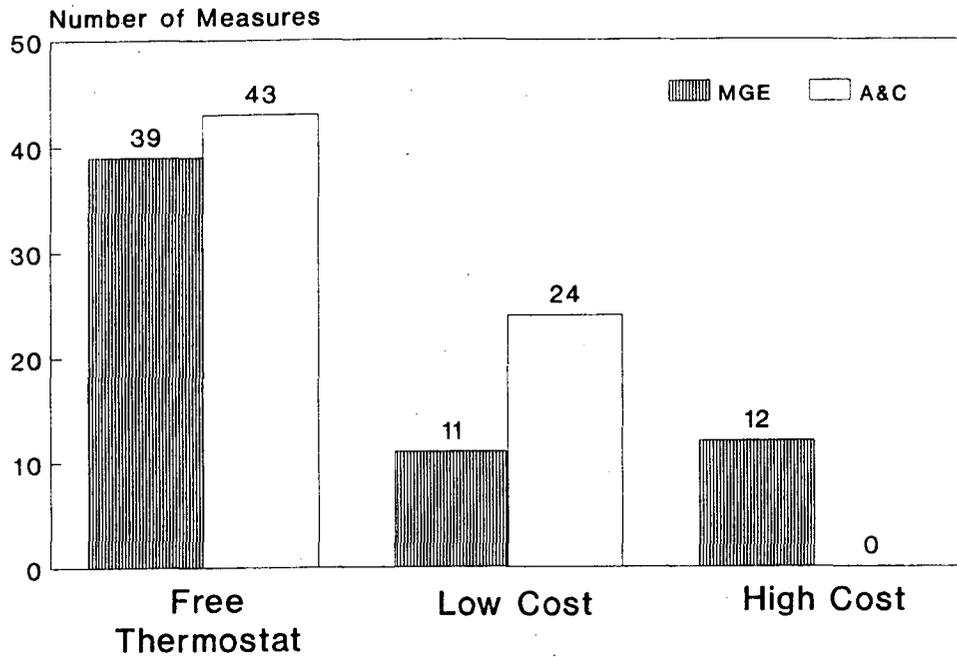
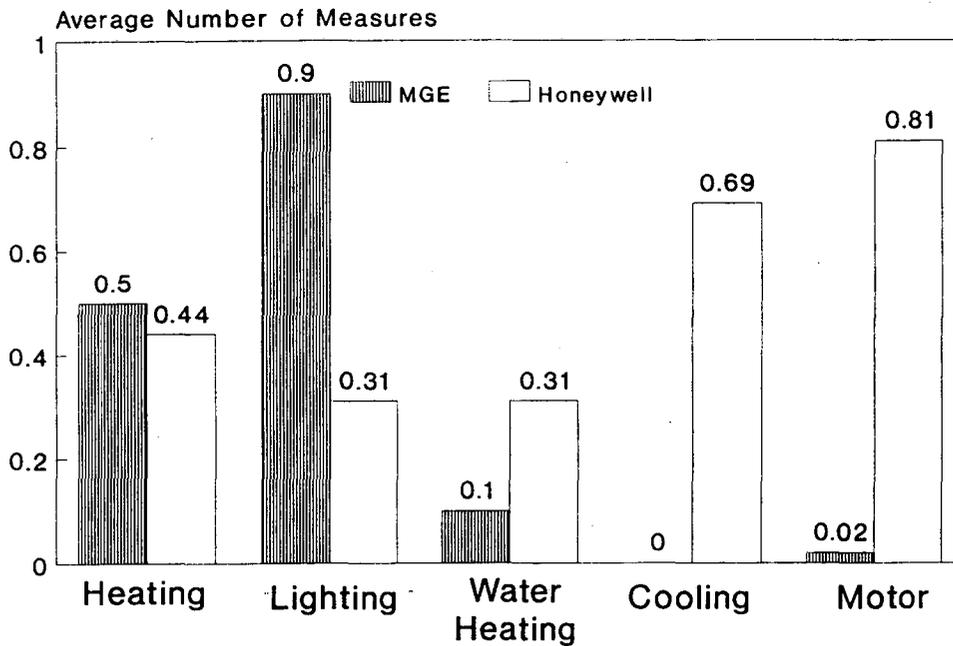
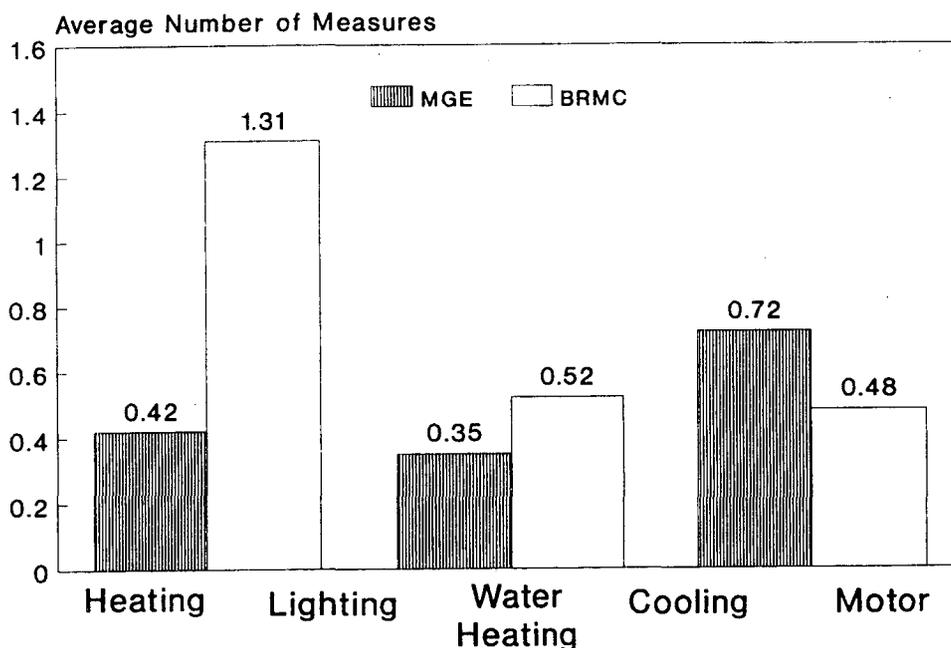


Figure 7.4 Measures per Customer in the Large C&I Sector



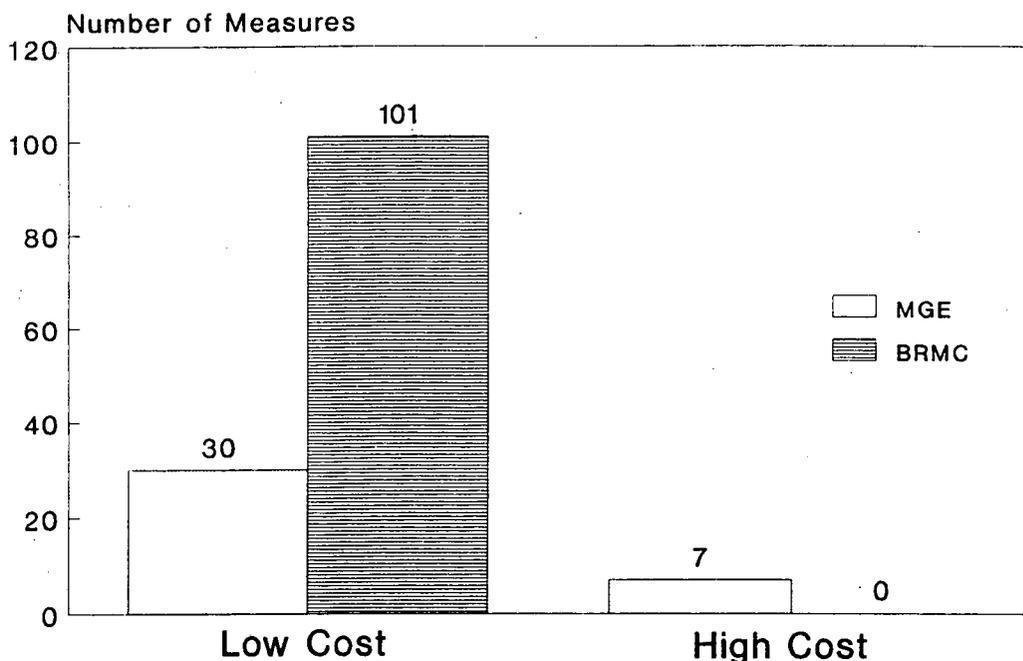
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Figure 7.6 Low vs. High Cost Heating System Measures (Rental)



7.3. FREE RIDERS

In this section, we discuss results from the customer survey that address issues related to "free riders" (tables in this section are located at the end of this chapter). Free riders are defined as those participants in a conservation program that would have installed the energy conservation measures even if there had been no program.* Because of the emphasis on rebates, many participants expected that the number of free riders in this program would be extensive. As discussed below, we found the average level of free

* Customer surveys are one of several tools that are available for estimating free rider effects; some analysts have argued that customer survey approaches tend to overestimate the number of free riders (Morrison, 1987). Customer surveys of various types of utility programs report free rider fractions ranging from 20 to 80%. Problems with the customer survey approach include: (Krause, 1989; Morrison, 1987):

- Self-response bias: participant is unwilling to reveal being a free rider to someone else (particularly if the purpose of the interview appears to be to identify the free riders), or participant alters his or her response to please the interviewer.
- Possibility that participant may not know exactly how he or she would have acted in the absence of the program.
- Type of response is very sensitive to the exact wording of the question and type of data collection (e.g., phone, mail, or in-person).

One final caveat regarding free riders relates to the specific market conditions in the Madison area. A number of participants noted that rebates and subsidies have been offered by MGE for a number of years and, as a result, many customers might delay investing in energy-efficiency equipment until a rebate for that product becomes available (i.e., customers had become "addicted" to subsidies). Given these limitations, results from customer surveys should be interpreted with caution because of the difficulty in definitively determining customer behavior in the absence of the program.

ridership for all customers to be about 10-15%; however, the number of free riders was higher when measures were analyzed by sectors. The latter type of analysis is important for program designers in order to screen out potential free riders.

In the survey, we asked customers if their decision to install particular measures was influenced by their participation in the Competition program. Because of the small numbers of customers installing some measures (e.g., cooling, motors, refrigeration, and weatherization measures), the following discussion focuses only on heating, lighting, and water heating measures, options which were installed by a relatively large number of customers.

Two questions were used to probe the extent of free ridership for these measures. The first question asked if the customer would have installed the same measure at the same time if the program had not existed (Table 7.10). About 85% of the customers among all three sectors indicated that they installed heating and lighting measures because of the program; for water heating measures, the percentage (90%) was even higher. For heating measures, MGE customers in the small C&I and rental sectors were significantly more likely to be free riders than customers targeted by A&C and BRMC: in these sectors, 19% and 39%, respectively, of MGE's customers indicated they would have installed heating measures if the Competition had not existed. And in the large C&I sector, approximately one-third of MGE's and Honeywell's customers indicated they would have installed heating measures if the Competition had not existed. This sector also experienced a high proportion of free riders for lighting and water heating measures, ranging from 25% to 67%. Free ridership was also evident for lighting measures in the rental sector (about 17% for both MGE and its competitor). In summary, for all customers, free riders varied from 10 to 15% for the three measures examined in this survey; however, free ridership was more extensive when examined by measure and by sector.

Those customers that indicated that they would have installed the measures without the program (i.e., were "free riders"), were asked an additional question to verify if the program had *no* impact on their decision to install a measure (Table 7.11). Ten to 25% of these customers reported that the program did have some impact on their decision, although sample sizes are small because few customers were asked this question based on their answer to the first question. Estimates of "free riders" would decrease for the entire sample to 8 to 13% for the three measures examined in this survey, if we adjust for responses to this question.

Three additional questions were asked of those customers that indicated they would not have installed a measure without the program. The first question attempted to ascertain if the program had just accelerated the purchase of a measure that the customer would have bought at a later date (Table 7.12). About 50% of the customers indicated they would have installed the same measure at a later date, which suggests that the Competition accelerated energy-efficiency investment activity. This trend was particularly evident for heating system measures in the large C&I sector (82%), although the sample size was small. These findings were also confirmed by personal interviews with participants.

The second question asked if customers who had installed more than one measure would have installed fewer measures at the same time if the program had not existed (Table 7.13). About 40% of the customers installing multiple measures indicated that they would have installed fewer measures; these results suggest that the Competition stimulated customers to install additional energy-efficiency measures.

The third question asked if customers would have installed less efficient equipment if the program had not existed (Table 7.14). Despite the small sample sizes, one-third of the respondents installing heating and lighting equipment would have installed less efficient equipment, indicating that the Competition promoted a market for high-efficiency equipment.

We also asked customers if the installed measures were replacing existing equipment or were a new option for the building. Most heating, lighting, and water heating measures replaced existing equipment, varying from 63% to 86% (Table 7.15). The highest percentage of new equipment (30%) occurred for heating measures (almost 70% of BRMC's customers received new heating equipment). Most of the equipment that was replaced was in fair or good working condition, except for heating system equipment in the rental sector, which suggests that customers were not using the Competition to replace broken or worn out equipment (Table 7.16). Therefore, the Competition was encouraging new energy-efficiency investments.

Interviews conducted for this process evaluation with key participants and trade allies tend to confirm the overall findings from the customer survey, although in some cases, the views and expectations of some key participations were not borne out by the customer survey information. For example, many of the key participants anticipated that "free riders" would be a significant problem in part because of the demographic characteristics and attitudes of many of MG&E's customers (e.g., well-educated and high awareness and support for environmental issues and energy conservation) which made them more likely to invest in high-efficiency products without utility rebates. Similarly, trade allies reported widely varying estimates of "free riders," ranging from 5% to 100%, depending on the product sold.

Some participants expected that the "free rider" problem would vary with the type of marketing approach used by MGE and its competitors. For example, MGE's direct mail approach was expected to produce more free riders than than A&C's cold call approach or Honeywell's shared savings approach. The customer survey data confirms this view only for the heating measures installed by small C&I customers (MGE 19% vs. A&C 10%); the sample size was too small in the large C&I sector for conducting statistical analysis.

When rental property was sold or inspected, a Madison ordinance required the installation of the following measures: pipe and attic insulation, storm windows, and low-flow showerheads. Accordingly, customers that installed low-flow showerheads in rental property during the Competition were free riders. The survey data also indicate that one type of measure appears to be related to free ridership: the replacement of inefficient boilers with high-efficiency boilers. In the large C&I sector, a relatively high

percentage of customers installed more efficient boilers, and a relatively high percentage of customers said they would have installed these boilers without the program. Moreover, many of these customers were replacing equipment that was in fair or good working condition (i.e, the equipment had not failed). Data collected from interviews with participants confirmed this finding that many customers would have installed new boilers without the rebates and that customers were installing high-efficiency boilers prior to the Competition. When boilers were installed with other measures, however, this finding may not be accurate: for example, Honeywell insisted that none of its 19 projects would have occurred during the Competition without the rebates, and that Honeywell had to initiate every one of its projects since customers would not act unless measures were bundled (13 of its 19 customers were new to Honeywell).

In conclusion, based on the responses to survey questions, we estimate the average level of free ridership for all customers to be about 10-15%; however, the number of free riders was higher when measures were analyzed by sectors. The latter type of analysis is important for program designers: conservation programs could be designed so that potential free riders could not be permitted to participate in the program. For example, market research could be conducted so that rebates would be targeted to those customers or end uses that need incentives.

7.4. THE IMPACT EVALUATION

An impact evaluation of the Competition is currently being conducted for the PSCW and MGE. The evaluation will determine the level of conservation achieved and its cost-effectiveness, and will compare estimated energy savings with actual customer bill savings (DeForest and Berkowitz, 1990). The key elements of the evaluation are:

- the development of screening criteria used to assess the applicability of billing analysis on a site-by-site basis,
- detailed billing analysis using advanced regression techniques,
- identification of key energy conservation measures implemented in each sector of the Competition, and a review of the engineering methods used to estimate their conservation impacts,
- probabilistic sensitivity analysis used to estimate uncertainty in engineering estimates, and
- modification of MGE's existing data bases for the Competition to include billing analysis results and estimates of energy and demand savings for alternative engineering methods.

The task of comparing measured savings (based on utility bills) with estimated savings will provide a level of quality control that was missing in the Competition; it will be important to verify if the actual

results in terms of winners and losers would be similar based on measured savings data.

As part of this process evaluation, several participants identified two issues that were particularly important for the impact evaluation to address, and it is hoped that these issues will be examined in the impact evaluation. First, several participants thought that the impact evaluation should examine the interactive effects of measures (e.g., lighting and heating) in estimating savings. In addition, the impact evaluation will provide an opportunity to identify other key factors that affect energy consumption over time (e.g., building schedule, weather, operating practices, business activities) and which need to be accounted for or normalized (if possible) in determining actual savings.

Second, several participants stated that the impact evaluation should include site visits to determine how well the installed measures are performing, and if the measures were acceptable to customers. Several measures should be carefully inspected, such as boiler resets and cutout controls, low-flow showerheads, and setback thermostats.* These findings could then be compared to the Monitor's inspection data. During the site visit (or through a customer survey), the attitudes of customers towards the Competition and conservation might also be explored.

* For example, BRMC inspected boiler cutout controls that were supposed to be set at 60 degrees in Madison; on inspection, some of the controls had been changed to 70 degrees.

Table 7.2. Number of Measures Per Customer

(a) Total number of measures per customer.

	Total	Small C&I(*)			Large C&I(*)			Rental(*)		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	449	205	95	110	78	62	16	166	89	77
Average	1.64	1.36	1.56	1.19	1.74	1.53	2.56	1.93	1.58	2.32
St. Dev.	1.51	1.25	1.43	1.10	1.60	1.42	2.28	1.77	1.46	2.10

(b) Heating measures per customer.

	Total	Small C&I			Large C&I			Rental(*)		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	449	205	95	110	78	62	16	166	89	77
Average	0.68	0.64	0.66	0.62	0.49	0.50	0.44	0.83	0.42	1.31
St. Dev.	0.76	0.57	0.66	0.49	0.61	0.62	0.61	0.97	0.87	0.86

(c) Lighting measures per customer.

	Total	Small C&I(*)			Large C&I(*)			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	449	205	95	110	78	62	16	166	89	77
Average	0.58	0.63	0.80	0.48	0.78	0.90	0.31	0.43	0.35	0.52
St. Dev.	0.79	0.72	0.70	0.70	0.93	0.96	0.58	0.76	0.66	0.86

(d) Water heating measures per customer.

	Total	Small C&I			Large C&I			Rental(*)		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	449	205	95	110	78	62	16	166	89	77
Average	0.28	0.07	0.05	0.08	0.14	0.10	0.31	0.61	0.72	0.48
St. Dev.	0.51	0.25	0.22	0.27	0.42	0.30	0.68	0.60	0.58	0.59

* Statistically significant differences (at 0.05 level) between MGE and its competitor in this sector (F-test).

Table 7.2 Continued. Number of Measures Per Customer

(e) Cooling measures per customer.

	Total	Small C&I			Large C&I(*)			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	449	205	95	110	78	62	16	166	89	77
Average	0.03	0.01	0.02	0.00	0.14	0.00	0.69	0.01	0.02	0.00
St. Dev.	0.20	0.10	0.14	0.00	0.42	0.00	0.68	0.11	0.15	0.00

(f) Motor measures per customer.

	Total	Small C&I			Large C&I(*)			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	449	205	95	110	78	62	16	166	89	77
Average	0.03	0.00	0.00	0.00	0.18	0.02	0.81	0.00	0.00	0.00
St. Dev.	0.20	0.00	0.00	0.00	0.45	0.13	0.63	0.00	0.00	0.00

(g) Weatherization measures per customer.

	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	449	205	95	110	78	62	16	166	89	77
Average	0.02	0.01	0.02	0.01	0.01	0.02	0.00	0.03	0.04	0.01
St. Dev.	0.18	0.12	0.14	0.09	0.11	0.13	0.00	0.26	0.33	0.11

(h) Refrigeration measures per customer.

	Total	Small C&I			Large C&I			Rental(*)		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Sample size	449	205	95	110	78	62	16	166	89	77
Average	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.03	0.00
St. Dev.	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.18	0.00

* Statistically significant differences (at 0.05 level) between MGE and its competitor in this sector (F-test).

Table 7.3. Heating System Measures Installed

	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
(N=number of measures) Measure	N=307	N=131	N= 63	N= 68	N= 38	N= 31	N= 7	N=138	N= 37	N=101
Higher cost measures										
207	2%	1%	2%	0%	11%	13%	0%	0%	0%	0%
208	9	9	19	0	24	29	0	5	19	0
Lower cost measures										
201	5	0	0	0	5	6	0	10	16	8
202	14	0	0	0	5	0	29	29	22	32
203	21	0	0	0	3	3	0	47	19	57
204	2	0	0	0	5	6	0	4	14	0
205	13	26	16	35	13	16	0	0	0	0
206	3	1	2	0	5	6	0	5	11	3
214	0	0	0	0	3	0	14	0	0	0
215	0	0	0	0	3	0	14	0	0	0
216	0	0	0	0	3	0	14	0	0	0
217	1	0	0	0	5	0	29	0	0	0
280	2	0	0	0	16	19	0	0	0	0
Free 299	27	63	62	63	0	0	0	0	0	0

Code:

- 201 Installation of boiler vent dampers on natural gas fired boilers
- 202 Installation of hot water reset controls on natural gas fired boilers
- 203 Installation of boiler cut-out controls on natural gas fired boilers
- 204 Tune-up of natural gas fired boiler
- 205 Installation of night setback thermostat on natural gas fired boiler or furnace
- 206 Installation of pipe insulation on space heating distribution pipes
- 207 Installation of infrared space heating equipment
- 208 Replacement of inefficient furnaces/boilers with their efficient counterparts
- 214 Reset of hot deck temperature by zone demand
- 215 Setting heating set point down during night or unoccupied times
- 216 Setting heating set point down during winter
- 217 Conversion of single duct constant volume reheat to variable air volume
- 280 Custom heating
- 299 Received free setback thermostat

Table 7.4. Lighting Measures Installed

(N=number of measures) Measure	Total N=260	Small C&I			Large C&I			Rental		
		Sub-total N=129	MGE N= 76	A&C N= 53	Sub-total N= 60	MGE N= 55	Honeywell N= 5	Sub-total N= 71	MGE N= 31	BRMC N= 40
101	12%	9%	11%	8%	30%	33%	0%	1%	3%	0%
102	5	8	3	15	5	5	0	0	0	0
103	19	12	7	19	18	20	0	34	29	38
104	2	2	1	2	7	7	0	0	0	0
105	7	5	7	4	10	11	0	6	0	10
106	10	12	12	11	10	11	0	6	13	0
107	2	1	1	0	7	7	0	0	0	0
108	1	1	0	2	3	2	20	0	0	0
110	14	0	0	0	3	0	40	48	42	52
111	1	0	0	0	3	0	40	0	0	0
113	2	4	0	9	0	0	0	0	0	0
114	0	1	0	2	0	0	0	0	0	0
115	0	1	0	2	0	0	0	0	0	0
180	0	0	0	0	0	0	0	1	3	0
Free 197	2	5	3	8	0	0	0	0	0	0
Free 198	18	33	55	0	3	4	0	4	10	0
Free 199	4	9	1	19	0	0	0	0	0	0

Code:

- 101 Replacement of standard efficiency fluorescent lamps with energy-efficient fluorescent lamps
- 102 Installation of reflectors in fluorescent light fixtures and removal of associated lamps and disconnecting ballasts
- 103 Replacement of inefficient light sources with screw-in compact fluorescent lamps
- 104 Installation of metal halide fixture to replace lower efficiency light source
- 105 Installation of high or low-pressure sodium fixtures to replace lower efficiency light sources
- 106 Replacement of incandescent exit lights with fluorescent exit lights or conversion kits
- 107 Installation of occupancy sensors on lighting circuits when occupancy patterns are varied
- 108 Installation of photocell sensors on lighting circuits when natural lighting is available
- 110 Replacement of inefficient light sources with hard wired compact fluorescent light fixtures
- 111 Installation of current limiters into fluorescent lamp fixtures
- 113 Replacement of standard efficiency incandescent lamps with energy-efficient incandescent lamps
- 114 Installation of energy-efficient incandescent lamps
- 115 Replacement of incandescent lighting with fluorescent lighting
- 180 Custom bulb removal // 197 Free compact fluorescent bulb// 198 Free exit light conversion// 199 Free exit light kit

Table 7.5. Water Heating Measures Installed

	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
(N=number of measures) Measure	N=126	N= 14	N= 5	N= 9	N= 11	N= 6	N= 5	N=101	N= 64	N= 37
Higher cost measures										
401	2%	0%	0%	0%	18%	33%	0%	0%	0%	0%
407	3	0	0	0	18	0	40	2	3	0
Lower cost measures										
402	3	0	0	0	9	17	0	3	3	3
403	3	29	0	44	0	0	0	0	0	0
404	3	0	0	0	36	50	20	0	0	0
405	2	0	0	0	18	0	40	0	0	0
406	16	7	20	0	0	0	0	19	16	24
408	45	0	0	0	0	0	0	56	52	65
Free 497	4	36	0	56	0	0	0	0	0	0
Free 498	1	7	20	0	0	0	0	0	0	0
Free 499	18	21	60	0	0	0	0	20	27	8

Code:

- 401 Installation of a heat pump water heater to replace an electric resistance water heater
- 402 Installation of pipe insulation on distribution pipes of natural gas or electric domestic hot water heating systems
- 403 Installation of insulation wrap on natural gas or electric water heaters
- 404 Installation of water circulating pump time clocks on natural gas or electric water heaters
- 405 Installation of water temperature setback controllers
- 406 Installation of thermal vent dampers on hot water heaters
- 407 Replacement of inefficient water heaters with efficient natural gas or electric water heaters
- 408 Replacement of standard flow showerheads with low-flow showerheads
- 497 Free water heater insulation wrap
- 498 Free water heater pipe insulation
- 499 Free low-flow showerhead

Table 7.6. Cooling Measures Installed

	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
(N=number of measures) Measure	N= 15	N= 2	N= 2	N= 0	N= 11	N= 0	N= 11	N= 2	N= 2	N= 0
Higher cost measures										
301	40%	100%	100%	N/A	18%	N/A	18%	100%	100%	N/A
304	13	0	0	N/A	18	N/A	18	0	0	N/A
Lower cost measures										
302	33	0	0	N/A	45	N/A	45	0	0	N/A
303	7	0	0	N/A	9	N/A	9	0	0	N/A
305	7	0	0	N/A	9	N/A	9	0	0	N/A

Code:

- 301 Replacing inefficient room air conditioners with energy-efficient models
- 302 Installation of enthalpy control or dry bulb economizer
- 303 Reset of cold deck temperature by zone demand
- 304 Retrofit of central fans for variable air volume usage
- 305 Setting cooling set point up during the summer

Table 7.7. Motor Measures Installed

	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
(N=number of measures) Measure	N= 14	N= 0	N= 0	N= 0	N= 14	N= 1	N= 13	N= 0	N= 0	N= 0
Higher cost measure 501	14%	N/A	N/A	N/A	14%	100%	8%	N/A	N/A	N/A
Lower cost measure 502	79	N/A	N/A	N/A	79	0	85	N/A	N/A	N/A
503	7	N/A	N/A	N/A	7	0	8	N/A	N/A	N/A

Code:

- 501 Replacement of inefficient electric motors with energy-efficient motors
- 502 Automatic scheduling of HVAC pump and fan motors
- 503 Reduce exhaust fan operating time

Table 7.8. Weatherization Measures Installed

	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
(N=number of measures) Measure	N= 9	N= 3	N= 2	N= 1	N= 1	N= 1	N= 0	N= 5	N= 4	N= 1
Higher cost measures										
802	11%	33%	0%	100%	0%	0%	N/A	0%	0%	0%
880	44	67	100	0	100	100	N/A	20	25	0
Lower cost measures										
801	33	0	0	0	0	0	N/A	60	50	100
803	11	0	0	0	0	0	N/A	20	25	0

Code:

- 801 Installation of room air conditioning covers in natural gas or electric space conditioned environments
- 802 Increasing wall, foundation, or ceiling insulation in natural gas or electric space conditioned environments
- 803 Caulking and weatherstripping of windows and doors in natural gas or electric space conditioned environments
- 880 Custom weatherization

Table 7.9. Refrigeration Measures Installed

	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
(N=number of measures) Measure	N= 3	N= 0	N= 0	N= 0	N= 0	N= 0	N= 0	N= 3	N= 3	N= 0
901	100%	N/A	N/A	N/A	N/A	N/A	N/A	100%	100%	N/A

Code:

901 Replacement of inefficient refrigerators with energy-efficient models

Table 7.10. Would Have Done The Same Measure At The Same Time If The Program Had Not Existed

Type of Measure	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Heating*	N=237	N=120	N= 53	N= 67	N= 33	N= 27	N= 6	N= 84	N= 23	N= 61
Yes	16%	14%	19%	10%	33%	33%	33%	13%	39%	3%
No	84	86	81	90	67	67	67	87	61	97
Lighting	N=188	N=101	N= 59	N= 42	N= 41	N= 37	N= 4	N= 46	N= 22	N= 24
Yes	15%	10%	12%	7%	27%	27%	25%	17%	18%	17%
No	85	90	88	93	73	73	75	83	82	83
Water heating	N=113	N= 13	N= 5	N= 8	N= 9	N= 6	N= 3	N= 91	N= 58	N= 33
Yes	9%	8%	0%	12%	44%	33%	67%	5%	3%	9%
No	91	92	100	88	56	67	33	95	97	91

* Differences are significant at the 0.05 level (Chi-square test).

Table 7.11. Program Had No Impact On Decision To Install Measure

Type of Measure	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Heating	N= 39	N= 17	N= 10	N= 7	N= 11	N= 9	N= 2	N= 11	N= 9	N= 2
Yes (no impact)	79%	76%	90%	57%	91%	89%	100%	73%	78%	50%
No	21	24	10	43	9	11	0	27	22	50
Lighting	N= 29	N= 10	N= 7	N= 3	N= 11	N= 10	N= 1	N= 8	N= 4	N= 4
Yes (no impact)	76%	80%	86%	67%	64%	70%	0%	88%	75%	100%
No	24	20	14	33	36	30	100	12	25	0
Water heating	N= 10	N= 1	N= 0	N= 1	N= 4	N= 2	N= 2	N= 5	N= 2	N= 3
Yes (no impact)	90%	100%	0%	100%	75%	100%	50%	100%	100%	100%
No	10	0	0	0	25	0	50	0	0	0

Table 7.12. Would Have Installed The Same Measure At A Later Date If The Program Had Not Existed

Type of Measure	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Heating *	N=198	N=103	N= 42	N= 61	N= 22	N= 18	N= 4	N= 73	N= 14	N= 59
Yes	54%	48%	38%	54%	82%	78%	100%	53%	79%	47%
No	46	52	62	46	18	22	0	47	21	53
Lighting	N=164	N= 91	N= 55	N= 36	N= 35	N= 31	N= 4	N= 38	N= 19	N= 19
Yes	45%	40%	35%	47%	49%	48%	50%	55%	74%	37%
No	55	60	65	53	51	52	50	45	26	63
Water heating	N= 93	N= 13	N= 5	N= 8	N= 6	N= 4	N= 2	N= 74	N= 45	N= 29
Yes	43%	54%	40%	62%	67%	50%	100%	39%	33%	48%
No	57	46	60	38	33	50	0	61	67	52

* Differences are significant at the 0.05 level (Chi-square test).

Table 7.13. Would Have Done Fewer Things At Same Time If Program Had Not Existed

Type of Measure	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Heating	N=150	N= 77	N= 37	N= 40	N= 14	N= 12	N= 2	N= 59	N= 9	N= 50
Yes	46%	45%	51%	40%	50%	50%	50%	46%	56%	44%
No	54	55	49	60	50	50	50	54	44	56
Lighting	N=159	N= 88	N= 57	N= 31	N= 33	N= 29	N= 4	N= 38	N= 18	N= 20
Yes	43%	41%	42%	39%	61%	62%	50%	34%	39%	30%
No	57	59	58	61	39	38	50	66	61	70
Water heating	N= 83	N= 6	N= 5	N= 1	N= 2	N= 1	N= 1	N= 75	N= 48	N= 27
Yes	39%	17%	20%	0%	0%	0%	0%	41%	35%	52%
No	61	83	80	100	100	100	100	59	65	48

Table 7.14. Would Have Installed Less Efficient Equipment If Program Had Not Existed

Type of Measure	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Heating	N= 22	N= 7	N= 7	N= 0	N= 12	N= 12	N= 0	N= 3	N= 3	N= 0
Yes	32%	57%	57%	0%	25%	25%	0%	0%	0%	0%
No	68	43	43	0	75	75	0	100	100	0
Lighting	N= 41	N= 17	N= 8	N= 9	N= 20	N= 20	N= 0	N= 4	N= 1	N= 3
Yes	29%	35%	38%	33%	30%	30%	0%	0%	0%	0%
No	71	65	62	67	70	70	0	100	100	100
Water heating	N= 2	N= 0	N= 0	N= 0	N= 2	N= 1	N= 1	N= 0	N= 0	N= 0
Yes	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
No	100	0	0	0	100	100	100	0	0	0

Table 7.15. Type of Measure: New Equipment Versus Replacement

Type of Measure	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Heating *	N=222	N=121	N= 53	N= 68	N= 28	N= 24	N= 4	N= 73	N= 17	N= 56
New equipment	30%	12%	21%	4%	32%	33%	25%	60%	35%	68%
Replaced existing equipment	63	84	70	96	54	50	75	32	59	23
Both	7	4	9	0	14	17	0	8	6	9
Lighting *	N=185	N= 99	N= 62	N= 37	N= 40	N= 36	N= 4	N= 46	N= 22	N= 24
New equipment	8%	7%	10%	3%	12%	8%	50%	4%	5%	4%
Replaced existing equipment	86	88	82	97	80	83	50	89	95	83
Both	6	5	8	0	8	8	0	7	0	12
Water heating *	N=103	N= 4	N= 4	N= 0	N= 8	N= 5	N= 3	N= 91	N= 59	N= 32
New equipment	17%	25%	25%	0%	75%	80%	67%	12%	10%	16%
Replaced existing equipment	80	75	75	0	25	20	33	85	86	81
Both	3	0	0	0	0	0	0	3	3	3

* Differences are significant at the 0.05 level (Chi-square test).

Table 7.16. Condition Of Replaced Equipment

Type of Measure	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
Heating *	N=153	N=107	N= 42	N= 65	N= 18	N= 15	N= 3	N= 28	N= 10	N= 18
Broken	8%	3%	2%	3%	6%	0%	33%	29%	30%	28%
Poor working condition	18	13	19	9	22	20	33	32	30	33
Fair or good working condition	75	84	79	88	72	80	33	39	40	39
Lighting *	N=167	N= 90	N= 55	N= 35	N= 34	N= 32	N= 2	N= 43	N= 20	N= 23
Broken	4%	3%	2%	6%	9%	9%	0%	0%	0%	0%
Poor working condition	13	7	7	6	29	25	100	14	10	17
Fair or good working condition	83	90	91	89	62	66	0	86	90	83
Water heating *	N= 84	N= 3	N= 3	N= 0	N= 2	N= 1	N= 1	N= 79	N= 53	N= 26
Broken	1%	0%	0%	0%	0%	0%	0%	1%	2%	0%
Poor working condition	11	0	0	0	50	0	100	10	4	23
Fair or good working condition	88	100	100	0	50	100	0	89	94	77

* Differences are significant at the 0.05 level (Chi-square test).

CHAPTER 8. COMMITMENT AND MOTIVATION

As discussed in Chapter 3, the primary objective of the Competition (as seen by the PSCW and its staff) was to compel MGE to install more energy efficiency measures in its service territory. Long-term commitment to energy efficiency was not as important to some regulatory staff as the utility's actions and activities that led to reduced customer energy use. This chapter examines the degree of overlap between motivation and commitment by the utility in promoting energy efficiency.

Some PSCW staff hoped that the Competition would stimulate MGE's corporate management to give higher internal priority to its conservation services. It was also expected that MGE's Marketing Department, the group primarily responsible for designing and implementing energy-efficiency programs, would be stimulated to develop a more comprehensive conservation program that would be quickly implemented in the field. The Competition was also expected to stimulate MGE's competitors and customers to install energy-efficiency products, as well as influence other Wisconsin utilities in promoting energy efficiency.

8.1. COMMITMENT AND MOTIVATION AT MGE

In the approach taken in examining commitment and motivation at MGE, we regarded MGE as a heterogeneous social organization with multiple actors having different values and interests. Accordingly, we analyzed the perspectives of several individuals within the MGE organization, including top (upper) management, lower and middle management (Director of Marketing Department and program managers), and field staff (customer representatives). In the discussion below, we differentiated these viewpoints and avoided the construct of MGE as a homogeneous entity.

8.1.1. Reactions to the Competition

MGE upper management's first reaction to the Competition was great concern: the Competition was going to put a halt to MGE's current programs. Top management felt that, at the time of the Competition, MGE was headed down the same road as the PSCW (e.g., developing comprehensive conservation programs and using trade allies to assist MGE). Top management was also concerned about the impact of the Competition on customer service: by turning customers to someone else, MGE wondered how it was going to be treated in the short term, as well as in the long term if customer service suffered. MGE knew it would be working with its customers after the Competition, but believed that the competitors would most likely leave MGE's customers once the Competition was over. Top management felt that MGE's competitors were participating in the Competition for monetary gain (winning the bonus) and not for long-term customer service. As noted in Chapter 5, this concern went unrealized.

The initial reactions to the Competition by MGE's middle and lower management and field staff were diverse: they were amazed, angry, frustrated, apprehensive/nervous, and threatened; some of these reactions changed during the Competition, as noted below. They felt this way because: MGE had just doubled its C&I conservation staff and felt reprimanded by PSCW; they thought they would lose the Competition; and they believed they were being penalized by the PSCW for not doing a good job. Other reactions by MGE staff were more specific: "Who is the competition? Aren't MGE's customers going to be confused? What about fuel substitution? What about load management?"

As the concept of the Competition sunk in, these individuals saw the Competition as an opportunity for greater creativity and a chance to make a greater contribution for MGE. Subsequently, MGE staff thought that the Competition was a good idea, and a competitive and exciting atmosphere developed (some "fighting" for customers occurred among MGE field staff). Accordingly, MGE staff developed a more proactive stance: "let's do the best job and let's win." As MGE was winning, MGE staff felt good.

As the end of the Competition drew nearer, however, some MGE staff became bitter. MGE staff experienced considerable frustration with the rules of the Competition which they felt would not serve the best interests of their customers and would jeopardize the quality of the service they provided to their customers. In addition, several staff thought the Panel's decisions on energy saving calculations were incorrect. Also, when MGE's programs in the large C&I and rental sectors ran out of money, customers and vendors complained to staff. Finally, there was internal disagreement on how MGE should market its measures. For example, MGE's direct mail approach forced MGE to respond to customers who replied to the mailing, and, as a result, audits were conducted for customers with low energy conservation potential (poor prospects). Near the end, the large number of applications and amount of paperwork required MGE staff to become less proactive (and more reactive) in influencing customers to install measures.

8.1.2. Bonus as Motivator

The PSCW and MGE thought the bonus did *not* provide a financial incentive to MGE. The Competition itself stimulated MGE to implement its programs more comprehensively and more quickly in order to win, but not the bonus. Initially, the bonus did get MGE's attention, but once the Competition started running, MGE did not care whether it got the bonus: it only wanted to win, and the bonus became the symbol of being a winner or loser.

The bonus was not large enough to influence top MGE management, nor would a larger bonus have made a difference, since the monetary rewards were secondary to the goal of winning. Some MGE staff thought the bonus might have been seen as a disincentive by top MGE management: the money for the bonus would have to be recovered through an increase in rates, and management wanted to keep rates as low as possible.

The bonus may have initially provided an incentive to the field staff, since some thought that the bonus money would be going to them. For others, the uncertainty of how the bonus was going to be distributed made them less motivated and committed. For still others, the bonus never influenced them because they knew that field staff did not get bonuses; they assumed the bonus money would go to management or stockholders. In conclusion, MGE's customer representatives were not stimulated by the bonus.

The bonus also had a negative effect on MGE lower management and customer representatives for the following reasons: they considered themselves professionals and thought the bonus was not necessary for them to do good work and, therefore, they regarded the bonus as demeaning; they thought their other work would suffer if they worked for a bonus in the Competition; and they believed customer service would suffer if they focused only on good prospects for winning the bonus.

8.1.3. Sources of Motivation

The Competition influenced MGE staff in the short-term in all sectors. Top management, however, was not motivated except in the negative sense: they were afraid it might deter them from pursuing goals already identified; also, they did not want the PSCW "breathing down on their necks." Institutional pride (corporate ego, prestige) was the biggest factor influencing MGE staff: winning to look good was the motivation. MGE's public image was important because MGE wanted to appear to be a strong leader in Madison. Winning the Competition would affirm this image, as well as validate its image as an effective competitor. As a result, the Competition may have stimulated MGE staff to do more than they otherwise would do to achieve conservation.

Professional pride (reputation, desire to do well) was an important personal driving force: MGE staff felt they were good workers, had something to prove, and wanted to be rewarded for their work. MGE's lower and middle management and field staff wanted to win, maintain their credibility, and earn the respect of senior management and the PSCW. Some staff felt their job was on the line and wanted to show they were doing good work. MGE staff also did not want to be beaten because of what the PSCW would do if MGE lost. "We better not lose" sometimes became a more important motivator than "wouldn't it be great if we won."

Initially, MGE's field staff thought the Competition represented a good opportunity for the Marketing Department: customer representatives felt they had lots of ideas to offer to customers and wanted to help and assist them. They saw their job as more than a sales job. They wanted to do a good job and do things cost-effectively, and they were enthused and motivated to work hard at their job. As the Competition proceeded, however, field staff and some lower MGE management became frustrated and demotivated because they felt the Competition was being poorly run (e.g., inaccurate scorekeeping). Moreover, where MGE field staff previously worked with customers the way they wanted, MGE field staff felt

more controlled by their immediate supervisors in the Competition: based on various marketing recipes, they were told what to do. As an example, MGE's field representatives felt they knew what worked in the field: they were the ones who responded to customer needs, and this response may be different than what was learned in a training course or indicated by a spreadsheet. As a result, field representatives did not rely on MGE's spreadsheets and tier analysis. Lower staff were also pressured by middle management to perform to new heights: a few employees perceived that if MGE did not win, they would lose their jobs, despite repeated assurances to the contrary.

MGE field staff also thought that good customer service suffered during the Competition as a result of the "time crunch:" (1) not enough time was given to a typical customer, (2) only good prospects were looked at, and (3) vendor and customer complaints were not answered. In addition, field staff thought the Competition was inequitable to some contractors because they could not participate in the Competition after MGE ran out of money (especially, the large C&I where Honeywell had sole access to the market after MGE ran out of money). As a result, lower-level staff did not see the Competition as an opportunity to be innovative, nor an incentive to be more committed to conservation.

Motivation and commitment was differentiated by sector. In the rental sector, MGE staff thought they were already doing a good job and didn't see any serious problems. In the C&I sectors, MGE staff felt they were already in the process of expanding their programs at the time of the Competition (they had re-evaluated their lighting program and had hired a consultant to evaluate other measures to promote). MGE staff in the C&I sectors were also frustrated because they were forced to drop MGE's air-conditioning program in the Competition because it had a lower Performance Score than other measures. As a result, MGE staff had to defend the company from angry vendors mad at MGE because they had expected the air conditioning program to last for several years.

8.1.4. Short-Term Impacts At MGE

Regardless of commitment, the Competition had several short-term impacts at MGE (Table 8.1). Top MGE management thought the Competition helped MGE to clearly focus on the goals and objectives of MGE's Marketing Department, and, as a result, the Competition permitted top management not to focus on the details of the actions of lower and middle management in this department. Because the Competition's objectives were relatively well-defined, top management delegated their authority by giving middle management more decision-making responsibilities. Consequently, top management stood back and disengaged itself from Competition decision making. As the Competition proceeded, top management was kept informed of its status by the Director of the Marketing Department, but top management was not involved in the Competition: no specific actions were taken by the Chairman of the Board or the President of MGE.

Table 8.1. Competition's Short-Term Impacts At MGE

- clearer goals and objectives for Marketing Department
 - more autonomous Marketing Department
 - faster internal process of program development and approval
 - conservation programs implemented more quickly in all sectors
 - expanded and improved marketing efforts
 - increased targeting of some customer service activities,
and selected decrease in some other customer service activities
 - doubling of MGE's conservation budget
 - a greater percentage of funds in the C&I sector
-

In some instances, existing corporate procedures had previously slowed decisionmaking at MGE: for example, all memos on individual customer projects had to be reviewed and approved by senior management prior to committing any rebates. As a result, staff sometimes felt limited in responding to customers in a timely fashion. Thus, an important positive short-term impact of the Competition was that MGE could respond to critical issues in a timely fashion. Marketing established more general procedures which resulted in their being given more authority and discretion to make quick decisions and changes during the Competition (e.g., determining rebate levels, technologies, and operating procedures). The approval process was shortened and things happened a lot sooner and more quickly at MGE because of the Competition.

MGE's marketing efforts expanded and improved during the Competition. Trade allies and turnkey contractors became more important in marketing MGE's programs, and more custom projects, bundling of measures, and comprehensive services became more available in recognition of the diverse needs of MGE's customers.* In addition, because of the short time frame of the Competition and the need to sell products, detailed energy audits were no longer required in the C&I sectors; these audits had entailed a one-half to one-day commitment and were replaced by a walk-through audit. MGE's marketing approaches also became more assertive: cold calls were introduced, and targeted mailings were used with follow-up phone calls. Other customer service activities suffered as a result of these efforts.

* In the Competition, MGE provided a full and comprehensive lighting program, and provided thirty additional technologies under its Power Plus program.

Cost-effectiveness was the primary focus of MGE's program: high benefit-cost ratios were the criteria for selecting measures. Due to the importance of selling energy-efficiency measures, staff went through a one-week sales training course. At the same time, involvement in customer service activities decreased because MGE staff did not have the time to explain bills to customers as staff focused on the most promising prospects. Finally, MGE's conservation budget doubled for each sector (if one includes funds for competitors), and a greater percentage of these funds went to the C&I sectors.*

To conduct the above activities, a number of organizational changes occurred in the Marketing Department: more teams were built ("team building"): work groups (composed of management and field staff) were established for each sector and met weekly; a Competition Task Force Group was created to supervise the work groups and met weekly; and the rental sector (Rental Services) was permanently re-assigned from Residential Market Services to C&I Market Services in the Marketing Department. These organizational changes also led to more verbal exchanges (in contrast to written communication), idea generation, and brainstorming, and increased decision making by a few people within a sector.

The team-building concept was not welcomed by all of MGE's staff. For example, MGE staff in Residential Market Services which were not involved in the Competition felt left out of the activity and excitement permeating the Marketing Department. Some MGE staff involved in the Competition considered team building to be a "total joke." These staff felt that nothing came out of the early efforts of brainstorming and targeting, and that field representatives' input (what would work and not work with customers) was not heeded by their immediate supervisors. As a result, while some MGE staff tried to target customers using the results from MGE's spreadsheets, other representatives drove around MGE's service territory to find promising customers using their own personal knowledge of what worked in the field. Thus, MGE's marketing strategy was not always implemented by its field staff.

MGE was not sure whether these short-term impacts were due to the Competition or would have happened anyway as a result of its activities under the integrated planning process (the Advance Planning process) in Wisconsin. For example, MGE decided prior to the Competition that an energy audit was no longer required because it was not an effective use of staff time. MGE felt that an experienced auditor could determine what needed to be done without conducting a detailed energy audit (which could be conducted later if warranted). Similarly, MGE felt it was already moving to an expanded set of energy-efficiency services in its Power Plus program which was conceptually designed before the Competition. However, MGE did recognize that the Competition encouraged the utility to develop its programs sooner and more proactively than expected.

* However, MGE did not hire additional staff during the Competition.

8.1.5. Long-Term Impacts At MGE

It is premature to speculate on long-run effects at MGE, because it is unclear whether short-term effects will, or should, become institutionalized in MGE. For example, MGE is currently concerned with its fiscal situation (a 5% cutback in MGE's labor force was recently imposed). The incentive for promoting electric energy conservation at the utility is to defer generating capacity. Furthermore, immediately after the Competition, MGE did not ask for an increase in its demand-side budget and staffing because it felt they were sufficient.

Some changes at MGE appear to be of a more permanent nature (Table 8.2). The Marketing Department continues to be relatively autonomous and receives regular approval on its recommendations on rebate levels and operating procedures. Vendors continue to be used at MGE; in fact, MGE signed a contract with one of its competitors, Honeywell, to continue its work in the large C&I sector. Detailed energy audits are not required and have been replaced with a walk-thru audit with a worksheet. The results of the Competition are being used for program design and the selective targeting of measures. For example, measures in the C&I programs must have estimated benefit-cost ratios of 2-3 or more; measures in the rental and residential sectors must have estimated benefit-cost ratios of 1 or more (for low-income weatherization programs, the ratio is 0.8 or more). Also, direct mail is targeted to customers and phone calls are made as follow-up. Sales training of staff continues to be held for new staff, and annual training follow-up for existing staff is planned. In summary, a number of changes have occurred at MGE that appear to be long-lasting, although an increased commitment to energy conservation may not be associated with these changes.

Table 8.2. Competition's Long-Term Impacts At MGE

- more autonomous Marketing Department
 - more vendors hired
 - signed contract with Honeywell
 - detailed energy audits no longer required
 - results of Competition used for program design
 - more targeting of measures
 - targeted mailings with follow-up phone calls
 - sales training of staff
-

8.2. COMPETITORS' COMMITMENT AND MOTIVATION

Most of MGE's competitors felt the performance bonus did *not* stimulate them to promote energy efficiency in the Madison area. Like MGE, A&C was not sure, if it won, how the bonus was going to be awarded to field staff and program managers. One possibility was that the bonus would go into paying employee bonuses (for program managers and field staff), a procedure that already existed at A&C. As described in previous chapters, however, A&C was not motivated to win the Competition: A&C was attempting to meet multiple objectives and was motivated to do the best job possible to maintain its reputation for quality.

Honeywell was motivated to satisfy its customers and maintain its reputation as a high quality corporation. The bonus was considered to be a nice incentive, but not a motivator. Honeywell did not know what it was going to do with the bonus if it won and realized that, if it won, the money would go to its corporate office, not to the local staff in Madison. As a result, Honeywell followed its game plan throughout the Competition. Honeywell felt the Competition did improve its performance: Honeywell wanted to do a good job in meeting customer needs (its reputation was based on this) and not make a fool of itself. Honeywell was proud of its Madison Branch and its ability to service commercial buildings. Accordingly, the Competition forced Honeywell to compete against itself, rather than against MGE. Finally, another motivating source for Honeywell was to expand its market penetration in the Madison area (e.g., by becoming a vendor for MGE).

In the rental sector, the bonus influenced The Energy Collaborative (TEC) at the beginning of the Competition: TEC wanted to win the Competition, no matter what it took, and the TEC was disappointed that BRMC did not win the Competition (TEC had dropped out by the end of the Competition). BRMC, however, felt differently than its partner: for BRMC, the bonus would have been nice, but winning the Competition was secondary to BRMC. Instead, BRMC was motivated to establish a business. Therefore, the \$50,000 in start-up money that was given to BRMC was a more significant incentive for it (there were no out-of-pocket costs for establishing a business). A larger bonus would not have influenced BRMC since it could not have worked any harder than it did.

In summary, MGE's competitors, as well as the PSCW, thought the bonus was *not* a financial incentive for their participation in the Competition. However, the PSCW thought the bonus did provide an incentive for MGE's competitors to implement their programs quickly in order to win.

8.3. IMPACT ON OTHER UTILITIES

From their perspective, most of the other Wisconsin utilities felt they were negatively influenced by the Competition. They saw the Competition as a threat (a stick), and a program they wanted to avoid. Accordingly, the Competition stimulated these utilities to improve their conservation programs so they would not have to conduct a similar program. From a regulatory perspective, the reaction of the utilities

was a positive impact because MGE's Competition motivated utilities to promote energy efficiency without experiencing the Competition and without incurring additional PSCW staff resources.

Wisconsin Power and Light (WP&L) (and the Wisconsin Public Service Corporation) negotiated a settlement with the PSCW to avoid a program like the Competition. WP&L saw MGE's Competition as disruptive as it was organized and implemented, saw no connection between the Competition and least-cost planning, and felt the Competition was too prescriptive. WP&L, like some other utilities including MGE, preferred to have only net benefit goals (a result of the Competition) and retain the flexibility to design programs to meet these goals. WP&L also felt there was a lot of upheaval, confusion, and bad feelings as part of MGE's Competition and, as a result, it sensed there was a loss of trust between MGE's Marketing Department and the PSCW. In addition, WP&L believed that a number of other factors had already heightened its commitment and interest in pursuing least-cost planning: its recognition and understanding of the value of energy efficiency; its desire to make sure that energy-efficiency dollars were being used cost-effectively (in the face of recent budget cuts); and its need to accelerate its generation planning by more than ten years.

The Competition did not affect the Wisconsin Electric Power Company because it felt it was already pursuing energy efficiency and did not expect the PSCW to force it to conduct a program similar to the Competition. The Competition did have a positive effect on Wisconsin Gas: it is currently running a program similar to the Competition. In the Wisconsin Gas program, outside vendors are competing with one another to provide demand-side services to the utility; however, the utility is not competing with the vendors, but is only the referee.

8.4. CUSTOMERS' COMMITMENT AND MOTIVATION

Most participants felt that the rebates offered in the Competition were critical in stimulating customers to invest in energy-efficiency measures. As discussed in Chapter 5, findings from the customer survey conducted for this evaluation confirmed this finding: rebates and, where applicable, the fact that the measure was free, were rated as very important in influencing the customer's decision to install a measure. However, customer commitment and motivation varied from sector to sector, as discussed below.

8.4.1. Large C&I Sector

Customers in the large C&I sector have a complex process of decision making. According to Honeywell, the key factors (in order of importance) influencing large C&I customers to install energy-efficiency measures are the following: (1) trust and local reputation of firm, and successful case studies conducted by the firm; (2) financial criteria (paybacks and benefit-cost ratios); and (3) technical expertise of the firm (e.g., Honeywell does all of its engineering before a sale). Other factors stimulating customers to install energy-efficiency measures are as follows: comfort, improved operations, increased

productivity, and convenience (e.g., reduced administrative time). Several of these findings were confirmed in the customer survey conducted for this evaluation (Table 8.3): large C&I customers mentioned energy conservation, financial savings, and employee/customer comfort as important factors influencing their decision to install energy-efficiency measures.

Decision making in large public organizations is different than in the private sector: the public entities face lengthy budgeting processes and often face greater capital constraints, so that they cannot move as fast as private institutions. As a result, MGE and its competitors avoided the public sector.

In the large C&I sector, rebates influenced customers, although their effect varied with the type of marketing approach. For MGE, the rebates drove its program and were responsible for stimulating customers to install measures. For Honeywell, the rebates were critical: none of its 19 projects would have happened during the Competition without the rebates. The rebates also contributed to what Honeywell was already doing: Honeywell never publicized the rebates and only discussed them as part of its marketing approach. Honeywell told its customers they would receive rebates only if the measures were installed within a two-month time period (the limited time frame was called a "pending event"). The pending event gave the customer an incentive to move and shortened Honeywell's sales cycle.

8.4.2. Small C&I Sector

Electricity and gas bills represent a small percentage of operating costs in the small C&I sector. In fact, home energy bills of small C&I customers may be larger than their facilities' energy bills, reducing the importance of energy in this sector. A&C also felt that Wisconsin customers were more aware of energy use and energy-efficiency measures and were already doing things to save energy. Therefore, rebates would help to motivate them. However, rebates are not sufficient to promote energy-efficiency investments; customers still needed handholding to get them to buy and install energy-efficiency measures.

In addition to energy savings, several other factors influence customers to install energy-efficiency measures in the small C&I sector: e.g., convenience, productivity, comfort, and safety. In particular, convenience is very important to the small C&I customer: the installation and maintenance of measures must be easy. This finding was confirmed in the customer survey (Table 8.3): small C&I customers mentioned financial savings, energy conservation, the life of the equipment, and less maintenance as important factors influencing their decision to install energy-efficiency measures.

The Competition's timeline and limited funds affected customers' decisions to invest in energy efficiency: they forced customers to get the money while they could, especially as the program was nearing its end (similar to Honeywell's "pending event"). At the same time, vendors encouraged customers to act as soon as they could. As a result, MGE and its competitors thought rebates were important to induce activity that would not otherwise occur and, therefore, represented a strong marketing tool.

Table 8.3. Factors Affecting Decision to Install Measures at This Location *

	Total	Small C&I			Large C&I			Rental		
		Sub-total	MGE	A&C	Sub-total	MGE	Honeywell	Sub-total	MGE	BRMC
	N= 57	N= 26	N= 3	N= 23	N= 15	N= 7	N= 8	N= 16	N= 14	N= 2
Financial savings	26%	35%	33%	35%	20%	14%	25%	19%	7%	100%
Consultant availability	5	4	0	4	7	0	12	6	7	0
Energy conservation	30	19	33	17	33	43	25	44	50	0
Ecology/environment	4	8	0	9	0	0	0	0	0	0
Less maintenance	4	8	0	9	0	0	0	0	0	0
Quality of equipment	5	4	0	4	7	14	0	6	7	0
Code requirements	5	0	0	0	7	14	0	12	14	0
Safety	2	0	0	0	0	0	0	6	7	0
Equipment life	5	12	33	9	0	0	0	0	0	0
Would have done measures anyway	5	8	0	9	7	14	0	0	0	0
Employee/customer comfort	5	0	0	0	20	0	38	0	0	0
Cost of equipment	2	4	0	4	0	0	0	0	0	0
Rebates from other programs	2	0	0	0	0	0	0	6	7	0

* The total sample size is small because this was a secondary question inviting respondents to list "other factors" in addition to the ones specifically asked in earlier questions. See Table 5.2 for responses to these questions.

8.4.3. Rental Sector

According to MGE, the primary factor affecting customer decision making in the rental sector is first cost, followed by aesthetics and property value. Owners and managers of rental property are also interested in low maintenance and code compliance (bringing their property up to code).^{*} These individuals wanted to take care of their buildings as investments and were open to new ideas that could help them save money. Several of these findings were confirmed in the customer survey (Table 8.3): building owners in the rental sector mentioned energy conservation, financial savings, and code requirements as important factors influencing their decision to install energy-efficiency measures.

Information, audits, and energy-efficiency ratings often led to no action because property owners and managers wanted "cash in their pockets:" they wanted money at the time of their investment to lower their purchase costs. Financial incentives other than rebates (such as, low-interest loans, guaranteed savings, and shared savings) did not work for MGE. According to MGE, rebates accelerated the market by at least a couple of years in this sector. Consequently, rebates formed MGE's strategy from the beginning in the rental sector. BRMC also thought rebates were critical in the Competition for influencing customers because Madison's rental customers were seen as "addicted" to rebates: they had been conditioned for years in obtaining rebates from MGE. However, BRMC decided to reduce the cost of the measure upfront (as a subsidy) to the customer, rather than have the customer wait for a rebate after the measure was installed.

BRMC thought that customer motivation depended on how busy the customer was and whether the customer owned the business. The easiest sales were property owners that had not had bad experiences with energy conservation measures. For many property managers, BRMC felt that vacancy rates and aesthetics may have been more important than energy savings. BRMC felt that large management companies were particularly reluctant to invest in energy efficiency. These companies were often limited partnerships with little cash flow; therefore, money had to come from the partners for installing energy conservation measures. These companies controlled a large percentage of the market, but they were not motivated to invest in energy efficiency. These companies might have installed more measures if offered for free, or if there was a shared savings program. But the latter was difficult to implement: shared savings was an administrative headache (it took lots of time and overhead, just to do the contract). BRMC was also aware of a few shared savings projects that fell through at the end due to a poorly managed property management company. For BRMC, no-interest loans were also a headache: e.g, one had to find out what the customer's credit was, and then pay someone to send the customer a notice. BRMC used no-interest loans once, but does not plan on using them again.

^{*} Since Jan. 1, 1985, the State of Wisconsin has enforced a weatherization ordinance for rental units at the time of sale (DILHR, 1989).

CHAPTER 9. THE COMPETITION: RECOMMENDATIONS AND COMPARISON TO OTHER ALTERNATIVES

In this chapter, we synthesize key findings from this process evaluation by developing a list of proposed changes and refinements which could improve the Competition if such a program were to be repeated in another utility service area. In addition, we compare the Competition with other strategies that have been used by PUCs to promote energy conservation programs for utilities in similar situations.

9.1. RECOMMENDATIONS FOR A FUTURE COMPETITION

If the Competition were to be repeated in another utility service area in Wisconsin, a number of refinements and changes are needed to avoid or ameliorate the problems encountered in MGE's Competition.

1. Revise the Performance Score.

Many participants felt that the Performance Score used in the Competition had major flaws and was an inappropriate measure of performance for several reasons. First, because the conservation value term was squared, the Performance Score was not a very stable indicator: small changes in benefits would result in large changes in the score. Second, many participants believed that the Performance Score tended to encourage measures with short lifetimes and cream skimming (quick payback measures and low-cost or no-cost products), despite the program restrictions that limited expenditures on measures with payback times shorter than one year to 50% of total expenditures. In the small and large C&I sectors, the lifetime of DSM measures was capped at 15 years in calculating lifetime savings.* Third, the characteristics of the Performance Score may have encouraged some competitors to set rebate levels at very high levels for measures with high benefits in order to obtain high Performance Scores. Fourth, it is important that the utility's avoided costs (which are used to calculate benefits) be consistent with Wisconsin's planning horizon and long-term energy needs; additional work is needed on quantifying avoided gas costs. Finally, some participants felt that the Performance Score did not sufficiently value measures with significant peak demand savings (e.g., high-efficiency air-conditioners). In summary, MGE and most other participants believed the Performance Score tried to do too much by both magnifying benefits (squaring benefits) and including cost-effectiveness (benefits divided by costs).

* According to PSCW staff, the cap was a compromise to partially correct for the fact that the formula did not use appropriate net present valuing in the large and small C&I sectors.

Since the Competition, the PSCW staff is using a different approach (net benefits) as the basis for measuring utility DSM performance. Net benefits are the amount of benefits customers receive as a result of conservation programs; this value is determined by the net reduction in utility revenue requirements. Qualitative goals, such as customer satisfaction, meeting customer needs, and breadth of measures, would also be included in measuring a utility's performance. This new approach, which involves an index of several indicators, may be more robust than reliance on one simple formula that tries to reflect all objectives. If future Competitions are contemplated, Performance Scores should also be compatible with indicators that are used to evaluate a utility's overall DSM effort.

2. Re-examine and clarify the roles of the Panel and Monitor.

The strength of the existing Competition structure is that utility and PSCW staff are compelled to take very active roles as members of the Panel (and thus are deeply involved in the Program). The disadvantages of this approach are that it places the utility representative in the difficult position of balancing utility and Panel roles, and it tends to reinforce utility perceptions that the PSCW staff is micro-managing the utility and possibly has excessive influence over outcomes that can affect the utility adversely. In addition, participants felt that individual members of the Panel were biased, although the Panel as a whole attempted to be unbiased.

If future Competitions are contemplated, other administrative arrangements should be examined (depending upon objectives). For example, the composition of the Panel could change so that all members of the panel represent independent parties (without representatives from the PSCW or the sponsoring utility). One of the disadvantages of this approach would be the amount of time needed to inform and educate the neutral panel about utility and regulatory issues. Some participants suggested that a neutral party could replace the Panel and manage and administer the Competition and resolve conflicts and technical and policy issues; the individual would not be a member of the PSCW or the sponsoring utility and, therefore, confront the same informational and educational problems mentioned above. If the composition of the Panel is similar to the MGE Competition, many participants felt that the independent third party should be local, in order to show up at each meeting, discuss issues with people face-to-face, and be kept informed. This would allow the Panel to meet more regularly.

Similarly, the role of the Monitor needs to be clarified. Many participants felt that the Panel should provide more explicit policy guidance to the Monitor, particularly at the beginning of the Competition, and should be more closely involved in overseeing the management responsibilities of the Monitor. One mechanism for improving oversight could be the assignment of some administrative duties to someone under the Panel's direction; this person would ensure that communications are clear and documented.* As

* According to PSCW staff, verbal communications were not adequately documented to determine if communications between the Panel and the Monitor were a problem, or whether the Monitor was at fault.

a result, time delays will be less of a problem in the administration of a Competition. In terms of allocation of the Monitor's time, some participants suggested that additional effort should be devoted to the inspection process, so that the Monitor would have time to evaluate measure performance.

3. Develop a more detailed blueprint and guidelines for the Competition prior to issuing the RFP.

As mentioned in Chapter 3, the Order mandating the Competition provided only a skeleton framework for the Competition. As a result, many of the implementation details were delineated after the RFP was issued. In some cases, this led to the perception among some participants, that the rules of the Competition changed during its development, leading to negative feelings as well as reduced performance scores. Some participants and outside observers felt that this situation could have been avoided if there had been more planning and organization prior to the implementation of the Competition. In the MGE Competition, time constraints made it impossible to conduct this preparatory work in a comprehensive manner.

First, additional efforts should be devoted to developing a comprehensive list of potential bidders and to evaluating project proposals in order to ensure an adequate response to any future RFP and high quality proposals. Preliminary notices about the Competition and the RFP could be distributed. Second, additional time for bidders to respond to the RFP should also be permitted. Third, in responding to a future RFP, competitors should be asked what they would do with bonus money to motivate their staff and/or management, if they were to win the Competition. Fourth, qualifications of competitors need to be investigated more carefully: an in-person interview must be mandatory, and references should be checked in writing.* And fifth, better guarantees of which people would be the primary people involved in the work are needed.**

4. Allow more time for upfront planning and for program implementation.

The amount of time needed to design and implement the Competition was underestimated; furthermore, time constraints made it impossible to provide this needed time. More time is needed for allowing the utility and energy service companies to develop detailed marketing and operational strategy before the Competition actually begins.*** This is especially needed for firms new to the area (e.g., for establishing contacts and, where applicable, for setting up a new office) and will help reduce the "home team" advantage of the utility. Many participants also felt that the amount of time devoted to the actual

* The review of competitors' qualifications was not done systematically in the Competition. Some checking of proposers was conducted and all candidates were interviewed, but, according to one Panel member, the review was done haphazardly and was incomplete.

** As noted previously, PSCW staff were disappointed that some of the bidders' personnel listed in their proposals did not work on the Competition.

*** The MGE Competition allowed three months for upfront design.

implementation of the Competition (9 months) was too short to test innovative marketing strategies. In addition, Thus, a minimum of 18 months is needed, and two years would be best for developing and implementing a data base, rules, procedures, methods and marketing strategies.* However, extending the program for more than a year could present some budgetary problems for those utilities that have annual rate case filings.

5. Review the level and use of budget caps.

A basic premise of the Competition was a framework in which utilities and third party firms were encouraged to achieve maximum benefits given a fixed level of financial resources. However, because of the existence of budget caps, MGE ran out of money in the large C&I and rental sectors.** Once the programs were stopped, MGE experienced problems with disgruntled customers, angry contractors, and frustrated staff, and MGE had to refer customers to competitors that still had money in their programs. Some limits on budgets appear to be a basic feature of this type of Competition but several options have been suggested that may mitigate this problem in the future:

- increase the budget cap above the level that would be selected if the utility were the only entity operating the DSM program in order to reflect the extra administrative costs associated with two entities
- review budget caps at some point in the Competition and provide an adjustment mechanism if agreeable to all parties, particularly if the Competition extends over a longer time period (e.g., two years).

In the Competition, budgets were higher as in the first recommendation. Upon review, even higher budgets may be warranted. As suggested in the second recommendation, PSCW staff wanted to adjust the budget caps, if agreeable to competitors; according to PSCW staff, MGE refused to consider this adjustment.

6. The utility and third party firms need to clearly articulate the incentive structure that will be utilized in the event that they receive the bonus.

Apart from the issue of measuring utility performance, a future Competition needs to focus more attention on the purpose and uses of the bonus. There was not a consensus among participants about the best way to divide up the bonus among winners and losers. For example, several participants thought the

* Another option for providing more time for each program would be to stagger rebate programs at regularly scheduled intervals (e.g., Feb. 1 and Oct. 1) or offer the large C&I Competition in the Fall, the small C&I in the Winter, and the rental in the Spring

** In the rental sector, a vendor promoted 7,000 low-flow showerheads, forcing MGE to send a flyer out to its customers announcing that rebates for gas domestic hot water heating had ended. The vendor had spent all of MGE's money in the rental sector in one and one-half months (mid-April to June 3).

winners of the next competition should receive a bonus and the losers should not receive a reward (as designed in MGE's Competition). In contrast, other participants thought that instead of having just one winner, the losers should receive a portion of the bonus based on their performance (e.g., as measured by how well they met their goal).

Moreover, there was considerable uncertainty about which members of the winning team would receive the bonus. Different expectations led to different responses in terms of motivation. For example, some MGE field representatives knew they would not be receiving a bonus and, therefore, were not influenced by the bonus. On the other hand, some middle management staff at MGE thought they might receive the bonus (in July 1990, MGE announced that it would distribute the entire bonus to shareholders). Competitors experienced similar uncertainties. We suggest that if a bonus is to be included in a future program for motivating organizations, competitors, as part of their response to the RFP, should state how the bonus would be used to motivate their staff and/or management, if they were to win the Competition. The utility should also provide this information prior to the Competition. Furthermore, the utility could also be encouraged to develop financial incentives for staff that exceed their performance in promoting energy efficiency.

7. Other approaches for marketing to customers should be considered if future

Competitions involve larger or more geographically diverse utilities.

In this Competition, MGE and its competitors were targeting the same customers. However, it is possible that the testing of such goals as encouraging innovative DSM programs could be tested differently in a larger or more geographically diverse utility. For example, competitors could be assigned to their own utility district or other geographic area. Similarly, one competitor could be assigned to work with one group of customers, while the utility works with a different group of customers, and have a "sales competition" to see which organization does best. Some participants also noted several organizations did not respond to MGE's RFP because they did not want to compete against the utility. Thus, another option is to require the utility to not compete in the Competition; however, this approach implies different objectives than those posited for the MGE Competition. This approach is currently being tested by the Wisconsin Gas Corporation which is running a Competition in Milwaukee in which the utility is not competing, but is assuming the role of the Panel. The PSCW is not involved, and a consultant is the Monitor.

9.2. THE COMPETITION COMPARED TO OTHER APPROACHES

In this section, we discuss the advantages and disadvantages of various strategies that have been used by public utility commissions (PUCs) to stimulate additional demand-side management (and particularly conservation) activity at utilities. We start from the premise that the Competition was ordered

principally because the PUC was dissatisfied with the pace at which MGE was developing its conservation efforts and wanted to signal its concern in a visible way to top management. The Competition was an experiment, and a rather innovative one. PUCs in other states (and the PSCW on different occasions) faced with a similar situation have employed, and are continuing to test, other approaches as well. We have grouped various regulatory options into five broad categories:

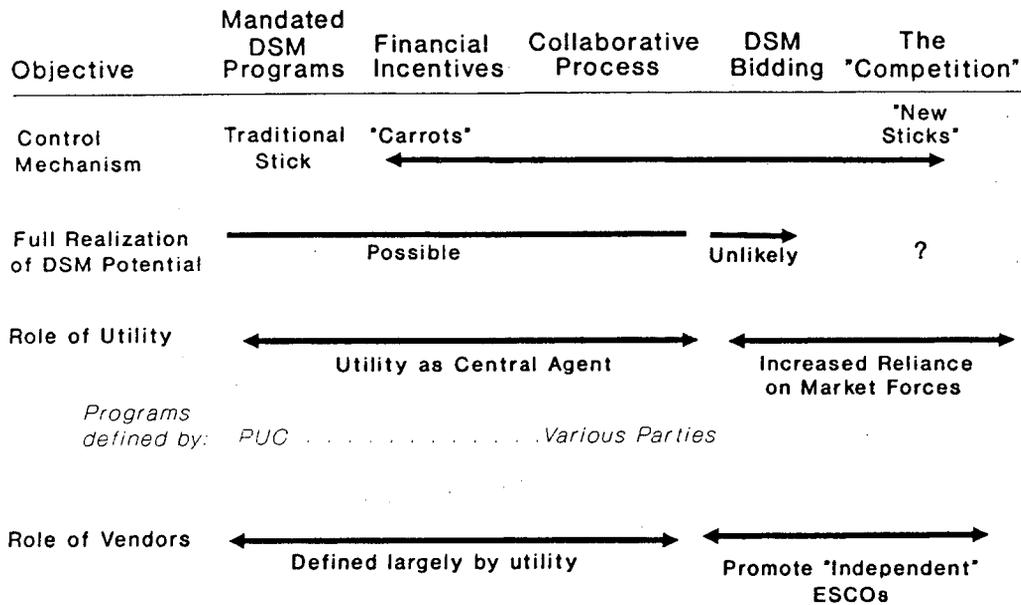
- DSM programs mandated by PUCs;
- provision of financial incentives to utility shareholders;
- collaborative planning processes, which may involve negotiations between a utility and major intervenor groups;
- development of a DSM bidding program that involves customers or third-party firms competing for long-term contracts that specify amounts of DSM savings to be achieved by a winning bidder at a specified price; and
- the "Competition," in which a utility competes against other conservation providers to deliver DSM services in specified market sectors.*

These various approaches are not mutually exclusive, and in many cases can be (and are being) pursued simultaneously by PUCs and utilities. In many cases, these alternative approaches are being considered primarily because the utility has not responded well to a PUCs' initial efforts to get a utility to develop demand-side resources.

Figure 9-1 describes the five alternative regulatory options to promote DSM in terms of overall regulatory philosophy (type of control mechanism), specific DSM objectives (full realization of DSM potential), and possible implications for the roles of the utility and third-party providers (vendors). One caveat needs to be made prior to examining the features of these programs as outlined in Fig. 9.1: there are significant differences within each option. For example, utilities might enter into a collaborative process with intervenor groups voluntarily or under significant pressure from a PUC. Similarly, DSM bidding programs may be initiated voluntarily by a utility (e.g., Public Service of Indiana) or occur as the result of a PUC order (New York) or a negotiated settlement agreement (New Jersey). A variety of incentive mechanisms are being considered and implemented by various PUCs and utilities. In some cases, these incentive mechanisms will include the opportunity to earn a performance-based bonus as well as penalties for non-performance and the potential for reduced earnings.

* We enclose Competition with quotation marks to differentiate it from the MGE Competition and to make it more generic.

Figure 9.1
Alternative Regulatory Options to Promote DSM



It is well understood that PUCs use a combination of "sticks" and "carrots" in regulating utilities (Fig. 9-1, first row). The choice is not strictly between "carrots" and "sticks" but in defining the proper balance and linkages between both types of control mechanisms. In the context of DSM, mandated DSM programs represent the traditional "stick" that PUCs often try first in an attempt to influence utility behavior. For example, in 1988, the New York Public Service Commission ordered the state's utilities to develop a core set of DSM programs, after reviewing the initial long-term DSM plans of the state's seven investor-owned utilities which proposed DSM goals that were quite modest.

The other four options can be thought of as representing a continuum from "carrots" to "new sticks." Regulatory options that include financial incentives are viewed most positively by utility management, but will often include a penalty for non-performance (Schultz and Eto, 1990). On the other hand, collaborative processes represent an attempt to enhance DSM program options outside the traditional regulatory framework. Collaboratives involve negotiations among the utility and other interested parties to develop a consensus on an implementation strategy to realize the DSM market potential. Notable examples include various collaboratives in New England involving utilities and the Conservation Law Foundation which have developed comprehensive energy-efficiency programs. In California, the California Public Utilities Commission (CPUC) mandated a collaborative process to revitalize the DSM programs of the state's utilities as well as develop appropriate financial incentive mechanisms. Depending on how DSM bidding programs evolved (initiated by utility voluntarily, or as the result of a PUC order), DSM bidding

may be viewed either as providing additional service options to customers, or as a potential threat to traditional utility DSM programs. In our model, the "Competition" represents a "new stick" that is available to PUCs.

The various regulatory options need to be evaluated against the objective of full realization of the DSM potential (Fig. 9.1, second row). This objective can be interpreted along several dimensions. First, in reviewing a utility's DSM plan, PUCs are often concerned that the plan includes programs that are offered to all customer classes (i.e., programs are "comprehensive"). Second, PUCs will often comment on the utility's attempt to capture the full market potential for DSM in various sectors (e.g., how ambitious and aggressive are the program goals, estimated penetration rates, and savings targets for particular program areas). Current experience with DSM bidding programs suggests that they have a limited role in a utility's overall DSM strategy, and may not be appropriate for all market segments: it is difficult to imagine DSM bidding programs focusing on new construction (Goldman and Wolcott, 1990). Proponents of the other three options (mandated DSM programs, financial incentives, and collaborative processes) would argue that they offer the possibility of full realization of the DSM potential, albeit by different means. PUCs that mandate DSM programs are often concerned about ensuring that DSM opportunities are available to all customer classes and about capturing full market potential. One of the arguments given for shareholder incentives is to provide the utility with a financial stake in the successful development of DSM resources, to make it financially attractive to aggressively promote energy efficiency in all sectors. Collaborative processes often address these issues by focusing explicitly on minimizing "lost opportunities" and increasing the penetration of comprehensive retrofits.

It is unclear how to evaluate the "Competition" against this objective of realizing DSM potential. The MGE Competition was a pilot and explicitly limited to three sectors (rental, and small and large C&I). Theoretically, the approach could be expanded to include all types of market sectors and could be "comprehensive" to the extent that there was a pool of third-party providers willing to compete and to provide services to all customers in all sectors. The relevant time horizon is critical in assessing utility efforts to develop the full market potential. While the Competition lasted for 9-12 months, the other regulatory options are often implemented over longer time periods. For example, winning vendors in DSM bidding typically have 2-3 years to achieve their savings goal, and the program goals and penetration rates of utility DSM programs are typically assessed over the planning period of a short-term action plan or a general rate case cycle (1-3 years). Thus, the "Competition" should be viewed as a "blitz" program that can be used by PUCs to assess short-term DSM market potential, not long-term potential.

Another distinctive feature of these various regulatory options relates to the underlying vision of the role of the utility in the demand-side arena (Fig. 9-1, third row). Approaches that involve mandated DSM programs, financial incentives, and collaborative processes tend to rely more heavily on the utility as the central agent in defining DSM resource opportunities and in implementing DSM programs. The PUC will often issue an order that defines the mandated DSM programs to be implemented by the utility. The

end product of collaborative processes is a set of utility-sponsored programs that have been defined and developed by the various parties. Note that mandated DSM programs, programs implemented by the utility which are eligible for incentives, and programs that arise out of Collaborative processes all can result in significant increases in activity and work for third-party providers because the utility will typically contract for various aspects of DSM implementation. In the "Competition" approach, conservation programs are implemented by third-parties that are relatively independent of utility control or guidance.

The alternative regulatory options affect the type of vendors participating in the DSM programs (Fig. 9.1, last row). In mandated DSM programs, programs that use financial incentives, and Collaborative processes, utility preferences and needs will tend to define the emerging energy services market. Utilities may choose to rely on trade allies, builders, architect and engineering firms, and vendors of specific projects (e.g., lighting and HVAC companies) to provide specific services (primarily on a fee-for-service basis). Utilities may also utilize ESCOs to deliver some of their programs. In contrast, DSM bidding and the "Competition" imply an increased reliance on market forces and non-utility entities (ESCOs) to define DSM resource opportunities and to provide comprehensive energy services. In these programs, the ESCO typically has a more distant (and in some cases adversarial) relationship with the utility and assumes greater performance risks. Most ESCOs are full-service providers in the sense that they offer comprehensive DSM services to customers (initial audits, specification of retrofit packages, financing, project management and installation, and in some cases, guaranteed savings and continuing operations and maintenance), in contrast to the more specific and narrower range of services typically offered by equipment vendors or contractors.*

In the next section, we examine these alternative approaches in somewhat more detail and discuss advantages and disadvantages in the context of specific criteria that encompass the objectives articulated for the Competition as well as for other regulatory strategies. The criteria include:

- minimization of DSM program costs, to provide demand-side services at least cost to utility ratepayers and society;
- promote innovative technologies and comprehensive DSM programs;
- assess increased administrative burden to the utility or PUC relative to the additional benefits of the alternative approach;
- long-term commitment to DSM;

* Some PUCs have ordered utilities to utilize third-party providers to deliver DSM services. For example, in the mid-1980s, the Massachusetts Department of Public Utilities (DPU) ordered utilities to test DSM pilot programs that relied on third-party firms, in part because the DPU was dissatisfied with the utility's own conservation programs. This order resulted in the development by several Massachusetts utilities of various types of DSM bidding programs involving energy service companies (e.g., Boston Edison's Encore Program, New England Electric Service's Performance Contracting Program) (Hicks, 1990).

- promote development of an energy services industry; and
- spillover benefits such as stimulating interest in DSM at other utilities.

9.2.1. Mandated DSM Programs

PUCs in a number of jurisdictions have ordered utilities to conduct DSM programs, either as part of general rate cases, least-cost planning processes, or reviews of demand-side program activities. In one sense, this approach represents the business-as-usual base case which has been the dominant approach used by PUCs during the last decade. In our context, the most noteworthy examples are those that involve PUC orders to implement large-scale energy-efficiency programs. In their response, utilities have generally been more enthusiastic about developing DSM programs that satisfy load management objectives. Mandating utilities to conduct large-scale DSM programs has had varying degrees of success in other states; utility response has ranged from lukewarm, halfhearted compliance (often accompanied by complaints of micro-management) to serious effort. Not surprisingly, mandating utility DSM programs has been most successful in situations when the utility's load/resource was tight, and the utility actually needed to obtain demand or energy reductions in the short run (e.g., California in the early 1980s). These mandates also force utilities to develop the capability to deliver DSM services for the long-term. The major disadvantage of this approach is that it does not engender any fundamental long-term commitment to DSM by the utility. Also, mandated DSM programs may minimize DSM program costs, but these programs often promote energy efficiency measures that are not cost-effective (especially, those that target low-income households). Another disadvantage is that these programs do not encourage the utility to be particularly innovative either in terms of developing creative methods for delivering DSM programs or introducing new technologies. As noted previously, these programs do not encourage the promotion of an energy services industry, and their impact on DSM in other utilities is often minimal. Partly because of dissatisfaction and frustration with the results of this approach, regulators in a number of states have experimented with other strategies in an attempt to motivate utilities.

9.2.2. Financial Incentives to Utility Shareholders

There is widespread interest among utilities, regulatory commissions, and intervenors in the use of incentive mechanisms that will encourage greater development of DSM resources. Incentives are under consideration in at least 21 states (Reid and Chamberlain, 1990). Incentive mechanisms can be grouped into two broad categories: (1) attempts to remove existing disincentives to utility investment in DSM and (2) bonuses for exemplary DSM performance. Prompt recovery of program expenses, allowing ratebasing of DSM expenses, and mechanisms that decouple profits from sales (e.g., Electric Revenue Adjustment Mechanism) have been implemented to overcome disincentives that exist in current regulations in many states. Bonus-type incentive mechanisms include higher allowed rate of return for DSM, bounty for achieving specified performance goals, or shared savings (NARUC, 1989).

Proponents of financial incentives for utility shareholders (and managers) argue that, given the disincentives for utilities to invest in DSM under traditional regulation, incentives are necessary to align the financial interest of utilities with the goals of integrated resource planning. It should be noted that Wisconsin's ratemaking approach tends to minimize the disincentives inherent in traditional regulation (e.g., the use of a forward-looking test year, frequent rate cases, and cost recovery procedures minimize concerns about lost revenues) compared to other states. Thus, it is not surprising that PUCs in other states without these features view incentives as an effective tool that can be used to stimulate utility commitment to promote energy efficiency. It is hoped that this commitment will be long-term and will fundamentally change the outlook of utility executives.

During the past two years, a number of state PUCs have adopted comprehensive incentive mechanisms that allow for recovery of DSM-induced revenue losses and provide an opportunity to earn a bonus. Clearly, we are in the midst of a large-scale experiment as utilities in New York, California, Massachusetts, New Hampshire, Rhode Island, and Oregon implement different types of incentive mechanisms. However, it would be premature to declare that financial incentives for shareholders are the only way to proceed. Administrative burdens to utilities and regulators vary significantly among the incentive proposals. Moreover, it is too early to definitively determine the extent of increased regulatory costs, although it could well be significant, particularly for incentive mechanisms where actual savings need to be verified. Finally, bonuses to shareholders clearly involve additional costs to ratepayers, which must be factored into any evaluation of the relative merits of various approaches.

Incentive mechanisms have been in place in Wisconsin for several years. Based on our interviews, it appears that financial incentives to utility shareholders are not viewed as a panacea, particularly by the PSCW staff. For example, Wisconsin Power and Light was offered a higher rate of return for conservation activities as part of its shared savings program. However, customer participation rates were low, and the effort was not deemed particularly successful. Wisconsin Public Service Corporation had a kWh incentive that included both penalties and rewards, but only a small amount of conservation was gained. Wisconsin Electric Power Company's (WEPCO) experience has been more positive. WEPCO was provided the opportunity to earn a higher rate of return if it achieved various targets in its Smart Money Program: WEPCO would receive an additional 1% increase in its rate of return if 125 MW of energy conservation was achieved, and an additional 2% increase if 250 MW of energy conservation was achieved. By December 1989, WEPCO had achieved 175 MW. The original deadline for WEPCO's program was the end of 1990, and the goal was 250 MW. In January 1990, the PSCW revised WEPCO's goals and established an interim target of 225 MW: if WEPCO meets this goal, it will receive an additional 1.5% on its rate of return.

In contrast to some PSCW staff, some senior utility executives in Wisconsin believe that incentives have an important role in promoting energy efficiency, particularly, in the near-term, as utilities gain more experience with DSM, and for those utilities that still have excess capacity. Because of this interest

by Wisconsin utilities and the use of financial incentives by utilities outside Wisconsin, we feel that financial incentives will remain a potential regulatory option that will need to be examined by the PSCW in Wisconsin in the years to come.

In summary, incentives are clearly an attractive tool that should be pursued to motivate utilities to promote energy-efficiency, but they should be guided by a well-developed integrated resource planning process that defines key objectives and goals. Initial anecdotal evidence from several states (California, Massachusetts, and New York) suggests that they have produced significant positive changes in the attitude of some utility managements, and stimulated utilities to dramatically increase efforts (people and budgets) devoted to acquiring DSM resources. In addition, these utility's have significantly increased their estimate of the achievable DSM potential and set ambitious savings goals. Over the next several years, we will be in a better position to assess the overall cost-effectiveness of various incentive approaches in terms of actual performance (e.g., DSM savings achieved and total costs to ratepayers), long-term commitment to DSM, and the promotion of innovative technologies and comprehensive DSM programs.

9.2.3. Collaborative Planning

PUCs in a number of states have encouraged and facilitated collaborative processes or planning as another approach to stimulate utility DSM efforts. The form and structure of the collaboration varies by state and utility, although the essence of the process is a negotiation between the utility and other parties (major intervenor groups, PUC staff, and consumer advocates in some cases) to cooperatively develop and implement comprehensive and innovative DSM programs (e.g., targeting all sectors and end uses, pursuing "lost opportunity" resources, and promoting innovative delivery strategies). Collaborative processes typically consist of working groups outside the formal regulatory process; the negotiated settlement is then brought back to the PUC for review and formal approval. Outside technical experts are often invited to assist in the development of the new and expanded DSM programs. Collaborative processes have been completed (or are ongoing) in several regions of the country (e.g., New England, California, New York). Wisconsin's Advance Planning Process already incorporates many aspects of these collaboratives, but in Wisconsin, the process is designed to encourage an ongoing dialogue between PUC staff and utilities.

Based on the experience in New England, it appears that collaborative processes have been successful in stimulating utilities to develop innovative DSM programs, encourage comprehensive retrofits, and promote the development of an energy services industry. The program designs are impressive, although most programs are in the early stages of implementation. This approach also seems to have influenced other utilities to set up and adapt collaborative processes to their own region based on the initial successes in New England. However, it is premature to say whether these efforts will result in a long-term commitment to DSM.

Most New England utilities speak positively about this approach, but it is important to note that, in some cases, the collaborative processes have produced settlements that both expanded DSM programs and developed financial incentives to shareholders. Thus, it is difficult to isolate utility reactions to the collaborative planning process alone. For many of the utilities, expansion of their DSM programs hinged on resolution of broader integrated resource planning issues and acceptance by the PUC of the incentive mechanism.

9.2.4. DSM Bidding

Demand-side management bidding programs are proliferating, although actual experience with implementing programs is still rather limited. Several utilities in New England have conducted pilot bidding programs for demand-side resources, while integrated bidding processes, which include DSM resources, are currently being implemented by utilities in Maine, New York, New Jersey, Washington, and Indiana. Our assessment of DSM bidding is based primarily on the work of Goldman and Wolcott (1990), Goldman and Hirst (1989), Cole et al. (1988) and experiences reported by utilities at a recent conference on DSM bidding (SRC, 1990).

A defining feature of most current DSM bidding programs is that they involve customers or third parties (e.g., energy service companies or ESCOs) competing for long-term contracts with utilities which specify amounts of DSM savings to be achieved by a winning participant over a defined time period. It is difficult to draw general conclusions about DSM bidding programs because there is substantial variation among bidding programs. Given that caveat, Goldman and Wolcott (1990) concluded that most utilities are skeptical about DSM bidding programs, and some were initially hostile to the approach. The most notable exception is Central Maine Power, which is generally quite satisfied with its Power Partners Program and the performance of participating ESCOs and customers. In addition, several utilities that do not have much experience implementing DSM (e.g., Public Service of Indiana) have found DSM bidding to be an attractive strategy because it allows them the opportunity to form explicit utility/ESCO partnerships. In this way, they can take advantage of the ESCO's expertise to learn how to effectively market DSM technologies.

Three major advantages of DSM bidding cited by proponents is the development of an energy services industry, stimulation of performance-based approaches for acquiring DSM (i.e., payments to ESCOs contingent on actual results), and encouragement of innovative DSM program delivery strategies (Bullock, 1990; Harding, 1990). In addition, long-term commitment to DSM is assumed, since utilities are relying on DSM savings for their resource planning. Thus far, customer satisfaction with some bidding programs is high (Hicks, 1990), although most programs are just in the beginning stages of implementation. Based on experience to date, it appears that the administrative burden on utilities and PUCs are high; DSM bidding programs are relatively complex programs to implement (Goldman and Wolcott, 1990).

Thus far, most DSM bidding programs have not been particularly successful in promoting comprehensive retrofits in commercial/industrial buildings (e.g., ESCOs are often accused of "cream-skimming," but this is usually related to program design).^{*} Concerns also have been raised that DSM bidding programs are a relatively costly way to acquire DSM resources compared to utility-run DSM programs; the extent of this concern varies by market sector. When compared against supply-side options, which is the competition in many bidding solicitations, DSM bids are attractive. It is difficult and not entirely appropriate to compare the cost of DSM bidding programs to conventional utility DSM programs offered to similar customer groups, because ESCOs are often being asked to bear performance risks (e.g., payment contingent on measured savings over long periods of time) that are not currently being borne by utilities in their own programs.

One major challenge raised by DSM bidding is the side-by-side operation of a DSM bidding program with a utility's other DSM programs. Coordination issues arise in the initial program design (e.g., the bidding RFP may prohibit customers from receiving rebates from other DSM programs - "double-dipping") as well as implementation (e.g., the utility's marketing of a DSM bidding program and its other DSM programs which target the same customers). This issue will become increasingly important over time as more utilities offer DSM programs that are comprehensive and full-scale.

9.2.5. The Competition

The MGE Competition was an innovative experiment and appears to have been generally successful in stimulating utility and third-party delivery of DSM services at MGE in the short term, assessing market potential, encouraging innovative DSM program delivery strategies, and providing a measure of utility performance (net benefits). When completed, the impact evaluation of the program will provide a more complete perspective on actual accomplishments over time (e.g., measured savings and their persistence). The Competition approach also tends to create incentives for utilities and third-party contractors to minimize costs. Moreover, in comparison to incentive mechanisms that have been adopted for utilities in several other states (e.g., Massachusetts, California, New Hampshire, Rhode Island and New York), the additional costs to ratepayers from the bonuses are relatively small. Approaches such as the "Competition" are likely to be viewed as a "negative stick" by other utilities, but may have positive benefits for a PUC in that other utilities may be motivated to improve their DSM performance to avoid this type of program without the expenditure of staff resources.

The Competition approach as implemented at MGE, however, appears to have several disadvantages which may limit its transferability. First, while the PSCW was successful in stimulating MGE to promoting energy efficiency, some energy service companies are reluctant to compete against a utility in

^{*} Lighting retrofits typically account for 50-80% of the savings in DSM bidding programs.

its service area in this type of Competition. ESCOs might be even less willing to participate in competitions with utilities that have large investments in energy conservation services and ongoing relationships with vendors (e.g., Wisconsin Electric Power Company); incumbent advantages held by the utility may be more pronounced in these situations. Second, it has not been demonstrated that the Competition is the best way to facilitate the development of an energy services industry in the long term. For example, the approach has fewer advantages for an ESCO than DSM bidding programs in terms of its relationship to the host utility (adversarial in the Competition; ranges from hostile to friendly in DSM bidding) and long-term contracts or access to customers which ensure that the ESCO will make a long-term business commitment to the area. Other types of energy service providers (e.g., equipment vendors and installation contractors) are likely to be even less enthusiastic about participating in an adversarial competition against an established utility. Many firms might conclude that the long-term negatives in terms of disruption to existing business relationships with utilities would seem to outweigh the short-term benefits. Third, some trade allies will not work with non-utility organizations in this type of competition with the utility. Fourth, relations between the regulatory commission and the utility can deteriorate, making it more difficult to promote energy efficiency in a particular service area. Finally, the "Competition" approach does not encourage long-term commitment by utility management and staff for promoting energy efficiency. The MGE Competition was primarily viewed by both PSCW staff and MGE staff and management as a "stick."

9.2.6. Summary

In summary, the Competition is one of several approaches that can be used by PUCs to stimulate the provision of energy conservation services. The appropriateness of each option, or the combining of several of the approaches, will depend to a great extent on a PUCs overall regulatory philosophy and policy objectives, PUC organizational capabilities (e.g., large or small staff) and approach (e.g., proactive or mainly reactive), and consideration of a utility's specific circumstances, problems, and preferences.

For example, for some PSCW staff, the Competition was one component of a broader strategy designed to motivate utilities to promote energy efficiency and facilitate "yardstick" comparisons among utilities. In this scheme, the results of MGE-type Competitions, in terms of net benefits produced over a specified time period, would provide a benchmark that defined satisfactory performance. Other utilities that performed significantly better than this benchmark may be considered for an additional financial incentive. Other utilities whose performance was questionable as measured by net benefits would be required to undertake their own Competition. The underlying rationale is that the utility could do a better job of providing DSM services if properly motivated (i.e., by a Competition).

However, we believe that the Competition approach may have limited applicability in other states. The ability to transfer the "Competition" is limited in part because of objective conditions that currently exist in the energy services industry. Utility-sponsored DSM programs are expanding rapidly in several

regions of the country and utilities are contracting out much of this work to private energy service providers. In some regions (New England), concerns have been raised about potential shortages of qualified personnel and firms, given the increased workloads. In addition, DSM bidding programs provide additional market opportunities for ESCOs. Thus, in an expanding DSM market with many opportunities available to energy service firms that appear more attractive, Competition-type approaches might be more constrained by the lack of qualified competitors. Reluctance to compete is not a significant problem as long as a pool of qualified contractors can be found, and they are willing to bid. Our concerns on this issue are not entirely speculative because the MGE pilot initially had difficulty attracting good bids in one sector (rental). Fortunately, this issue can be resolved empirically by additional Competitions, although we think PUCs should make some initial assessment of the potential response by the local and national energy service firms when considering programs like the MGE Competition.

Another reason that the Competition may have limited applicability relates to our assessment of the Wisconsin regulatory environment relative to other states. In contrast to other regions, the MGE Competition was feasible because of a unique combination of factors including: Wisconsin's mature and sophisticated least-cost planning process (e.g., the Advance Plan process, proactive staff), the long-term working relationships established between the PSCW and utility staff, the geographic proximity of the utility and PSCW staff because of the Madison location, and the distinctive characteristics of MGE (e.g., compact service territory) and its customers (Table 9.1). These factors created a more suitable environment for testing the Competition.

Table 9.1. Unique Factors that Improved the Workability of the Competition

Wisconsin's Regulatory Environment

- Integrated planning framework
- Formal and informal communication between utility and regulatory staff
- Proactive, involved, and innovative regulatory staff
- Close monitoring of utility DSM programs by regulatory staff
- Trust between regulatory staff and PSC commissioners

MGE

- Small organization and small, compact and urban service area
 - Innovative marketing department
 - Customers highly educated, liberal, socially responsive, and aware of environmental and energy-related issues
 - Utility located in same city as regulatory commission
-

A Competition-type approach similar to the MGE pilot involves a significant commitment of PUC staff resources. Other alternative regulatory approaches also involve additional responsibilities and work for PUCs. However Competition-type approaches involve PUC staff in different types of decision-making roles (through membership on a Panel) and may require more direct and sustained involvement in the implementation details of DSM programs. Some PUCs may not be that anxious to assume these new roles, given limited resources, particularly if they are involved in one or more of the other approaches described in this section.

The fact that the utility was located in the same city as the PUC changed the type and extent of communications between the various parties. Numerous face-to-face meetings between the PSCW and MGE were conducted during the Competition, and these meetings were considered by the PSCW to be very valuable since they gave the PSCW a better opportunity to monitor the Competition. Obviously, geographic proximity should be considered in the context of the goals and value of any approach, but these type of considerations may be more important in considering Competition-type approaches.

CHAPTER 10. SUMMARY AND CONCLUSIONS

The Competition was an innovative program and an unique experiment to encourage and stimulate energy efficiency by a utility company. This process evaluation suggests, however, that the Competition did *not* further motivate MGE's upper management to promote energy efficiency (Chapter 8). Their level of commitment to demand-side efforts was not changed by the Competition. In contrast, most of MGE's staff in lower and upper management were stimulated in all sectors (large and small C&I and rental) to win the Competition for professional and organizational pride, but they were not particularly supportive of the Competition nor were they influenced by the bonus that accompanied the winner of each sector. MGE's field representatives were somewhat critical of the Competition because of MGE's top-down approach used in guiding their work with customers and because they perceived that customer service suffered as a result of the limited duration of the Competition and the early termination of programs. Although MGE did increase its delivery of demand-side services, some PSCW staff believe that MGE's long-term commitment to energy efficiency is uncertain. If there is not this commitment, the PSCW will have to continue to closely oversee the utility if it wants to make sure it continues to promote energy efficiency. In summary, the Competition was successful in getting MGE personnel to more actively promote energy efficiency, one of the key objectives for mandating the Competition.

The Competition did produce both short-term and long-term impacts at MGE (Chapter 8). Structural, procedural, and perceptual changes occurred during the Competition to facilitate the design and implementation of comprehensive energy programs. In the short-term, MGE's Marketing Department became more autonomous and flexible and was able to develop and implement programs more quickly based on the Competition's objectives and goals. In the long-term, MGE's Marketing Department's autonomy continues to evolve, as it expands and improves its marketing efforts for specific targeting of measures and customers. Some of these changes might have occurred naturally at MGE in the absence of the Competition over the course of time; however, these changes were accelerated by the Competition. In summary, the Competition stimulated MGE to more actively promote conservation services for its customers, one of the key objectives of the Competition.

The Competition was viewed negatively by several other Wisconsin utilities (Chapter 8). These utilities felt threatened by a possible Competition and improved their conservation programs in order to avoid a program like the Competition. Although not intended by the PSCW, the Competition was viewed by these utilities as a stick by the PSCW to encourage energy efficiency programs in their organizations. From a regulatory perspective, the reaction of the utilities was a positive impact because MGE's Competition motivated utilities to promote energy efficiency without experiencing the Competition and without incurring additional PSCW staff resources.

The most significant unintended consequence in the Competition was the importance given to winning for its own sake and the attention focused on the Performance Score by MGE and its competitors

and the Panel (Chapter 9). Moreover, because of the limitations of the Performance Score, cream skimming was encouraged, particularly for measures designed to reduce electricity use, thereby superseding long-term perspectives and investments in many cases and additional investments in energy efficiency (lost opportunities). The PSCW's use of net benefits and the analysis of both quantitative and qualitative measures should correct for most of these problems.

Most participants considered the conduct of the Competition to be fair (Chapter 5). Perceived differences in fairness were mainly attributable to the advantages MGE possessed as the "home team" in the Madison area. As the local utility, MGE had name recognition, a presence in the marketplace, high credibility, trust, respect, and an excellent reputation for customer service. MGE also had pre-established customer contacts, a customer data base, and often knew who to contact in a specific building. Furthermore, MGE had good rapport with trade allies, who were contacted to market MGE's services. These incumbent advantages permitted MGE to have a significant competitive edge over its competitors in the small C&I and rental sectors, and a slight edge in the large C&I sector (Honeywell had the advantage of being a nationally well-known company, credibility, trust, respect, and presence in the Madison marketplace). Some participants felt that the decisions of the Panel and the Monitor were unfair to them regarding specific issues (e.g., fuel switching, estimated savings from low-flow showerheads and setback thermostats), but, in general, most participants thought the Competition was conducted fairly.

Innovation in the delivery of energy-efficiency programs increased as a result of the Competition (Chapter 4). MGE's competitors tried several methods that were not emphasized by MGE (e.g., door-to-door cold calls, guaranteed savings, telemarketing). At the same time, MGE experimented with marketing strategies that were new to its repertoire (e.g., extensive use of trade allies, and one-stop shopping and turnkey services). It is premature to tell whether these changes in MGE's programs will be permanent; however, some of these features have continued since the Competition. As for the competitors, Honeywell subcontracted with MGE to deliver its services in the large C&I sector after the Competition, using the same approach it used during the Competition.

The PSCW staff is using the results of the Competition as a yardstick for measuring and comparing the performance of utilities in Wisconsin. However, the calculation method used for measuring performance (the Performance Score) had serious limitations and has been replaced by the PSCW staff in favor of another method (net benefits) that will be used as the yardstick for evaluating future utility performance. For example, MGE has to obtain a Conservation Value that is 10% higher than the net benefits that were obtained during the Competition. Nevertheless, the Competition did demonstrate to the PSCW staff, MGE, and other utilities the amount of energy conservation that could be achieved over a specified time period (9-12 months).

MGE and its competitors were successful in promoting energy efficiency in each of their sectors because of marketing strategies that responded to customer needs and that included significant rebates (Chapter 5). MGE relied on traditional marketing methods (e.g., advertising, bill inserts, newsletter,

presentations, and direct mail), but also used more innovative methods (e.g., working with trade allies and using turnkey services) to win two sectors (the small C&I sector and the rental sector). Honeywell relied on its basic sales approach to convince customers to install energy-efficiency measures; combined with guaranteed savings and bundling of measures, Honeywell won the large C&I sector. Although they did not win their respective sectors, A&C's sales process and use of door-to-door cold calls and BRMC's use of one-stop shopping, bundling of measures, and 25/40% subsidy were effective in stimulating energy efficiency in the small C&I and rental sectors, respectively. Extensive personal marketing of customers, in addition to traditional mass marketing, should be emphasized in the future because it often was a critical factor in convincing customers to install energy-efficiency measures.

Rebates offered in the Competition were critical in stimulating customers to invest in energy-efficiency measures (Chapter 8). In the large C&I sector, rebates drove MGE's program; for Honeywell, while rebates contributed to what it was already doing, none of its projects would have happened during the Competition without the rebates. In the small C&I sector, MGE and A&C thought rebates represented a strong marketing tool and induced activity that would not otherwise occur. In the rental sector, MGE felt that rebates accelerated the market by at least a couple of years; BRMC also felt rebates were important but decided to reduce the cost of the measure upfront (as a subsidy) to the customer, rather than have the customer wait for a rebate after the measure was installed.

Customers participating in the Competition were also motivated to invest in energy efficiency equipment for non-financial reasons (Chapter 8). In the large and small C&I sectors, comfort, improved operations, increased productivity, and convenience were important determinants. In the rental sector, compliance with code requirements was particularly important for property owners and managers.

In general, the Competition encountered few problems in customer service (Chapter 5). Overall, most customers were very satisfied with the Competition and with the different components of the program: the rebate application process, size of the rebate, length of time to get the rebate, service received from MGE or its competitor, the performance of measures, the service received from the installer of the measures, and the energy saved from the measures. Moreover, the outside vendors were able to provide the same level of satisfactory service to customers as provided by MGE. In addition, there were few reported cases of customer confusion (or staff confusion) as a result of the strategy of assigning the same sectors and territories to MGE and its competitor (Chapter 6). Where confusion did occur, customers took advantage of the best offer.

The administration of the Competition ran relatively smoothly, although MGE felt it carried the burden of administering the Competition due to the numerous activities for which it was responsible (Chapter 6). The key administrative problems evident in the Competition were related to the Performance Score (see below), the development of the Competition's data base, and the roles of the Panel and Monitor. Many of these problems could be solved or ameliorated in a future Competition if sufficient time is given initially for designing the program: e.g., determining the rules of the Competition and the

decision-making process. A future Competition should run longer than MGE's Competition: two years should be sufficient with a minimum period of 4-5 months for designing the Competition.

The Monitor's role as referee influenced the administration of the Competition (Chapter 6). While some participants thought the Monitor did a good job in what was expected of him and was conscientious, several participants were critical of the Monitor's work. The Monitor was criticized primarily for being too slow (not timely) in preparing the energy-saving calculations, the Competition data base, and monthly reports, and in inspecting installations. Despite the guidance given in the RFP and the Monitor's contract, some participants felt that the lack of clear directions and priorities given to the Monitor at the beginning of the Competition may have caused many of the Monitor's problems. Similarly, some participants felt that the Monitor may have received undue criticism, since the Monitor was considered by many as the referee of the Competition, and unhappy participants wanted to "kill the messenger." Nevertheless, as the Competition progressed, dissatisfaction with the Monitor's work remained a source of contention among several participants.

The Panel was responsible for administering the Competition and establishing the rules of the Competition (Chapter 6). Most participants believed the Panel to be fair to everyone by reasonably accommodating their interests and by making satisfactory decisions. However, several participants thought the Panel suffered the same problem that afflicted the Monitor: the Panel was too slow in making timely decisions on critical issues. The Panel's reluctance to direct the Monitor in the early part of the Competition may have been a reflection of the dual management responsibility that was provided in the Competition: the Monitor and the Panel expected each other to provide the leadership. This reluctance might also have reflected the fact that the PSCW and MGE felt that it would be inappropriate for either of them to lead the Panel.

The bidding process for selecting competitors worked fairly well in the Competition (Chapter 3): all participants thought the process of choosing competitors was fair, and the Panel was able to devise a satisfactory solution to the initial poor response in the rental sector. By the end of the Competition, however, the PSCW staff was somewhat disappointed with the efforts of some of the competitors and the Monitor: for example, in several cases, the PSCW staff felt that the staff listed in a competitor's proposal were not the personnel that eventually worked on the Competition, and that the attention given by one competitor to audits was misallocated (Chapter 9). The bidding process of a future Competition could anticipate these types of problems and attempt to address them during the interview process and contract negotiation.

The methods used to calculate energy savings and overall benefits (Conservation Value and the Performance Score) were the center of attention during the entire Competition. Much of the discussion focused on three key issues: default values, sensitivity of methods, and the impact of these methodologies on the selection of measures (Chapter 6). Disagreements about default values were based on technical merit as well as on gamesmanship: per unit energy savings and installation rates for setback thermostats

and low-flow showerheads were particularly suspect. The Conservation Value was very sensitive to inputs such as efficiencies, measure lifetimes, installation rates, and hours of operation. And the Performance Score magnified small differences in benefits, so that changes in the latter would lead to significant changes in the score. Many participants felt that the Performance Score led to the promotion of "cream skimming" measures which was reflected to some extent in the distribution of measures installed during the Competition (Chapter 7). In summary, the Performance Score, combining both cost-effectiveness and quantity of energy saved, was inappropriate for measuring utility performance. A change in the calculation of utility performance (using net benefits) should help correct for these problems.

In conclusion, the Competition was an innovative experiment proposed by the PSCW to motivate utilities to promote energy efficiency. Our evaluation suggests that there was a significant divergence of opinion about the relative merits of this approach among key participants. The PSCW staff viewed the experiment as highly successful in terms of motivating MGE and other Wisconsin utilities to increase conservation services; MGE staff were not enthusiastic about the basic approach, while other utilities reacted negatively. Despite the Competition's problems and limitations, the program clearly stimulated MGE to develop a broader menu of conservation services for its customers and to implement these programs more aggressively.

We also briefly compared the Competition with four other alternative regulatory strategies that are being implemented in various states to stimulate utilities to improve their DSM efforts: (1) DSM programs mandated by PUCs, (2) provision of financial incentives to utility shareholders, (3) collaborative planning processes, and (4) DSM bidding. These various approaches are not mutually exclusive, and in many cases are being pursued simultaneously by PUCs and utilities. The advantages and disadvantages of the various options were examined in terms of overall regulatory philosophy, implications for the roles of utility and third-party providers, as well as specific criteria and objectives used to assess utility DSM programs (see Chapter 9).

We found that the Competition, as a "stick," is just one of several approaches that can be used by PUCs. The appropriateness of each option, or the combining of several of the approaches, will depend to a great extent on a PUCs overall policy objectives, PUC organizational capabilities (e.g., large or small staff) and approach (e.g., proactive or mainly reactive), and consideration of a utility's specific circumstances. Our analysis suggests that the Competition approach may have limited applicability in other states. The ability to transfer this approach may be limited because of reluctance by energy service firms to compete directly against well-established utilities in Competitions, given that other opportunities may be more attractive and less risky for energy service firms in the current business environment. For example, utility-sponsored programs are expanding rapidly in several regions and utilities are contracting out much of this work to third-party providers. Moreover, ESCOs may be more interested in the long-term contracts that are offered through DSM bidding programs and the prospects of a less adversarial relationship with the utility. In addition, the feasibility of the MGE Competition was improved because of a

unique combination of factors including the long-term working relationships established between the PSCW and utility staff as a result of Wisconsin's Advance Plan process, the geographic proximity of the utility and PSCW staff, and the distinctive characteristics of MGE and its customers.

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APPENDICES

Appendix A	Participant Interviews
Appendix B	Participant Questionnaire
Appendix C	Trade Ally Interviews
Appendix D	Trade Ally Questionnaire
Appendix E	Customer Survey
Appendix F	Customer Survey Questionnaire

APPENDIX A

PARTICIPANT INTERVIEWS

Name	Organization *	Title	Date of Interview
Dean Alford	A&C	President	Feb. 14, 1990
Paul Berkowitz	PSCW	Program and Planning Analyst	Jan. 23, 1990
Janet Brandt	MGE	Manager, Residential Marketing	Jan. 24, 1990
Joyce Burgess	BRMC	Vice-President, Operations	March 20, 1990
Bob Connor	MGE	Senior Energy Adviser	March 7, 1990
Bob Criscione	MGE	Senior Energy Adviser	March 6, 1990
Wayne DeForest	PSCW	Energy Engineer	Jan. 23, 1990
Claire Fulénwider	MGE	Director, Marketing	Jan. 24, 1990
Dave Gohlke	A&C	Project Manager	Feb. 27, 1990
Lynn Hobbie	MGE	Supervisor, Program Planning and Evaluation	Jan. 25, 1990
Frank Jablonski	BRMC	Regional Manager	Feb. 23, 1990
Barbara (Bobbi) McKellar	WP&L	Manager, Demand-Side Planning	March 7, 1990
Susan Mitchell	A&C	Project Manager	Jan. 23, 1990
Mary Lou Munts	PSCW	Commissioner	March 6, 1990
John Neville	MGE	Manager, Commercial/Industrial Marketing	Jan. 25, 1990
Paul Newman	PSCW	Director, Energy Management Bureau	Jan. 23, 1990
David Nichols	Tellus Institute	Senior Research Scientist	March 1, 1990
David Odegaard	MGE	Supervisor, Commercial/Industrial Services	Jan. 25, 1990
Randy Popp	MGE	Marketing Services Engineer	March 6, 1990
David Porter	WEPCO	Senior Vice-President, Corporate Planning	Feb. 20, 1990
Chuck Sasso	MGE	Commercial Engineer	March 7, 1990
Terry Schuh	MGE	Senior Vice-President, Gas Systems	Feb. 28, 1990
Bob Smith	Honeywell	Branch Mgr., Commercial Buildings Group	March 2, 1990
Anita Sprenger	PSCW	Administrator, Div. of Energy Planning and Programs	March 6, 1990
Sheldon Strom	TEC	President	March 26, 1990
Gus Swoboda	WPSC	Senior Vice-President, Marketing and Corporate Services	Feb. 28, 1990
Frank Vondrasek	MGE	President	March 1, 1990
David Whitson	MSC	Vice-President, Consulting Services	Jan. 24, 1990

* Key:

A&C	A&C Enercom
BRMC	Building Resources Management Corporation
MGE	Madison Gas and Electric Company
MSC	Morgan Systems Corporation
PSCW	Public Service Commission of Wisconsin
TEC	The Energy Collaborative
WEPCO	Wisconsin Electric Power Company
WP&L	Wisconsin Power and Light Company
WPSC	Wisconsin Public Service Corporation

APPENDIX B

PARTICIPANT QUESTIONNAIRE

1. ORIGIN AND OBJECTIVES

1. Who came up with the idea of a Competition Pilot?
2. What are the primary objectives of the Pilot?
3. How consistent is the Pilot with Wisconsin's Advance Planning Process and utility regulatory strategies in general?
4. How consistent is the Pilot with least cost planning? (e.g., avoided costs and system benefits)
5. Was it really a competition: were people competing against one another, as in a contest?
6. How important was the timing of the program?

2. SECTORS

1. Why were three areas (large and small commercial and industrial sectors, and the residential rental sector) chosen and why were other areas excluded?
2. Did this focus and division present any problems during the Pilot?
3. Why have a competitor focus on only one sector (why not two or three sectors)?
4. Were the same customers contacted by both MG&E and its competitor? If so, why?
5. As a result of this strategy, how much confusion was there between: (a) the customer and the competitor? (b) the customer and MG&E? and (c) among staff?
6. Are there better alternatives to this strategy?
7. Are certain sectors sufficiently different than others that different *programs* are needed? (e.g., is a bidding program appropriate for the multifamily sector, if trust is more important in this sector than in the C&I sector?)
8. Are there significant differences between private and public C&I?
9. Are there significant differences between C&I owners and lessors?
10. Are there significant differences between residential rental owners and lessors?

3. BUDGET

1. How was the total budget (\$950,000) arrived at for MG&E and for all the competitors?
2. What was the rationale for determining the amount of money that went into each sector?
3. Why have a cap on the budget?
4. What effect did this cap have on the Pilot?
5. Did anyone run out of money? (MG&E ran out of money in the large C&I sector - leaving only one service provider)
6. Should the cap be eliminated?
7. What are the strategies for stretching utility dollars? (e.g., lower incentives, along with a focus on the most cost-effective measures, resulting in cream skimming)

4. COMPETITORS

1. How were the competitors selected?
2. What criteria were used for selecting competitors?
3. Were there any problems with how competitors were selected? (e.g., would they have been involved anyway? if so, why were they chosen? (free rider issue))
4. Was there a level playing field for all competitors with MG&E, or did MG&E have an edge? (i.e., was the competition reasonably fair to all competitors?)
5. What, if any, changes could be made to improve fairness?
6. How does the Pilot differ from a bidding program?
7. How could this process of choosing competitors be improved?

5. PANEL

1. What did the three-member oversight panel do? (policy guidelines, designing programs, selecting bidders, dispute resolutions (negotiations), and tracking of results)
2. Were the right people from PSCW and MG&E on the panel?
3. Was the independent third-party representative needed for the whole Pilot, or just at the beginning?
4. Was the panel needed for the whole Pilot, or just at the beginning?
5. In the future, should the panel have a limited lifetime at the beginning to get the Pilot started?

6. Should the panel have been larger?
7. Were there problems with the panel? (e.g., too disorganized? not timely? poor communication?)

6. MONITOR

1. How was the independent monitor selected?
2. What did the monitor do? (calculation methodology, design database, quality control of calculations, inspections of projects (problems))
3. Was the independent monitor needed for the whole Pilot, or just at the beginning?
4. Were there problems with the monitor? (e.g., too slow? not active enough?)

7. PERFORMANCE BONUS

1. How was the bonus calculated?
2. Did the bonus provide an incentive to the competitors or to MG&E?
3. **IF YES:** Was the size of the bonus appropriate?
4. **IF NO:** Would a larger bonus have been an incentive?
5. Whom did the bonus affect: top management? program staff?

8. REBATES

1. How were rebates calculated and designed? (by what amount? frequency distribution needed)
2. How were the measures and incentives distributed among gas and electric customers?
3. Was this allocation fair?
4. Could the allocation have been made more fair?
5. What were the monetary limits (min/max) for rebates?
6. Why have limits?
7. What effect did these limits have on the Pilot? (certain projects excluded?)
8. What was the average rebate per measure?
9. What percent of costs were covered by rebates?
10. Were rebates passed on to customers or kept by competitors and MG&E?

11. How important were the rebates to (a) customers, (b) MG&E, and (c) competitors? (e.g., timing issue - forced decision makers to act)
12. What factors affected customers' decisionmaking: energy savings? cost savings? comfort? convenience?
13. Are rebates needed in all sectors? (perhaps less in multifamily sector, where trust is more important)
14. Should the incentive structure be changed? (e.g., instead of a rebate, the contractor gets payments over time for savings; the contractor is responsible, and energy savings persist over time)

9. CALCULATION METHODOLOGIES

1. How were the performance score and conservation value calculated?
2. How did the *performance score* methodology determine the type of technology promoted and installed and the actions of the competitors? (e.g., were the most cost-effective technologies chosen - such as, low-flow showerheads?)
3. How did the *conservation value* methodology determine the type of technology promoted and installed and the actions of the competitors?
4. What were the problems with calculating the engineering estimates?
5. How accurate were the numbers? (e.g., degree of error)
6. What parameters was the calculation methodology particularly sensitive to?
7. How did the performance score and conservation values change over time (as a function of inclusions and exclusions)?
8. How did the performance score and conservation values differ by sector?
9. Is it possible to calculate MG&E's performance score for previous years? If so, how did they do?
10. Was the performance score a reasonable measure of overall performance?
11. How could the performance score be improved? (e.g., other reasonable criteria of performance might include: impact on low-income and elderly populations, payback time, amount of cream-skimming, customer satisfaction, or if the program produced new information on end-use patterns and customer preferences for use in future program development)

10. APPLICATIONS

1. What is the process for accepting an application for a proposed measure to be installed? (start from the beginning)
2. Why is an application rejected? [Ask Dave W.]
3. Does *every* application have a pre-installation inspection and a post-installation inspection?
4. What is conducted under a pre-installation inspection? (did it include measures NOT considered in an application?)
5. What is conducted under a post-installation inspection? (was customer satisfaction surveyed?)

11. CONSERVATION PROGRAM DESIGN, DELIVERY AND MARKETING

1. Why was the design and marketing of specific conservation programs left to the competitors?
2. Should the PSCW or MG&E have established program design guidelines?
3. Did any of the marketing designs use the results of the Wisconsin Commercial Market Segmentation Study (WCMSS)?
4. How successful were the various marketing strategies used by the competitors in promoting customer investment in conservation?
5. Did existing marketing methods become more effective as a result of the Pilot? If yes, how?
6. How does one measure marketing effectiveness? (percent of people contacted who installed measures?)
7. Did bundling of energy conservation opportunities occur? (grouping of: short, medium, and long paybacks; low-cost and high-cost technologies; and gas and electric technologies)
8. Did programs target gas savings?
9. Did programs target electricity savings?
10. What marketing strategies were used for promoting programs? (e.g., direct mail, phone calls, site visit, newsletters, advertising, news releases, door openers, and trade allies)
11. How did marketing strategies vary by sector?
12. How did marketing strategies vary by competitor?
13. What are the strengths and weaknesses of these strategies?

14. Who was usually contacted at the building?
15. Who was responsible for installing technologies?
16. In addition to rebates, what other financial incentives were used? (e.g., market-rate financing, loans, guaranteed savings, shared savings)
17. Who used turnkey services?
18. Who used custom projects?
19. How did competing against another affect marketing designs and program strategies?
20. How important were trade allies?
21. Were there any problems with getting them involved with competitors, rather than with MG&E?

12. MEASURES/TECHNOLOGIES

1. Which competitor preferred single-measure audits and which preferred comprehensive walk-thru audits where multiple measures are recommended?
2. Did MG&E install more options to improve its load factor?
3. Which technologies were successfully promoted and which ones were not? (all or a select few?)
4. How did technologies vary by sector?
5. How did technologies vary by competitor?
6. What did customers want but was not offered?

13. MOTIVATION

1. Did the Pilot motivate MGE to improve its conservation services to its customers? (Indices of motivation might include increased budget requests, additional programs, more customers contacted)
2. IF YES: in what sectors did this improvement occur?
3. Who was motivated at MGE: top management? program staff?
4. What provided motivation for MG&E and for the competitors? (company loyalty, recognition, sales, money)
5. Although difficult to distinguish, to what extent were improvements due to the Pilot itself, rather than the increased regulatory presence engendered by the Pilot? (was being "Number 1" in a competition a sufficient incentive?)

6. Did the Pilot motivate any other Wisconsin utilities to improve their own conservation services?
7. IF YES: in what areas?
8. What other approaches can regulators use to motivate utilities to improve and expand DSM opportunities?

14. MG&E

1. What conservation potential studies have been conducted by MG&E?
2. What analyses of end-use energy use, by sector, have been conducted by MG&E?
3. In the last three years (1987, 1988, 1989), what percent of gross operating revenues did MG&E spend on conservation programs?
4. For 1990 and 1991, what percent of gross operating revenues will MG&E spend on conservation programs?
5. How unique is MG&E, compared to other Wisconsin utilities? (MG&E has one of the lowest load factors in the state, so that MG&E is concerned with building up load; MG&E's top management)
6. How unique are MG&E customers, compared to customer from other Wisconsin utilities? (renters and large C&I are different, higher median income than Wisconsin average, and higher A/C saturation than Wisconsin average)

15. IMPACT ON MG&E

1. What was MG&E's first impressions of the Pilot?
2. Was top management informed of the Pilot and the work done by MG&E staff during the Pilot?
3. Was top management involved in the Pilot?
4. How does top management relate to field staff? to customers?
5. Did the Pilot have an impact on the level of communication and coordination between key utility personnel responsible for the design and implementation of energy conservation programs for C&I and rental sectors?
6. Did the Pilot result in any changes (structural or procedural) in MG&E's programs or strategies?

7. Did the Pilot affect the distribution of MG&E's conservation budget?
8. Did the Pilot result in more customers provided and additional programs?
9. Did the internal process of program development and approval change as a result of the Pilot? (shorter? smoother?)
10. Did MG&E hire more staff?
11. Was MG&E staff rewarded during the Pilot?

16. PILOT AFTERMATH AT MG&E

1. Is MG&E offering services now not deemed cost-effective in the Pilot?
2. After the Pilot, will MG&E work with competitors to continue to provide services?
3. After the Pilot, will MG&E solicit proposals to select other conservation providers in certain sectors?
4. After the Pilot, will MG&E ask for more funds from PSCW to do more conservation?
5. After the Pilot, will MG&E hire more conservation staff?
6. Will the commitment of MG&E's top management change or end after the Pilot?

17. INNOVATION

1. Did any innovative ideas, strategies, or tactics result from the Pilot?
2. Were these innovations mainly short-term, or were there long-term innovations?
3. How innovative (re: technologies and program delivery and marketing strategies) was the Pilot, compared to other DSM programs in the U.S.?

18. ADMINISTRATIVE PROBLEMS

1. What administrative problems occurred in the Pilot?
2. Were these problems limited to program development and approval?
3. Where did these problems occur: in MGE, PSCW, between MGE and PSCW, and/or between PSCW and the competitors?
4. Were these problems unique to the Pilot, or standard administrative problems?
5. How could these problems be solved in future pilots?

19. COST-EFFECTIVENESS

1. Did the Pilot demonstrate conclusively whether or not it is possible to cost-effectively administer such a competition between a utility and an outside entity?
2. Where did extra costs (e.g., administrative) and cost-savings occur?
3. What costs could have been avoided?
4. How were administrative costs handled by MG&E and competitors?
5. What problems arose in calculating the different components of costs?
6. Were these costs estimated or actual?

20. QUALITY OF SERVICE

1. How satisfied were customers with these programs? (e.g., measures installed, comprehensiveness of measures, rebates, etc.)
2. Did this satisfaction vary by sector or competitor?
3. Did the competitors report on any customer service problems or promotional concerns to the utility?

21. FREE RIDERS

1. How much conservation is occurring naturally (via the marketplace)?
2. Did the Pilot stimulate additional conservation?
3. How extensive was the free rider problem?
4. Did free riders vary by technology? sector? competitor?
5. What improvements are needed to reduce free riders? (program design, program targeting)

22. UNINTENDED CONSEQUENCES

1. Did any unintended consequences of the Pilot occur? [E.g., "cream-skimming" (installing short payback measures while excluding other measures), ineffective use of funds, or decreased morale on the part of participants?]
2. **IF YES:** how seriously did these affect the success of the Pilot in meeting its objectives?
3. **IF YES:** could such unintended consequences be controlled in future competitions?

23. WHAT'S MISSING?

1. How has the Pilot addressed *lost opportunities*?
2. How has the Pilot addressed *low-income households*?
3. How has the Pilot addressed *externalities*?
4. How has the Pilot addressed *avoided costs*?

24. COMPETITORS' INSTITUTIONAL ENVIRONMENT

1. How did your Madison work related to your other work?
2. Has the Pilot changed your work? (e.g., standard operating practices?)

25. PSCW

1. What conservation potential studies have been conducted by PSCW?
2. What analyses of end-use energy use, by sector, have been conducted by PSCW?

26. MADISON

1. Was there a shortage of contractors and conservation service providers in Madison before the Pilot?
2. Is there one now?
3. How important was the objective of improving Madison's conservation infrastructure in the Pilot?
4. What other approaches can regulators use to promote the development of an energy services industry?

27. TRANSFERRABILITY

1. How transferrable is the Pilot to other utilities in Wisconsin?
2. How transferrable is the Pilot to other utilities in the U.S.?
3. What is unique about Wisconsin's regulatory environment? (e.g., is PSCW's relationship to utilities adversarial or cooperative?)

28. CONCLUDING COMMENTS

1. In conclusion, who were the critical players and why?
2. What caused each winning competitor to win?
3. Did the Pilot format show promise as a yardstick, by demonstrating to the utility the level of energy conservation that was feasible to achieve?
4. What should be the proper amount of time for implementing this kind of program: one year? two years? etc.
5. If more than one year, should the competitors and sectors remain the same, or should new competitors and sectors be introduced?
6. What technical and methodological principles should be followed in the forthcoming impact evaluation of the program?
7. How would PSCW rate MG&E's programs in the three areas - before the Pilot? and since the Pilot?
8. Was there just one winner, or was everyone a winner? [who won the C&I sectors: Honeywell won large C&I? A & C lost small C&I?]
9. Should the losers have received some (a percentage) money at the end?
10. Should a future pilot include fuel switching (elec. to gas)?
11. Is there a need for a nonprofit, conservation corporation in Wisconsin? (e.g., it would market conservation services for utilities and government, and coordinate conservation programs)
12. How will the results of the process and impact evaluations of the Pilot be used at MGE and PSCW?

APPENDIX C

TRADE ALLY INTERVIEWS

<u>Name</u>	<u>Company</u>	<u>Location</u>	<u>Date of Interview</u>
Stan Beatty	Abner Boiler & Heating	Madison	March 23, 1990
Randy Cyrus	Kennedy Hahn	Waunakee	March 23, 1990
Robert Dohse	American Lighting	Madison	March 23, 1990
Jim Driscoll	Stay-Lite Lighting Service	Middleton	April 2, 1990
Donald Knachreiner	American Heating	Middleton	April 4, 1990
Bob Shepherd	ACE Hardware	Madison	March 23, 1990
Don Warren	Warren Heating	Madison	March 23, 1990

APPENDIX D

TRADE ALLY QUESTIONNAIRE

1. BACKGROUND INFORMATION

1. What products do you sell?

2. PROGRAM KNOWLEDGE

1. How familiar are you with the rental, commercial and industrial programs that involved MGE and other companies (such as Honeywell, A&C, and BRMC)? The C&I programs were offered from Nov. 1988 through July 1989, and the rental program ran for one year beginning in Feb. 1989. What do you know about these programs?

3. MGE

1. How did you initially hear about the rebates and no-cost measures MGE was offering in these programs?
2. Did MGE give you enough information and guidance about their programs to effectively promote the rebates?
3. What did you think of MGE's marketing strategies, such as site visits, personal calls, mailings, and presentations to trade allies?

4. COMPETITORS

1. How familiar are you with the programs offered by Honeywell, A&C, and BRMC?
2. Were any customers confused resulting from the activities of MGE and these other firms?

5. PROGRAM SATISFACTION AND IMPACT

1. Did you like these programs? Why, or why not?
2. Would you like to see the rebates continued at the same levels offered in these programs?
3. Did these programs change the way you think about MGE? If so, in what way?
4. How did these programs affect your business?
E.g., increases in sales, changes in types of sales, changes in stocking practices
5. Any negative effects resulting from these programs?

6. What other measures would you like to have seen included in these programs, but were not offered?
7. Did any manufacturers offer rebates for the same measures included in MGE's programs?
8. Did customers take advantage of both rebates (from manufacturers and MGE)?
9. How could MGE work with manufacturers and trade allies in the future in promoting energy-efficient products?

6. FINAL QUESTIONS

1. What percent of participating customers would have installed the same measure without the rebate? _____%
2. What percent of customers made use of the available incentives? _____%

APPENDIX E

CUSTOMER SURVEY

Telephone survey data were collected for the purposes of comparing Madison Gas and Electric's (MGE) energy conservation efforts with those of three MGE competitors in the Competition: Honeywell (large commercial and industrial (C&I) sector), A&C Consultants (small C&I sector), and Building Resource Management Corporation (BRMC) (rental sector).

Sampling Design

The customer sampling design involved selecting samples from each of the 6 groups of participants (MGE and one competitor in each of the three sectors). The sampling unit for this study was defined as a service address location. A location could consist of a single building or a continuous stretch of buildings on the same street. Each group was sorted by business name and service address in order to identify all the service address locations. Duplicate locations in each group were removed from the sample. Where possible, approximately 120 participants from each sample were sampled. For the two groups which did not contain 120 participants, all participants were sampled. The number of service locations sampled from each participant group is listed in Table E-1.

Table E-1. Sampling Description

Competitor	Approximate Number of Service Locations	Number Sampled
MGE - Rental	272	116
BRMC - Rental	109	109
MGE - Small C&I	539	128
A&C - Small C&I	366	126
MGE - Large C&I	76	76
Honeywell - Large C&I	19	19

Survey Implementation

Two versions of the telephone survey instrument for this study were designed: one for customers in the rental samples and one for customers in the C&I samples (the surveys are shown in Appendix F). For the most part, the survey questions were identical for both versions except for a few questions on the characteristics of the customer. The survey implementation procedures for both the rental and C&I customers were identical and involved two contacts with customers:

Advance contact. Sampled customers received a letter from MGE explaining the study. The letters were mailed on April 5, 1990.

Telephone interview. Telephone interviews were conducted with participants between April 9, 1990 and May 2, 1990. The telephone interviews averaged seven minutes in length.

Since the sampling frame was the service location (typically a building), it was possible for the same person to be interviewed for more than one sampled location. An attempt was made to group these locations together and interview the person for all locations at the same time. If the same person was selected for more than three locations, the person was only interviewed for three locations maximum. The other locations were replaced with other locations not already sampled where possible.

Overall, interviews were completed with 82% of the sampled participants (Table E-2). Within each group, 78% were completed from the MGE rental sample, 72% from the BRMC sample, 81% from the MGE small C&I sample, 90% from the A&C sample, 87% from the MGE large C&I sample, and 84% from the Honeywell sample.

Twenty-four (24) locations were removed from the sample because they reported that they never participated in the program (13), were no longer at the location sampled (10), or never owned or managed the property at the location listed (1). Other reasons for not completing the surveys were: customers could not be contacted with repeated calls (44), a telephone number was not available (24), customer refused to be interviewed (17), nobody was available who was knowledgeable about the program (contact person had changed) (15), and the equipment was never installed at the location sampled (1).

Table E-2. Response Rates

	MGE Multi- Family	BRMC Multi- Family	MGE Small C&I	A&C Small C&I	MGE Large C&I	Honeywell Large C&I	Total
Starting sample size	116	109	128	126	76	19	574
Refusals	8	3	2	3	1	0	17
No telephone numbers	3	2	13	2	4	0	24
Personnel changed	2	5	4	1	2	1	15
Equipment not installed	0	0	1	0	0	0	1
Removed from sample:							
Nonparticipants	1	1	5	2	4	0	13
Wrong location	0	1	0	0	0	0	1
No longer at location	1	0	6	2	1	0	10
Adjusted sample size ^a	114	107	117	122	71	19	550
Completed interviews	89	77	95	110	62	16	449
Response rate ^b	78%	72%	81%	90%	87%	84%	82%

^a The adjusted sample is the starting sample size minus those removed from the sample.

^b Calculated as the number completed divided by the adjusted sample size.

APPENDIX F

MGE COMPETITION PARTICIPANT TELEPHONE SURVEY

May 13, 1990

SECTION 1: DEMOGRAPHIC QUESTIONS—C&I VERSION

Starting time: ____ : ____

1. First, can you describe your main business activity at this location? (DO NOT READ LIST)

- 01 Office
- 02 Restaurant
- 03 Bar
- 04 Grocery or food store
- 05 Retail (non-food)/personal services
- 06 Warehouse
- 07 Elementary/secondary school
- 08 College/trade school
- 09 Hospital
- 10 Other health services
- 11 Hotel/motel
- 12 Industrial
- 13 Miscellaneous/other (please describe: _____)

2. How long has your firm been at this location?

____ years

3. Does your business . . . (READ LIST)

- 1 Own and occupy this facility
- 2 Own the facility and lease it to a tenant
- 3 Rent the facility----->How long is your lease?
_____ years
- 4 Neither own nor rent the property, but manage it for others
- 5 Other (please describe: _____)
- 6 Don't know

SECTION 1: DEMOGRAPHIC QUESTIONS--RENTAL VERSION

Starting time: _____:_____:_____

1. First, what is your main role with this residential rental property at this location? Are you . . .
(READ LIST)

- 1 The owner of this property
- 2 A representative of a property management company
- 3 Both (owner and manager)
- 4 Other (please describe: _____)

2. Approximately how many residential rental units do you own or manage in the Madison area?

_____ units

SECTION 2: COMPETITION QUESTIONS

1. Now, I'd like to ask some questions about your experiences with the Power Plus program. Did you hear about this program from a . . . (READ LIST)

	No	Yes	Don't Know
MGE bill insert	1	2	8
MGE direct mail brochure	1	2	8
MGE newsletter	1	2	8
MGE representative's phone call or visit	1	2	8
A business colleague or acquaintance	1	2	8
A contractor or equipment supplier	1	2	8
An advertisement (newspaper, radio or television)	1	2	8
Did you hear in any other way? (please describe: _____)	1	2	8

2. Were you aware of this program before you decided to install any energy-efficient equipment or do these measures?

- 1 No
- 2 Yes
- 8 Don't know

(IF MORE THAN ONE LOCATION) For the next set of questions, I'd like you to think only about the measures done at _____ (location).

3. On a scale of 1 to 5, with 1 being "not at all important" and 5 being "very important," how important were each of the following factors in your decision to install or do these measures at this location? How important was . . . in your decision to install or do these measures?

	Not at all Important		Very Important			DK	NA
	1	2	3	4	5	8	.
Phone call or visit from (company) rep or contractor	1	2	3	4	5	8	.
Repeated follow-ups by (company) rep or contractor	1	2	3	4	5	8	.
MGE mailed written materials explaining the program	1	2	3	4	5	8	.
Having someone to select, finance, <u>and</u> install the measure(s) for you	1	2	3	4	5	8	.
(If rebate) the rebate	1	2	3	4	5	8	.
(If free) the fact that the measure was free	1	2	3	4	5	8	.
Other (please describe: _____)							

The next few questions refer to the _____ installed/done at this location.

4. Would you have done the(se) exact same _____ measure(s) at the same time you did if the program had not existed?

1 No

2 Yes-----> So are you saying that the program had no impact on your decision to do the(se) thing(s)?

1 No

2 Yes-----> SKIP TO QUESTION 6

8 Don't know

5. What do you think you would have done if the program had not existed? Would you have . . .

	No	Yes	DK	NA
a. done the(se) same thing(s) at a later date?	1	2	8	•
b. (If multiple things installed) done fewer things at that same time?	1	2	8	•
c. (If can vary in efficiency) installed less efficient equipment at that same time?	1	2	8	•

6. (IF INSTALLED EQUIPMENT) Was the (measure) new equipment or did it replace existing equipment?

1 New equipment-----> SKIP TO QUESTION 8

2 Replaced existing equipment

3 Both

• Not applicable

7. (IF INSTALLED EQUIPMENT) What was the condition of the old equipment? Was it broken, in poor working condition, or was it in fair or good working condition?

1 Broken

2 Poor working condition

3 Fair or good working condition

8 Don't know

• Not applicable

8. Next, I'd like you to rate your level of satisfaction with the measures you did at this location through the program. Using a scale of 1 to 5, with 1 being "not at all satisfied" and 5 being "very satisfied," how satisfied were you with . . . ?

	Not at all Satisfied					Very Satisfied	DK	NA
	1	2	3	4	5	8	.	
The energy you saved from the measures	1	2	3	4	5	8	.	
IF CODED 1-4, 8: Why do you say that?	_____							

The performance of the measures	1	2	3	4	5	8	.
IF CODED 1-4, 8: Why do you say that?	_____						

The service or assistance you received from (MGE/BRMC/Honeywell/A&C)	1	2	3	4	5	8	.
IF CODED 1-4, 8: Why do you say that?	_____						

The service or assistance you received from the firm that did the measure(s)	1	2	3	4	5	8	.
IF CODED 1-4, 8: Why do you say that?	_____						

IF FREE ONLY, SKIP TO QUESTION 9

The size of the rebate	1	2	3	4	5	8	.
IF CODED 1-4, 8: Why do you say that?	_____						

The length of time it took to get the rebate	1	2	3	4	5	8	.
IF CODED 1-4, 8: Why do you say that?	_____						

The rebate application process	1	2	3	4	5	8	.
IF CODED 1-4, 8: Why do you say that?	_____						

9. Is there anything else about the program or the measures done at this location that you were very satisfied or very dissatisfied with?

10. In general, do you have any other comments regarding this program?

11. What is your job title or position?

On behalf of Madison Gas and Electric Company, I'd like to thank you for taking the time to answer these questions. Your answers will help MGE improve the services they offer their customers.

Ending time: ____ : ____

Total time: ____ minutes

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