MAINE STATE LEGISLATURE

PA Consulting Group

Maine Public Utilities Commission

Evaluation of The Efficiency Maine Business Program—Final Report

December 5, 2006

Maine Public Utilities Commission

Evaluation of The Efficiency Maine Business Program—Final Report

December 5, 2006

Prepared by:
Lark Lee
Carol Sabo
Kimberly Bakalars
Bryan Ward
Tom Giffin, SAIC

PA Government Services Inc.
351 Hidden Point
New Braunfel, TX 78132

Tel/Fax: +1 830 964 3409
Lark.Lee@paconsulting.com
www.paconsulting.com

Version: 1.0

TABLE OF CONTENTS

Appendices

1. EXECUTIVE SUMMARY

This executive summary highlights the results of the first process and impact evaluation of the Efficiency Maine Business Program ("the Program").

This summary begins with an overview of the Program and the evaluation methodology followed by the key findings from the process and the impact evaluation. The summary then lists major conclusions including the opportunities for program improvement that were identified by the evaluation.

1.1 PROGRAM OVERVIEW

In the Energy Conservation Act of April 2002, the Maine Legislature directed the Maine Public Utilities Commission (MPUC) to develop, and to the extent of available funds, implement energy conservation programs. In response, MPUC created Efficiency Maine—a brand for the administration of energy conservation programs—that was rolled out in 2003.

The Efficiency Maine Business Program has been in operation since April 15, 2003, and therefore is still a relatively new program. The Program offers information and cash incentives to Maine businesses, including nonprofit organizations, public and private schools, colleges, local governments, farms, airports, water and wastewater facilities, quasi-government and other regional systems. Incentives are available for retrofit and new construction projects.

Efficiency Maine is a statewide effort funded by electricity consumers to promote the more efficient use of electricity, help Maine residents and businesses reduce energy costs, and improve Maine's environment. The Program is delivered through registered Program Allies (made up of approximately 400 manufacturers, wholesalers, retailers, professionals, and contractors). The MPUC contracts an implementation team to administer the Program.

The Program has three main application processes through which incentives are awarded to customers: 1) A quick and easy application form that is only available for small businesses and existing K-12 schools, 2) A pre-qualification incentive application for established incentives for qualified equipment that requires streamlined documentation and is more similar to a 'prescriptive' approach, and 3) custom projects that required detailed documentation on project costs, payback and energy savings. Where possible, the evaluation discusses findings for these individual processes recognizing that the results are only statistically significant at the overall program level due to the small number of sample points for some categories.

1.2 EVALUATION METHDOLOGY

PA Government Services (PA) and Science Applications International Corporation (SAIC) conducted the evaluation of the Efficiency Maine Business Program from May to November 2006. The evaluation covered the Program from inception through June 30, 2006, with particular emphasis on the last 18 months of program activity (January 1, 2005–June 30, 2006).

The purpose of the evaluation was to develop information that will allow the MPUC to improve the Program. The impact evaluation reviewed the energy savings estimates of the Program as currently designed to calculate adjusted net and gross energy savings. The process

evaluation examined the current delivery mechanisms of the Program and evaluated their effectiveness in achieving the stated goals and objectives of the Program.

The evaluation included program documentation review, interviews with eight program design and delivery staff, 20 in-depth interviews with program allies, and surveys of 303 business customers including participating and nonparticipating businesses. The evaluation estimated the Program's gross electric savings from the data gathered through a program tracking system engineering review, review of 77 project files and on-site inspections for 36 participating customer sites. The evaluation made net-to-gross energy savings adjustments based on free ridership and spillover estimates obtained from the participant customer survey. The scope of work for this evaluation did not allow for a quantitative analysis of the Program's market effects or nonparticipant spillover thus the program impacts including energy savings are likely understated.

1.3 PROCESS EVALUATION KEY FINDINGS

1.3.1 Program Satisfaction

Satisfaction with the Efficiency Maine Business Program was high among both program allies and program participants. Allies are planning to continue their participation and most are planning to increase their participation. Almost all participants said they would likely participate again and they would recommend the Program to another business. At the same time, the evaluation identified some opportunities for improvement in the pre-approval process, program paperwork, incentive processing, and information provided by the Program to customers.

1.3.2 Ease of Participation

The Program's paperwork requirement was reported as a barrier by about ten percent of participants and some non-key program allies (those who sell only a few pieces of qualifying equipment each year). Also, not a major concern, some participants expressed lower levels of satisfaction with information provided by the Program to customers, which could deter some customers from Program participation. Most of the interviewed program allies reported that Efficiency Maine's application process has improved over the years. Program staff reported that the Program has increased its field staff to provide more assistance to program allies and customers. The Program's ease of participation appears to be relatively on par with other energy efficiency programs according to allies and customers, although they did identify ways to streamline the participation process. Recommendations included an on-line application, shortened pre-approval times, more 'prescriptive' measures and more information provided to the customer.

1.3.3 Program Marketing and Outreach

The customer surveys show that while the trade-ally based model[1] is successfully getting the word out about the Program to customers, marketing efforts need to continue to be bolstered by program outreach efforts directly to customers as well. In general, program staff and

[1] The Efficiency Maine Business Program is delivered primarily through program allies. Program allies are the main vehicle for marketing the program to customers, informing customers about the program requirements, completing the paperwork requirements and implementing energy efficient projects. This approach is commonly referred to as a "trade-ally based model."

program allies are in favor of expanded direct marketing to customers. Allies report customer-specific case studies are helpful. The Efficiency Maine newsletter and Efficiency Maine representatives also appear to be successful mechanisms for building program awareness.

1.3.4 Program Ally Participation

Efficiency Maine has built up a substantial infrastructure of program allies representing different kinds of firms, targeting different customer segments and covering most regions of the state, but a few program allies still account for the majority of projects. In general, allies are satisfied with the Program. Most allies are planning to expand their participation in the Program, but some non-key allies are not planning to expand their participation because of the reported hassle and transaction costs of the Program (discussed above).

1.3.5 Customer Participation—Motivators, Barriers to Increased Involvement and Business Types

Motivators

While the incentive was the primary motivator for program participation for participants, nonparticipating businesses are most interested in reducing their bills and helping the environment. Nonparticipating small businesses had the least amount of interest in the Program while schools had the most interest. State sponsorship of the Efficiency Maine Business Program may have a positive influence on participation. The key factors influencing participating customers' equipment decision-making processes—overall cost, followed by electrical operating costs—were similar for replacement of failed equipment and for discretionary retrofits and new projects.

Barriers to Increased Participation

Data collection with program staff, program allies, and customers all confirm that one of the largest barriers to energy efficiency projects is the upfront costs to do the project. This was especially true for small businesses. Other barriers include a perceived lack of need, lack of control over energy use, other cost concerns such as the incremental cost or insufficient payback, and product availability.

Business Types

Manufacturing is the largest participating customer segment type in terms of energy savings and the percentage of overall participants. This is typically true for other energy efficiency programs, mostly as a result of this sector's high energy consumption. While Efficiency Maine appears to be capturing a good breadth of the different business segments, some industry types are better represented than others.

1.3.6 Program Goals

There is a reported lack of consensus on the program goals within the implementation contractor team and MPUC staff concerning whether the Program is primarily a market transformation program or a resource acquisition program and the extent to which the Program is to serve the new construction market.

1.3.7 Program Design

While benefits of the trade-ally based model include streamlined staff, there is substantial evidence that this approach may result in missed opportunities, but the Program is capturing the major cost-effective savings opportunities for participants. In terms of program design options, customers were most interested in receiving project reviews from Efficiency Maine and small businesses were interested in a direct install program.

1.3.8 Incentive Levels

Research with program staff, program allies and customers suggest that incentive levels are likely set at appropriate levels, but tweaks are needed for certain equipment types and to reduce free ridership by taking into account changes in standard practice for customer equipment purchases. The program has changed its incentive cap for customers from $50,000 a year to $100,000 every two years. This was viewed positively by both program staff and allies, although some believe the incentive cap should be based on energy usage.

1.3.9 The Program Tracking System

While the Efficiency Maine tracking system has a number of strengths, improvements should be made to increase data consistency and completeness and provide more accessible data to track the program's progress.

1.3.10 Program Administration, Processes and Resources

The Program's contractor team has added more field staff and the MPUC has recently added two supporting positions. Areas for improvement in program administration include more informal, internal communication among the program staff, more formal feedback to the program implementation team from the MPUC's Director of Energy, and the re-design and content of the Efficiency Maine website. To-date, program oversubscribing has not been an issue.

1.4 IMPACT EVALUATION KEY FINDINGS

1.4.1 Gross Reported Savings From Program Tracking System

The majority (over 57%) of the program reported savings for the period from January 2005 through June 2006 came from the custom incentive applications. Pre-established incentive projects account for 22% of the program reported savings. The Quick & Easy Incentive projects account for less that 12% of the program reported savings for this period, with the remaining percentage (8.7%) attributed to "Pilot" projects that were implemented in the early stages of the program.

1.4.2 File Review Findings

Overall, the program records and data were maintained well and were informative. Savings processes were consistent within each of the program application tracks, and the central database tracking system reflected consistent data compared to the project files. Following program specifications, adequate information was available to define the quantities and types of the installed energy efficient measures. Invoices were useful in estimating equivalent baseline wattages of compact fluorescent fixtures in the Quick & Easy and Pre-Established

lighting programs. They were also useful in estimating the number of lamps per fixture for the Quick & Easy Program linear fluorescent fixtures.

The documentation for defining the baseline systems often required interpretation. It was often difficult to determine the true baseline in both the Quick & Easy and Pre-Established lighting programs. The applications do not explicitly capture kW and kWh savings in projects where the lighting technology type changes (i.e., when high bay HID fixtures are retrofit with high performance T5 fluorescent fixtures) or when the fluorescent lamps per fixture are reduced (i.e., when replacing 4-lamp fluorescent fixtures with a 3-lamp fluorescent fixtures). Forms could be modified to allow a better description of the baseline systems.

1.4.3 Gross Savings Adjustment Based on Site Visits

The calculations of gross energy savings from the 36 site visits as a group increased the gross energy savings by more than 5 percent of the tracking system estimates.

Overall, the site reviews found that the type, scale, and general characteristics of the measures at the sites were properly reflected in the program documentation. As expected, the most complete project information was available in the Business Custom Incentive projects, and the least project details were available for the Small Business Quick & Easy Incentive projects.

Lighting Projects

Site review proved very useful in determining how the lighting systems and fixtures were actually installed and used for the project. For several lighting projects, factors to account for diversity in operating hours within a project were estimated and applied to savings estimate calculations. The operating hours of several projects were reduced because portions of the project area were not being fully occupied or included occupancy sensor controls.

Non-Lighting Projects

For projects other than lighting, the site reviews affirmed system operations data to provide a sound basis for adjustment of the estimates. The visits sometimes revealed special site conditions that were not totally reflected in the savings estimates. The majority of the non-lighting projects were through the Custom Incentives path where a specific energy calculation was done for the project. Overall, these calculations were found to accurately reflect the measures; however, adjustments were most often made to reflect specific on-site conditions and operations of the measures as discussed in the main report.

1.4.4 Adjusted or Verified Gross Savings Estimates

The “best” estimates (based on project file review and site visit, if applicable) were developed for each of the 77 projects in the sample. Realization rates were calculated and applied to the total program savings estimates from the tracking system. The gross realization rate for the overall program kWh savings is 1.08, which results in a total program adjusted or verified gross savings estimate of 30,518,964 kWh of annual energy savings. The gross realization rate for the kW demand reduction is 0.84 resulting in verified gross demand savings of 6,663 kW. These savings will continue over the useful life of the installed equipment that can range from five years to more than twenty years.

The following table summarizes the verified gross savings estimates for the Program, applying the gross realization rates by application type to the program reported savings to provide verified gross energy impacts for the Program.

While there are downward adjustments to energy savings estimates for the custom incentive and the quick and easy incentive application projects, these are more than offset by the upward adjustment of the pre-established incentive application projects.

The downward adjustments to the energy demand estimates for the custom incentive and quick and easy incentive application projects are quite significant (over half of the demand impact for the quick and easy application projects). While the pre-established incentive application projects are adjusted up, it is not enough to offset the downward adjustments for the other application types.

Table 1-1. Verified Gross Annual Energy and Demand Impacts from the Efficiency Maine Business Program by Application Type for the Period January 2005–June 2006

Application Type	Number of Projects	Program Reported kWh	GRR kWh	Verified Gross kWh	Program Reported kW	GRR kW	Verified Gross kW
Custom Incentive	122	16,047,539	0.98	15,721,113	5,189	0.78	4,042
Pre-Established Incentive	180	6,374,050	1.46	9,327,815	1,350	1.34	1,810
Quick & Easy Incentive	273	3,269,510	0.86	2,821,248	1,061	0.49	522
Pilot	29	2,441,687	N/A*	2,648,787	345	N/A*	289
Business Program	**604**	**28,132,786**	**1.08**	**30,518,963**	**7,945**	**0.84**	**6,663**

* The GRR for the Business Program was applied to the pilot project

For Pre-established applications the energy savings and demand impacts are significantly underestimated, while for the quick & easy applications the energy savings and demand impacts tend to be underestimated.

1.4.5 Participant Free Ridership and Spillover Effects

The next step in the process is to estimate free ridership and spillover. These factors are then applied to the adjusted or verified gross savings to estimate net program savings for participants in the program.

Free ridership Definition and Methodology

A program's ***free ridership rate*** is the percentage of program participants deemed to be free riders. A ***free rider*** refers to a customer who received an incentive through an energy efficiency program who would have installed the same or a smaller quantity of the same high efficiency measure on their own within one year if the program had not been offered. For free riders, the Program is assumed to have had no influence or only a slight influence on their equipment purchase decision. Consequently, none or only some of the energy savings of equipment purchased by this group of customers should be credited to the energy efficiency program.

The participant survey for this evaluation of Efficiency Maine's Business Program used the census of program participants from the last 18 months in estimating free-ridership and spillover.

It is also important to measure the *extent* of free-ridership for each customer. Pure free riders (100%) would have installed exactly the same quantity and type of equipment within one year in the absence of the program. Partial free riders (1–99%) are those customers who would have installed some equipment within one year on their own, but a smaller quantity and/or a lesser efficiency. Thus, the Program had some impact on their decision. Non-free riders (0%) are those who would not have installed any high efficiency qualifying equipment within one year in the absence of the program services. The total free-ridership estimates in this report include pure, partial, and non-free riders.

Participant "Like" Spillover Estimates Methodology

Spillover refers to additional energy-efficient equipment installed by a customer due to program influences but without any financial or technical assistance from the Program. ***Participant "like" spillover*** refers to the situation where a customer installed equipment through the program in the past year and then installed additional equipment of the same type due to program influences. In contrast to free-ridership, spillover adds benefits to the program at no additional cost, increasing the program benefits and benefit-cost ratio.

Survey free-ridership questions were followed by questions designed to measure "like" spillover.

One of the issues with attempting to quantify spillover savings is how to value the savings of measures installed outside the Program since we are relying on customer self-reports of the quantity and efficiency of any measures installed. *We used a conservative approach and reported only those measures installed outside the Program that were of exactly the same type and efficiency as the ones installed through the Program.*

Table 1-2 presents the free ridership and spillover rates by application type for energy and demand savings. The free ridership rate for the custom incentive projects is lowest of the three application types at 23%. This is just slightly lower than the 27% free ridership rate for custom compressed air projects, which accounts for approximately half of the energy savings from custom incentive projects.

The free ridership rate for the pre-established application type is just slightly higher than the custom application type at 27%. This is driven by the lighting equipment which had a free ridership rate of 28% and accounts for over 85% of the energy savings from pre-established applications. Other types of equipment installed through pre-established applications include HVAC, motors, and VFD's.

The quick & easy applications had the highest level of free ridership at 42%. Like the pre-established applications, this is also driven by the lighting equipment which had a free ridership rate of 52% and account for approximately 67% of the energy savings from quick & easy applications. Other types of equipment installed through quick and easy applications include agricultural measures, appliances and motors.

Participant Like Spillover was only realized from the compressed air equipment for custom incentive participants and lighting equipment for pre-established and quick & easy incentive participants.

Table 1-2 Free Ridership and Spillover Rates by Application Type

Application Type	N Surveyed	Gross kWh Surveyed	Free Rider Rate kWh	Spillover Rate kWh	Free Rider Rate kW	Spillover Rate kW
Custom	63	11,007,840	0.23	0.01	0.22	0.00
Pre-established	77	2,364,510	0.27	0.04	0.26	0.04
Quick & Easy	113	1,444,146	0.42	0.02	0.37	0.07
Business Program	**253**	**14,816,496**	**0.27**	**0.02**	**0.25**	**0.02**

1.4.6 Nonparticipant Spillover Estimates

Nonparticipant spillover refers to energy efficient measures installed by program nonparticipants due to the Program's influence. The Program can have an influence on design professionals and vendors as well as an influence on product availability, product acceptance, customer expectations, and other market effects, all of which may induce nonparticipants to buy high efficiency products.

It is important to recognize that the additional energy savings from market effects of the Program, including nonparticipant spillover, are not captured in the impact evaluation. Additional research would be needed to quantify nonparticipant spillover. There is strong evidence that the Program has impacted the market and should be credited with additional energy savings.

1.4.7 "Net" Energy and Demand Savings Estimates

The estimates of participant free ridership and spillover were applied to the adjusted or verified gross savings estimates. These represent total program impacts for the participants in the Program. The following table indicates that the energy impacts realized through the Program are just over 80 percent of the gross savings recorded in the tracking system. This is the net realization rate also referred to as the net-to-gross ratio. This is based on the gross realization rate discussed above and the attribution rate, which is equal to 1-(free ridership rate + spillover rate) and indicates the proportion of the energy impacts that are attributable to the program initiatives.

Looking more closely at the numbers for the Program, the net realization rate for the energy savings ranges from 0.52 for the quick & easy incentives to 1.13 for the pre-established incentives. Attribution rates for the custom incentive and pre-established incentive application types are similar at 0.78 and 0.79. While the attribution rate for the quick and easy applications is 0.60, indicating that 40% of the energy impacts from the projects installed through that program would have occurred even if the quick & easy incentives were not offered. In that context, further analysis should be done to determine standard practice for lighting equipment being promoted through the Program.

Table 1-3. Net Energy Savings (kWh) Impacts by Application Type

Application Type	Number of Projects	Program Reported kWh	GRR kWh	Verified Gross kWh	Attribution	Net kWh	Net Realization Rate
Custom Incentive	122	16,047,539	0.98	15,721,113	0.78	12,314,330	0.77
Pre-Established Incentive	180	6,374,050	1.46	9,327,815	0.77	7,199,044	1.13
Quick & Easy Incentive	273	3,269,510	0.86	2,821,248	0.60	1,690,902	0.52
Pilot	29	2,441,687	N/A*	2,648,787	N/A*	2,015,259	0.83
Business Program	**604**	**28,132,786**	**1.08**	**30,518,963**	**0.76**	**23,219,535**	**0.83**

* The GRR for the Business Program was applied to the pilot project

The net realization rate for the demand savings ranges from 0.34 for the quick & easy incentives to 1.04 for the pre-established incentives. Attribution rates for the custom incentive and pre-established incentive application types are similar at 0.78 and 0.78. While the attribution rate for the quick and easy applications is 0.70, indicating that 30% of the energy impacts from the projects installed through that program would have occurred even if the quick & easy incentives were not offered.

Table 1-4 Net Energy Demand (kW) Impacts by Application Type

Application Type	Number of Projects	Program Reported kW	GRR kW	Verified Gross kW	Attribution	Net kW	Net Realization Rate
Custom Incentive	122	5,189	0.78	4,042	0.78	3,170	0.61
Pre-Established Incentive	180	1,350	1.34	1,810	0.78	1,409	1.04
Quick & Easy Incentive	273	1,061	0.49	522	0.70	364	0.34
Pilot	29	345	N/A*	289	N/A*	224	0.65
Business Program	**604**	**7,945**	**0.84**	**6,663**	**0.78**	**5,167**	**0.65**

1.4.8 Program Non-energy Benefits

Participants are realizing non-energy benefits from the Program with better performing equipment topping the list.

1.4.9 Program Market Effects

Program ally interviews indicate market effects in high efficiency lighting on both the supply and demand side. The market effects were not measured by this evaluation but could result in additional energy savings from nonparticipants that were not captured by the impact evaluation.

1.5 CONCLUSIONS AND OPPORTUNITIES FOR IMPROVEMENT

Efficiency Maine is successfully raising awareness of energy efficiency and getting energy efficiency projects implemented. There are several quantitative indicators of program success including: the annual increase in customer projects since the Program began, a strong program ally infrastructure to deliver the Program that covers the state and a range of customers and equipment types, high customer and program ally satisfaction with the Program, significant energy impacts, evidence of non-energy benefits resulting to customers, and evidence of market effects, particularly in energy efficient lighting.

The evaluation results suggest the Program is making significant progress in meeting the Program's goals. The Efficiency Maine Business Program is still a relatively new program and interviewees indicate the Program has greatly improved during its first three years. At the same time, free ridership is fairly high for some sectors and some program improvements were identified in both program processes and energy impacts.

The following are opportunities for program improvement for policy makers and program managers to consider based on the process and impact evaluation key findings:

1. Review the Program's goals, clearly communicate the Program's goals to the implementation team, and make sure the Program design is in-line with meeting those goals.

2. Enhance the energy efficiency project information provided to customers by the Program.

3. Increase marketing activities to business customers and take the Efficiency Maine message beyond just money savings to promote other benefits of energy efficiency including positive impacts on the environment.

4. Continue to streamline the application process by creating an on-line application, adding more 'prescriptive' measures, and reducing the paperwork that must be completed multiple times by the participating program allies.

5. Consider *defining* and *serving* small business customers based on energy use instead of number of employees and through a direct install program.

6. Address the gaps in program participation for types of customers served and types of projects implemented.

7. Explore program strategies to further reduce the identified barriers to increased participation (beyond the application process) such as upfront capital costs, lack of control over equipment or energy use, lack of awareness of energy efficiency and benefits of increased efficiency, and product availability.

8. Review the program staffing needs and consider using external contractors to fill gaps such as oversight of evaluations.

9. Explore ways to reduce missed opportunities for additional energy savings at participating customer sites.

10. Consider a study to review customer standard practices for purchasing efficient equipment for sectors or equipment where estimates levels of free ridership are increasing.

11. Implement a study or add to the evaluation work scope to assess nonparticipant spillover and market effects of the Program.

12. Review procedures for estimating and tracking energy savings to make improvements based on the findings of the project file review and site visits.

2. INTRODUCTION

This report presents the results of the first process and impact evaluation of the Efficiency Maine Business Program ("the Program"). In this introductory chapter, we present an overview of the Program, the evaluation methodology and the organization of the remainder of the report.

2.1 PROGRAM OVERVIEW

In the Energy Conservation Act of April 2002, The Maine Legislature directed the Maine Public Utilities Commission (MPUC) to develop, and to the extent of available funds, implement energy conservation programs. In response, MPUC created *Efficiency Maine*—a brand for the administration of energy conservation programs—that was rolled out in 2003. Efficiency Maine is a statewide effort funded by electricity consumers to promote the more efficient use of electricity, help Maine residents and businesses reduce energy costs, and improve Maine's environment.

The Efficiency Maine Business Program has been in operation since April 15, 2003, and is a relatively new program. The Program offers information and cash incentives to Maine businesses, including nonprofit organizations, public and private schools, colleges, local governments, farms, airports, water and waste water facilities, quasi-government and other regional systems. Incentives are available for retrofit and new construction projects. Twenty percent of the program spending must be targeted to small businesses (defined as businesses with less than 50 employees). The Program is delivered through registered Program Allies (made up of approximately 400 manufacturers, wholesalers, retailers, professionals, and contractors). The MPUC contracts an implementation team to administer the Program.

The Program has three main application processes through which incentives are awarded to customers:

- A quick and easy application form that is only available for small businesses and existing K-12 schools,
- A pre-qualification incentive application for established incentives for qualified lighting, HVAC, NEMA Premium energy efficiency motors and system controls that requires streamlined documentation and is more similar to a 'prescriptive' approach, and
- Custom projects that required detailed documentation on project costs, payback and energy savings.

Customer incentives are capped at $100,000 every two years per unique customer (defined by taxpayer identification number).

2.2 EVALUATION METHDOLOGY

The MPUC, as the administrator of Efficiency Maine, requested proposals for a process and impact evaluation of the Program. PA Government Services (PA) and Science Applications International Corporation (SAIC), the PA/SAIC team, was selected to conduct the evaluation. The evaluation, completed from May to November 2006, covered the Program from inception

through June 30, 2006, with particular emphasis on the last 18 months of program activity (January 1, 2005–June 30, 2006). This is the first evaluation of the Program.

The purpose of the evaluation was to develop information that will allow the MPUC to improve the Program. The impact evaluation reviewed the energy savings estimates of the Program as currently designed to calculate adjusted net and gross energy savings. The process evaluation examined the current delivery mechanisms of the Program and evaluated their effectiveness in achieving the following stated goals and objectives of the Program, as indicated below.

Program Goals

- Improve the efficiency of electric use by businesses in Maine.
- Transform the business market for energy using equipment in Maine.

Program Objectives

- Increase business awareness of the benefits of energy efficiency and their use of energy efficient products.
- Reduce inefficient consumption by business customers.
- Increase the number of Maine suppliers and contractors selling energy efficient products and services to businesses.
- Achieve energy savings in Maine businesses (Goal for FY 2006 18,000 MWh/yr.)

The PA/SAIC team conducted the following activities for the evaluation[2]:

- Task 1: Conducted an evaluation start-up meeting and program documentation review
- Task 2: Finalized the Evaluation Plan and conducted ongoing communication
- Task 3: Interviewed eight program design and delivery staff. Interviewees included two MPUC Efficiency Maine staff and six members of the contractor implementation team.
- Task 4: Conducted twenty in-depth interviews with program allies. Interviews were conducted with the following three types of program allies:
  - Key program allies—those that represent a substantial number of customers who receive program incentives (nine interview completes)
  - Non-key program allies—those that only sell a few pieces of qualifying equipment each year (six interview completes)
  - Non-traditional program allies—market intermediaries such as trade associations, food processors, and regulators that provide outreach channels and influence business customer decisions (five interview completes)

[2] For a more complete description of the evaluation workplan, please refer to the *Efficiency Maine Business Program Evaluation Plan*, PA Consulting Group, June 6, 2006.

- Task 5: Surveyed 303 business customers. We completed telephone interviews with the following three business customer groups:
  - Two hundred and twenty-eight customers who participated in the Efficiency Maine Business Program from January 2005–June 2006 ("participants").
  - Seventy customers who had not, at the time of the survey, completed a project through the Efficiency Maine Business Program ("nonparticipants")
  - Five customers who started the application process to complete a project through Efficiency Maine, but did not complete the project ("partial-participants")[3]
- Task 6: Conducted an impact evaluation to estimate gross and net electric savings. Steps in the impact evaluation included:
  - A program tracking system engineering review
  - Review of 77 project files
  - On-site inspections for 36 participating customer sites
  - Net-to-gross adjustments based on free ridership and spillover estimated from the participant survey
- Task 7: Provided the energy savings input for the benefit/cost analysis of the Program
- Task 8: Analyzed all the collected data together and reported the findings and recommendations

The MPUC identified several key issues for the evaluation to address, which were further refined at the evaluation start-up meeting. Based on these, we developed a preliminary set of researchable questions for the process evaluation and impact evaluation as shown in Table 2-1. Table 2-1 also identifies the work plan tasks that provided data to answer each identified researchable question.

Table 2-1: Evaluation Key Researchable Questions and Related Work Plan Task

Key Researchable Questions	Evaluation Work Plan Task to Provide Data (See Section 3.2)
Process Evaluation	
Are trade allies effectively conveying program information and encouraging customer participation in incentives? How can the Program continue to leverage the trade ally infrastructure? Should there be more emphasis on direct marketing to customers?	Task 3, 4, 5
Are there opportunities to streamline the application and rebate process for both trade allies and customers?	Task 3, 4, 5
How effective is the marketing of program? Are there customer segments that marketing efforts should specifically target? What are strategies for effectively marketing the program to identified customer segments?	Task 3, 4, 5

[3] A partial participant could have completed a different project through the Efficiency Maine program, interviews focused on a project(s) that were begun, but not completed through the program.

Key Researchable Questions	Evaluation Work Plan Task to Provide Data (See Section 3.2)
Is the current level of "in-house" staffing sufficient to adequately support the program? If not, what gaps have been identified? Are there tools to increase the efficiencies of staffing? Are additional outreach staff needed?	Task 1, 3, 7
To what extent are customer facilities receiving holistic treatment—are there missed opportunities? Are trade allies and customers knowledgeable about the importance of a holistic approach to maximize energy savings? Can the Program better address the comprehensiveness of services delivered through training of trade allies and education of customers?	Task 4, 5, 6
What is the correct definition of "small business consumer" by the Program that ensures an equitable distribution of benefits and follows the Legislature's mandate?	Task 1, 3, 4, 5
Impact Evaluation	
How do the Program's gross savings need to be adjusted to accurately demonstrate net savings the Program has achieved?	Task 5, 6
What are the levels of the Program's free riders to be used in net-to-gross adjustments?	Task 5
Are incentive levels optimally set to encourage participation while maximizing the cost-effectiveness of the program?	Task 1, 3, 4, 5, 7
What is the persistence of equipment installed through the Program and resulting energy savings?	Task 5, 6
Is the balance of treatments between retrofit and new construction optimal?	Task 3, 4, 5, 6, 7
Are "discretionary" retrofits (e.g., adding supplemental technologies, removing working but inefficient equipment) sufficiently incentivized?	Task 4, 5, 7
What impact has the Program had on the market in terms of greater availability of efficient products?	Task 4, 5
Is the level of pre-established and customer incentives appropriate – of a sufficient level to cause customers to act – are there instances where overpayments or underpayments occur?	Task 4, 5
Should there be caps on rebate amounts, particularly on customized rebates? Is the cap per calendar year of $50,000 and $100,000 over a two-year period on large customers appropriate?	Tasks 1, 3, 6, 7

2.3 EVALUATION LIMITATIONS

The evaluation results in substantial, defensible findings and recommendations at the overall Program level as defined in the scope of work for this study. Because of the relative newness of the Program, the participation levels did not provide sufficient sample points to allow statistically significant results at many sub-categories of interest (e.g., application approach and measure level within application approach). In addition, the impact evaluation is limited to an analysis of participant savings. The scope of work did not allow for an estimate of nonparticipant spillover and other market effects. As a result the program savings data presented in the impact evaluation likely understates the total program net energy savings. Finally, participant freeridership and spillover estimates are derived from self-reported customer data. While this is an acceptable approach and the survey battery has been established to capture the most accurate information from customers, it does not take into account contractors' opinions of the program influence,

which may differ from customers'. Limitations of the data are discussed through out this evaluation report where applicable. In addition, the final chapter includes recommendations for additional research to address issues identified during the evaluation process that are in need of further exploration.

2.4 REPORT ORGANIZATION

The remainder of this evaluation plan consists of the following three chapters and supporting appendices:

- Chapter 2, *Process Evaluation Key findings*, presents the key findings from the process evaluation drawing upon the program documentation review, program design and delivery staff interviews, program ally interviews and customer surveys.
- Chapter 3, *Impact Evaluation Key Findings,* presents the key findings from the impact evaluation drawing upon the customer survey, engineering file review and on-site inspections
- Chapter 4, *Conclusion and Recommendations*, synthesizes all evaluation activities to make general conclusions about the program's performance and recommendations to improve the program
- Appendix A contains all primary data collection instruments.
- Appendix B contains the customer survey methodology and response rates.

3. PROCESS EVALUATION KEY FINDINGS

This section of the report presents the key findings from the process evaluation. The process evaluation draws on the results of the program documentation review, program design and delivery staff interviews, program ally interviews (key, non-key and non-traditional program allies as discussed in the Introduction), customer surveys with participating (participants) and nonparticipating (nonparticipants) business customers, interviews with business customers who started the application process, but did not complete the project (partial participants) and the on-site inspections of customer sites.

We present process evaluation key findings in the following categories:

- Program satisfaction
- Ease of participation
- Program marketing and outreach
- Program ally participation
- Customer participation—motivators, business types and barriers to increased involvement
- Program goals
- Program design
- Incentive levels
- The program tracking system
- Program administration, processes, and resources

3.1 PROGRAM SATISFACTION

Satisfaction with the Efficiency Maine Business Program was high among both program allies and program participants. Allies are planning to continue their participation and most are planning to increase their participation. Almost all participants said they would likely participate again and they would recommend the Program to another business. At the same time, areas for improvement were identified including the pre-approval process, program paperwork, incentive processing, and information provided by the Program to customers.

The majority of interviewed program allies were very pleased with the Program. All of the interviewed program allies report that Efficiency Maine program staff are helpful and responsive.

"*Efficiency Maine staff are excellent. They are very responsive and easy to deal with. They call you right back and if you have a problem, they will work with you to fix it*." –Key Ally

"*Program staff are quite responsive. The time between submission of the application and approval is done very efficiently. With other utilities we spend a lot more time following the paperwork*".—Non-key Ally

Average overall satisfaction with the program and satisfaction with various aspects of the program were high among participants – above 4.0 on a 5-point scale (1 = not at all satisfied and 5 = very satisfied). Almost all respondents (99.5%) reported they were satisfied with the program overall. The aspect of the Program that participants were least satisfied with was the amount of information the company received. (Table 3-1)

Table 3-1. Participant Satisfaction with the Efficiency Maine Business Program (n=228)
5-point scale, 1=not at all satisfied, 5=very satisfied

Program Component	Mean	Percent Satisfied (4 or 5)
Overall, satisfaction with Efficiency Maine Program	4.6	99.5%
Equipment purchased as part of program	4.5	98.5%
Amount of information company received	4.3	95.6%
Size of incentive received	4.3	96.9%
Amount of time taken to process incentive payment	4.3	95.5%
The Efficiency Maine Program staff	4.2	99.0%
Amount of paperwork needed to complete	4.2	96.0%
The contractor that implemented your project	4.2	98.0%
Amount of information received concerning equipment purchased	3.9	98.0%

Source: Efficiency Maine Business Program participant surveys, July–August 2006, QS1

The survey asked participants who were not satisfied (less than 3 on the 5-point scale) with any aspect of the Program why they were not satisfied. Reasons given for dissatisfaction included: the paperwork was too difficult to complete, cumbersome or ambiguous; there was not enough information provided about the Program or equipment; the incentive was not large enough for the additional cost of the equipment or to sufficiently bring down the project payback; or problems in receiving the incentive in a timely manner.

Participant satisfaction with the Program is further evidenced by the fact that almost all participants said they would likely participate again (Figure 3-1) and they would recommend the program to another business (Figure 3-2).

Figure 3-1
Likelihood of participating again (n=228)

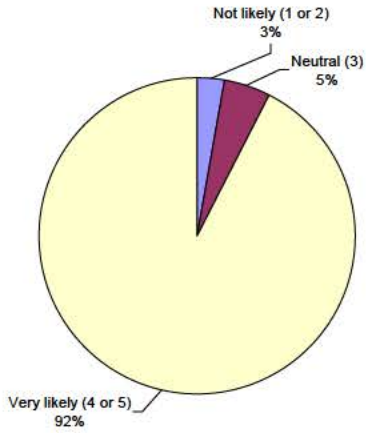
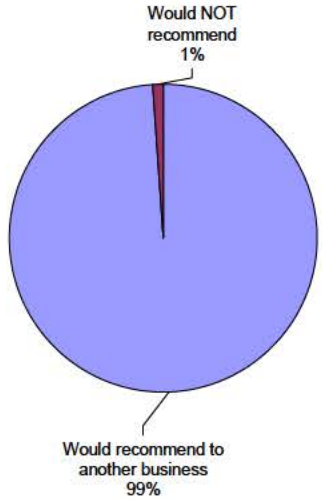


Figure 3-2
Would recommend program to another business (n=228)



Source: Efficiency Maine Business Program participant surveys, July–August 2006, QS2

The one percent of participants that would not participate again or recommend the program to another business cited hassles or transaction costs of the program including getting the incentive and the paperwork. These are discussed more under the next section, *Ease of Participation*.

3.2 EASE OF PARTICIPATION

The program's paperwork was reported as a hassle factor by about ten percent of participants and some non-key program allies. Another factor adversely impacting participation experience includes a lack of information provided by the Program to customers.

Most of the interviewed program allies reported that Efficiency Maine's application process has improved over the years. Program staff reported that the Program has increased its field staff to provide more assistance to program allies and customers. The Program's ease of participation appears to be relatively on par with other energy efficiency programs, according to allies and customers although they did identify ways to streamline the participation process. Recommendations included an on-line application, shortened pre-approval times, more 'prescriptive' measures and more information provided to the customer.

The majority of the interviewed key program allies said they do not find the Program's paperwork difficult and reported it is about on par with other energy efficiency programs they participate in. Most also report that they have an established system now for completing the paperwork and receive less incomplete applications back than when they first started participating in the program.

"*We have it [program applications] down to a science*." —Key Program Ally

Several of the key program allies said that they have designated one person in the company that is the "Efficiency Maine person." This person is the company expert in getting the paperwork completed correctly, identifying projects for the incentives, working with program staff and staying on top of program changes and communications. These allies reported that originally they had tried to keep most of their staff abreast of the Program, but it was too difficult and much easier to appoint one key program contact.

Many of the key allies also reported that the paperwork process has improved over the years.

"*They've made that much easier and streamlined it*." —Key Program Ally

A few allies reported that the paperwork burden helps them with the customer because that is part of selling their services to the customer—they will take care of the application for them. One ally also reported retaining a small percentage of the incentive to compensate them for their time.

Many allies advocated on-line applications instead of paper applications. They believe this would greatly reduce the paperwork burden for them. One ally pointed out that several state agencies do have on-line applications.

A suggested improvement to further streamline the application process was to allow allies to submit a "cut sheet template" for equipment they use in multiple projects. They could then refer to this cut sheet template instead of having to submit the same cut sheets multiple times.

Most key program allies also said that the pre-approval process was fairly quick. One non-key ally who works nationally reported that Efficiency Maine's pre-approval turn around is better than most other energy efficiency programs he works with. But at the same time, he reported that programs with more prescriptive measures that do not require a pre-approval process are easier for contractors and easier to sell to customers.

A few key allies reported that the pre-approval process is a barrier, especially with larger customers who feel adversely impacted by the waiting period.

Several non-key allies reported that the program paperwork and pre-approval process was tedious and is limiting their increased involvement in the program. Non-key allies also reported that because of the time involved with the paperwork and pre-approval process they will not bring the program up for small projects, only large projects.

One key ally believes T5s should not require a long form and pre-approval for large customers. Instead, the program should establish a quick and easy application for T5s for large customers.

One ally said that while a prescriptive approach is easier administratively, he thinks the program approach to lower customer payback is fairer. He said otherwise the program is just offering a price discount, which he thinks, "*is the incorrect road to head down*."

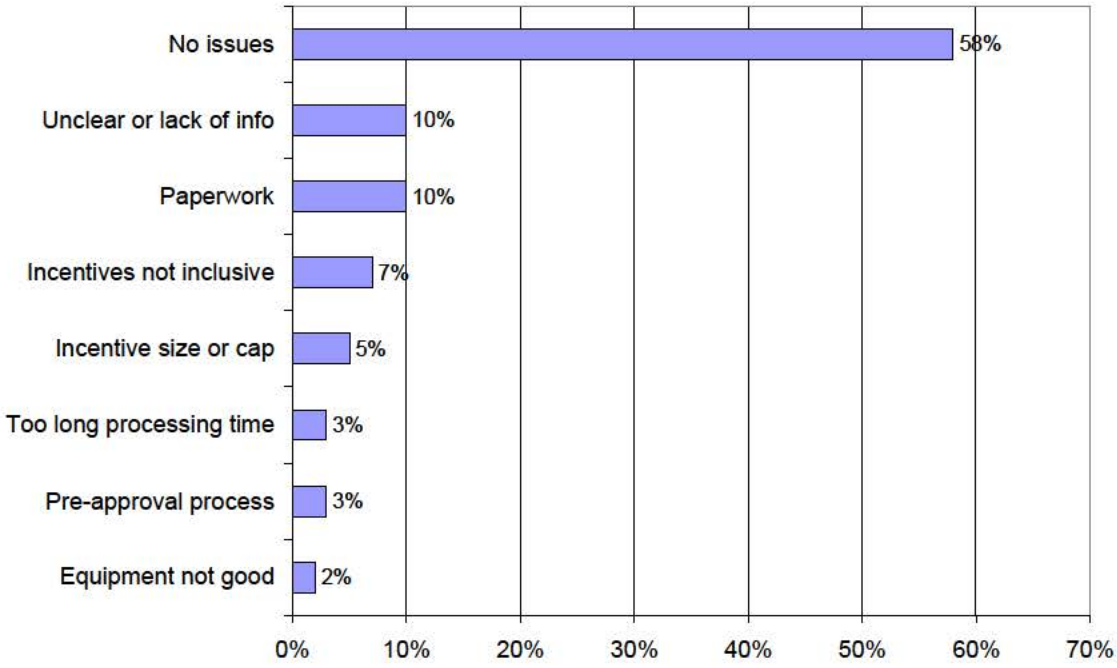
Program allies and program design and delivery staff felt that the turn-around time for the incentive check was quite good, although some participants did not agree as found in the customer survey results discussed below.

Program design and delivery staff reported that the program has increased its field staff and this has had positive effects on ease of participation for allies and customers. There is now more staff field time with program allies to recruit, train and assist them with the program requirements. In addition, expanded field responsibilities have included providing some direct assistance to customers when approached by a customer or ally to do so. Interviewed program design and delivery staff said this has helped them to identify additional energy-efficiency opportunities at customer sites. It has also helped allies sell high-efficiency projects by providing an objective assessment of the customer's situation.

- There were several questions on the participant survey that probed on ease of participation from the customer perspective. As already discussed in the satisfaction section above, reasons given for dissatisfaction by customers included the paperwork, lack of information and the size and timeliness of the incentive and the type of equipment eligible for the incentive. These themes were echoed through two different survey questions. One that asked participants about any concerns they had about participating in the Program. The second that asked participants what they liked least about the Program.
- When participants were asked if they had any concerns about participating in the Program, the majority of participants (80%) reported no concerns with participating in the Program, but the most commonly reported concern was completing program paperwork (5%). The second two most commonly reported concerns were both related to savings from the equipment—if energy savings would be realized (3%) and whether the payback period would be too long (3%). These concerns could be addressed through increased information provided by the Program. Other reported concerns were: incentive was not high enough to offset cost of higher efficiency equipment (2%), higher cost of energy efficiency equipment (1%), upfront cash needed to complete project (1%), if equipment would be eligible for incentive (1%) and reservation about participating in a state-operated program (1%).

When asked what they liked least about the Program, over half of participating customers said they had no issues with the Program. The two issues reported the most, each by 10 percent of respondents, were the lack of information provided by the Program and the paperwork (Figure 3-3). Seven percent reported they didn't think the incentive was inclusive enough—in other words that it didn't apply to key types of equipment that should be covered. These suggest further areas where the Program could improve ease of participation from the customer perspective.

Figure 3-3. What Participants Liked Least About Program (n=228)



Source: Efficiency Maine Business Program participant surveys, July–August 2006, QS5

In regards to the lack of information, this was also an issue brought up by program staff. Some program staff interviewees would like the Program to continue to evolve to include technical assistance to customers. In their view, what customers want is an unbiased, objective analysis of their facility's energy use.

The program application process was not reported as a primary deterrent to program participation by either nonparticipants or partial participants.

3.3 PROGRAM MARKETING

The customer surveys show that while the trade-ally based model is successfully getting the word out about the Program to customers, marketing efforts need to continue to be bolstered by program outreach efforts directly to customers as well. In general, program staff and program allies are in favor of expanded direct marketing to customers. Allies report customer-specific case studies are helpful. The Efficiency Maine newsletter and Efficiency Maine representatives also appear to be successful mechanisms for building program awareness.

The Efficiency Maine Business Program is delivered primarily through program allies. Program allies are the main vehicle for marketing the program to customers, informing customers about the program requirements, completing the paperwork requirements and implementing energy efficient projects. This approach is commonly referred to as a "trade-ally based model".

According to program staff, the Program does limited mass marketing to business customers. Media advertisements have mainly been limited to a few ads in Maine Biz. Staff also reported garnering free press for the Program through public service announcements and articles about the Program in local newspapers. A media campaign was proposed, but it was decided to not go forward with it at the time of the evaluation interviews. The main reason given for this is that the market had been saturated with media from the MPUC's *Save a Watt 10% Challenge* program. Program staff interviewees also had mixed opinions about the value of a business media marketing campaign. Some believe it is field staff out building relationships that will result in more projects, not media. Others are afraid that mass media could lead to the Program being oversubscribed. (To-date the program has not fully expended its annual funds.) Others think mass media could support the allies out there delivering the program. They referred to this as the "push" in a "push-pull" approach to moving the market. This is further discussed in the findings of the December 2005 focus groups with program allies[4] conducted by the program implementation team.

The most common way participants reported first learning about the Efficiency Maine Business Program was from a contractor or program ally (30%). This is consistent with the program's design, a trade-ally delivered model as discussed above, showing this approach is working to some extent. At the same time, other sources of program information remain important since less than a third of participants and less than a fifth of nonparticipants report first learning of the Program through traditional trade allies. (Table 3-2)

Table 3-2. How Respondents First Heard of Efficiency Maine

Source	Participants (n=228)	Nonparticipants (n=70)
Ally/contractor	30%	16%
Word-of-mouth	23%	13%
Association	15%	0%
Bill insert	8%	12%
Media ad/article	8%	10%
Efficiency Maine newsletter	7%	23%
Trade Show	6%	7%
Efficiency Maine Rep	5%	15%
Program meeting	3%	3%
Efficiency Maine website	3%	4%
Workshop/seminar	0%	2%

Source: Efficiency Maine Business Program participant/nonparticipant surveys, July–August 2006, QA1

Program staff interviewees reported the Program is reaching more customers by working with professional associations or "market intermediaries." It was reported that originally the Program focused on target markets—groceries, laundromats, convenience stores—with its

[4] GDS Associates, *Focus Group Report for Efficiency Maine Business Program Program Allies,* December 2005.

outreach activities, but has now broadened its scope. The Program's implementation team has a staff member that works part-time with associations and setting up outreach events through them for field staff.

Several program staff interviews mentioned that now that the Program has established relationships with associations, the associations are approaching them for materials. For example, the Associated Grocers of Maine often uses blurbs about Efficiency Maine as 'filler' for their newsletters. In addition, Oakhurst Dairy put letter stuffers about the Program in the checks they mail farmers.

Non-traditional allies reported that while they are not directly involved in implementing projects through Efficiency Maine, they act as a conduit to their memberships about the Program. The associations said they communicate to their members about the Program in newsletters, website links, and annual trade shows, which Efficiency Maine staff attend. Interviewed associations discussed the difficulty of getting the message about the Program out to their customers. Even though their members have heard messages about the Program repeatedly, associations think most of their members probably still do not know about the Program. One association said that they are successfully cross-marketing the program with the Green Lodging Program. Another association reported that she tries to pull something new out about the Program or highlight the Program to their membership about four times a year. She thinks this consistent, periodic messaging is important to increase customer awareness.

"*It's important to keep it [the Program] in front of them because it may take a few times before the light bulb goes on*." —Non-traditional Ally

The survey results show that the Program's outreach work with associations has been effective—the third most commonly reported venue for participants' learning of the program was through professional associations (15%). (Table 3-2)

Half of nonparticipating businesses have heard of the Efficiency Maine Business Program. This is a high level of awareness among nonparticipants, especially given the relative newness of the Program. And unlike participants, the main venues that nonparticipants report hearing of the program is through direct program outreach. The most common way nonparticipants reported hearing about the Efficiency Maine Business Program was from the Efficiency Maine Newsletter (23%) with another fifteen percent hearing about the Program through an Efficiency Maine representative. (Table 3-2).

In general, program staff interviewees were pleased with the Program's marketing efforts. There was discussion that some marketing funds should be shifted from Efficiency Maine name recognition marketing activities to more education and training about energy-efficiency. Two interviewees also mentioned that marketing activities should focus less on the cash incentives and more on the benefits of energy-efficient products and practices. By emphasizing the incentive, these interviewees believe customers are more disappointed when they do not quality for the incentive and less likely to implement the energy-efficient measure for its own merits. Program staff interviewees felt that marketing has recognized this and is changing its marketing messages in response to this identified need.

Program allies were also in favor of more direct marketing to customers or marketing efforts through the supply chain. Allies would like to see expanded awareness of the Program on the part of customers. Most would like this to be done through direct

marketing to customers with particular emphasis on the benefits of energy efficient equipment, but a couple of allies preferred more full-press marketing through the supply chain.

"*They need to continue to raise visibility of the program with customers. It is still fairly new – so it is important to continue the marketing efforts*." —Non-key Ally

Program staff reported producing case studies of successful projects targeted at customer segments, which is viewed as a positive.

"*We started small and focused to get successes, and now we are cranking it up with case studies to get more businesses*." —Program staff

Two of the interviewed allies were featured in program case studies. They found these useful in selling projects.

"*It [case study] was helpful. It was a positive tool. I'm not sure if it was why I won the job, but it helped*."—Key Ally

Most of the allies said they would like more templates (or case studies) for different types of structures (schools, hospitals, businesses, etc.). These case studies could serve as a quick guide for customers and sales people to see what different applications are best used in different settings (such as lighting, HVAC, etc.).

The non-traditional allies reported that they would like press releases about projects that their members have completed. They can then highlight these in newsletters. The non-traditional allies were mixed about how well they know about their members' projects—some tended to be on top of member projects while others did not. Associations were unanimous that they would like to know as much as possible about successful projects so they can highlight them to other members.

"*I would like feedback from Efficiency Maine on my members they have worked with and how it's going so I could pass it on to other members*."—Non-traditional Ally

Commonly reported sales tools used by allies are spreadsheets that calculate energy savings based on square footage and hours of operations. The prescriptive application form was also reported as a valuable sales tool because it allows the ally to show customers the equipment and the incentive. One non-key ally reports using life cycle costs. Some allies said they would like the program to develop spreadsheets for them to market the higher efficiency equipment that shows the project payback. One key ally reports using metering to demonstrate energy savings.

3.4 PROGRAM ALLY PARTICIPATION

Efficiency Maine has built up a substantial infrastructure of program allies representing different kinds of firms, targeting different customer segments and covering most regions of the state. However, a few program allies still account for the majority of projects. In general, allies are satisfied with the Program. Most allies are planning to expand their participation in the Program, but some non-key allies are not planning to expand their participation because of the reported hassle and transaction costs of the program (discussed above).

Efficiency Maine works with two different kinds of program allies. The first, and the majority, are traditional trade allies. These consist of contractors who deliver services directly to customers. The second are non-traditional allies that are market intermediaries such as associations and wholesalers.

At the time of the evaluation, the program had approximately 400 participating program allies. The Program's approach is that they do not tell the customer whom to work with. Instead the Program will work with the vendor the customer chooses. Participating allies have a field staff member assigned to them to assist them through the participation process and sell to customers if requested.

The training of trade allies has evolved, according to program staff. Implementers found that breakfast/trade meetings did not work for trade allies. Now program staff are working with several different professional associations (electrical, HVAC, Metalworkers, Agriculture) to integrate recruiting and training of trade allies in pre-established forums such as annual meetings. It was reported that field staff have also found it more effective to work with wholesalers. Field staff are working with about 20 wholesalers. For example, the wholesalers set up brochure stands for when electricians come in. Program staff visit the wholesalers monthly to make sure they have brochures and to talk with them and any customers that are in. Program staff are also working with Supply Houses. At Supply Houses, field staff attend "counter days" where they discuss the program with contractors.

Program staff reported that the size of trade ally companies in Maine is generally not large —most have about 5 people working for them. Evaluators found, however, in program ally interviews that the size of allies ranged considerably from small companies to larger companies with up to 100 employees. Program staff reported that to-date there are not any large energy service companies in Maine. Program staff did not feel the Program has trouble recruiting trade allies regionally; instead they feel the Program has good geographic coverage. This was reported as a result of "*field people working their regions*."

One type of program ally identified by program staff not included much in the program infrastructure is Architecture and Engineering (A&E) firms. Particularly if the Program expands its new construction piece, this will be an important ally group to recruit, reports one program staff interviewee. The evaluation's analysis of the program ally database and interviews with program allies leads us to concur that A&E firms are not well represented among program allies at this time. Evaluators did interview one A&E firms that is a non-key ally. This ally reported they are not at this time planning to expand their participation in the program because it is not a good fit for the type of projects they do, which are mainly custom projects.

Program staff interviewees report that it has taken program allies a while to see the benefit of the Program. They report that now allies are approaching program staff for training and even asking for program staff to go on joint customer calls with them. One program staff interviewee reports that as much as 40% of the allies are actively working the Program. As a result, this has put more demands on the program staff.

Table 3-3 below summarizes project information for the interviewed program allies. Interviewed key and non-key allies represented 258 projects, approximately a million and a half dollars of incentive money and almost 14 million in kWh savings.

Table 3-3. Interviewed Program Allies Project Information[5]

Ally Type	Number Interviewed	Number of Projects	Incentive Amount	KWh savings	KW Savings
Key	9	247	$1,355,345.60	12,630,550.85	1,448.68
Non-key	6	11	$136,646.36	1,030,962	166.24
Non-traditional	5	N/A	N/A	N/A	N/A
Total	20	258	$1,491,991.96	13,661,512.85	1,614.92

Source: Efficiency Maine program database (www.gdsassociates.com/efficiencymaine), June 2006

Several of the key and non-key program allies are based and work exclusively in Maine. The other interviewed program allies focus primarily on New England—Maine, Vermont, New Hampshire, and Massachusetts. Only one interviewed ally is based outside of New England.

Most of the key program allies were involved in utility-run efficiency programs (such as Central Maine Power's programs) prior to Efficiency Maine. Many, but not all, of the program allies also report implementing projects through other energy efficiency programs such as Efficiency Vermont, National Grid, Northeast Utilities, and NYSERDA. Some of the allies report that most recently they are doing more work in New Hampshire and Vermont because the incentive levels are better. As a result of increased incentive levels for lighting, they now expect to increase their work in Maine.

Key program allies range considerably in size from 2 to 100 employees. Non-key allies range in a similar size from 10 to 80 employees. They also range in sites from one site to multiple branch locations. Several different types of firms represent both key and non-key allies. These include electrical, HVAC, compressed air and ventilation system contractors as well as Design Build firms, supply houses and hardware stores and engineering firms. Figure 3-4 and 3-5 show the types of firms that make-up the interviewed key allies and non-key allies.

[5] Project information is not presented for non-traditional allies since they inform customers about the program, but do not directly implement projects for customers.

Figure 3-4. Key Ally—Firm Type (N=9)

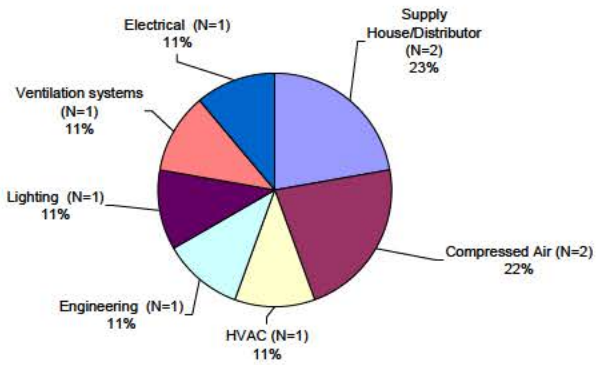
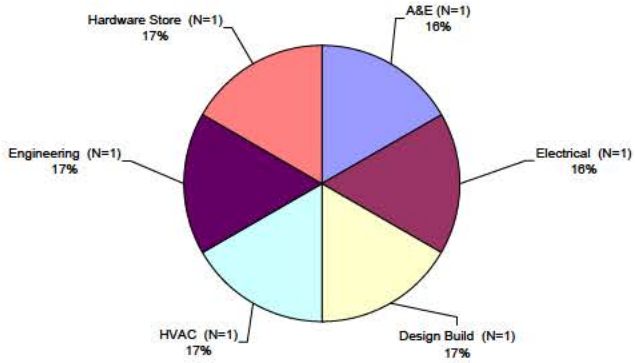


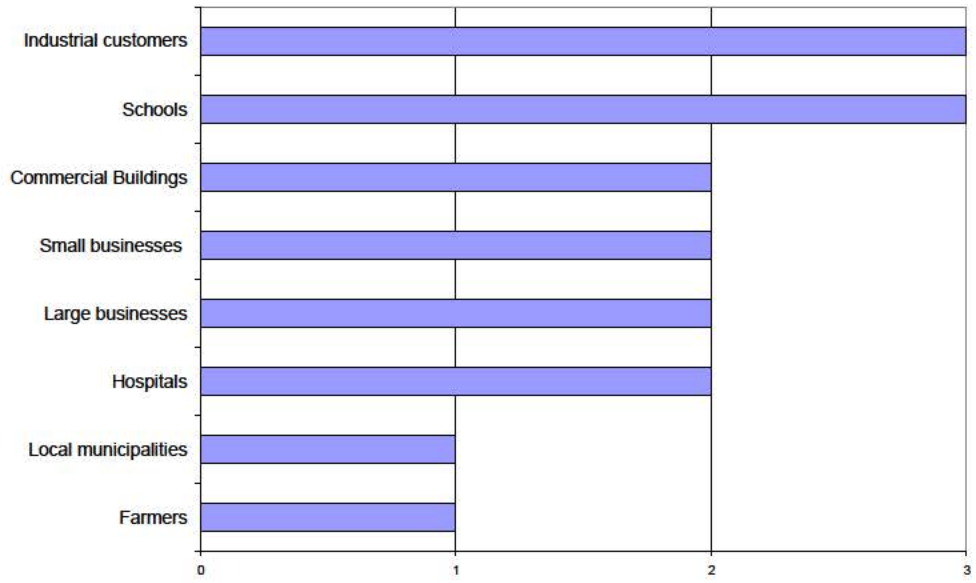
Figure 3-5. Non-Key Ally—Firm Type (N=6)



Source: Program ally interviews, June–July 2006

Key and non-key allies report primarily serving a range of businesses with schools and industrial customers topping the list. Two key allies focus primarily on small businesses (Figure 3-6).

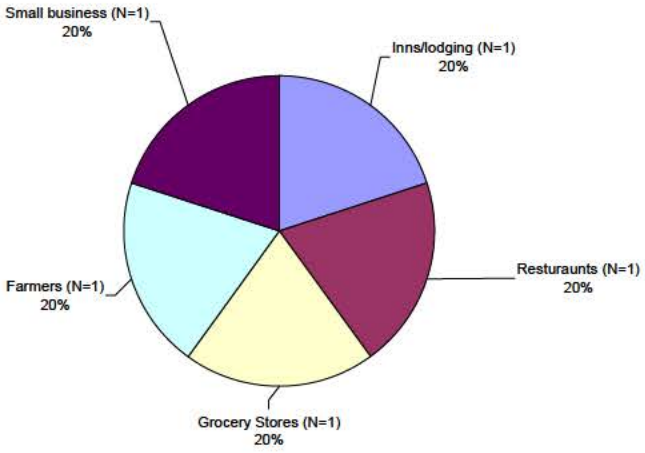
Figure 3-6. Interviewed Traditional Allies' Primary Customers (N=15)



Source: Program Ally Interviews, June–July 2006

The interviewed non-traditional allies or market intermediaries also represent a range of customers (Figure 3-7). The non-traditional allies represent hundreds of their target industry members in Maine, but have only a handful of administrative staff. Their main functions are to provide business and legislative support for members of the target industry that they support.

Figure 3-7. Interviewed non-traditional allies' primary customers (n=5)



Source: Program ally interviews, June–July 2006

The majority of interviewed allies are very pleased with the program.

"*It is a good working, functioning program that is getting money out there for energy efficiency improvements.*"—Key Ally

All of the key program allies plan to increase their participation in the program. They plan to increase their participation because they are now stocking more high efficiency equipment, are finding customers receptive to high efficiency equipment, and find that the incentive is helpful in closing sales. While non-key allies plan to continue participating in the Program, none of them plan to greatly increase their participation, mainly as a result of barriers discussed above in terms of hassle and transaction costs of the Program.

Allies elaborated how important the program staff's quick help and review of applications have been. Allies reported that if the pre-approval process takes a long time, this could decrease their probability of not closing the project.

"*If we're looking at a job and have questions, they get back to us right away. They're local and get to a customer site if needed. If the program took 4–6 weeks to approve an application, customers would cool off, but they get to them in a hurry.*" —Key Ally

Non-traditional allies also report that Efficiency Maine staff have been helpful when they have a question about the Program. Non-traditional allies report that they will continue to

promote the Program because they see it as a valuable program that helps their members and can improve their members' bottom lines.

"*It makes good business sense. Energy efficiency is the way to go and there is a program to give you dollars to do it."* —Non-traditional Ally

Allies are also generally pleased with program communications and like receiving communication via e-mail. However, many allies did not know about the change in the incentive caps. This suggests the current methods may not be effective in conveying the program changes. One ally was specifically troubled that he did not know about the change in the incentive cap. He said *E-news* is a broader document with interest pieces so he does not always have time to read it. He would like program changes conveyed separately and with high importance.

"*E-news has a lot of chit chat and is for the public, not just us, so I don't always read it. I need to know about program modifications. I want to see those come in on a guided missile through my window*." —Key Ally

This same ally voiced that he would like the Program to communicate about the new program manager and provide an opportunity to meet him.

Program allies were positive about the trainings offered through the program. One suggestion offered by an ally was to have trainings for procedures, whether custom or pre-established. Several allies also discussed the need for periodic, update trainings. Specifically it was suggested to have one discussing how recent changes to the Program fit with the ASHRAE 2004 90.1 energy guidelines.

"*It would be nice to have periodic updates on how to produce forms that will clear the first time*."—Non-key Ally

Most of the allies reported that they do use the Efficiency Maine Website and find it useful. Some allies liked the PDF files. Many suggested the website have an on-line application (discussed above). One ally said he uses the survey forms available on the website for getting building audits started.

3.5 CUSTOMER PARTICIPATION—MOTIVATORS, BARRIERS TO INCREASED INVOLVEMENT, AND BUSINESS TYPES

3.5.1 Motivators

While the incentive was the main motivator for program participation for participants, nonparticipating businesses are most interested in reducing their bills and helping the environment. Nonparticipating small businesses had the least amount of interest in the Program while schools had the most. State sponsorship of the Efficiency Maine Business Program may have a positive influence on participation. The key factors influencing participating customers' equipment decision-making processes—overall cost, followed by electrical operating costs—were similar for replacement of failed equipment and for discretionary retrofits and new projects.

The primary reason participants decided to participate in the Program was the incentive (51%). This is not surprising given the relatively high levels of free ridership as discussed later in the *Impact Evaluation* section of this report. Other significant motivators for participants were to save money or reduce bills (45%) and to improve their energy efficiency or save energy (33%). Approximately a quarter (22%) reported participating in the Program because of failed equipment. (Table 3-4).

The main reason nonparticipants gave for being interested in the program was to reduce energy bills or save money (72%). Another 41 percent would like to improve their energy efficiency and save energy, while 37 percent are interested in helping the environment. (Table 3-4). Nonparticipants reported a much greater interest in the environment (37% for nonparticipants compared to 3% for participants) and reducing bills than participants (72% for nonparticipants compared to 35% for participants). This suggests there may be opportunity to expand the program to new customers through an environmental slant as well as a money saving slant.

Table 3-4 Reasons for Participating in Efficiency Maine

Reasons	Why Participants Decide to Participate (n=228)	Why Nonparticipants are Interested in Participating (n=47)
Improve energy efficiency/save energy	33%	41%
Reduce bills/save money	45%	72%*
Incentive	51%	11%*
Replace equipment	22%	6%
Reduce maintenance costs	15%	24%
Improve payback	13%	14%
Help the environment	3%	37%*
Trade ally	2%	0%
Good corporate citizenship	0%	6%
Position company for future projects/incentives	0%	3%
Educational benefits	0%	1%
Positive previous experience with Efficiency Maine	0%	1%

Source: Efficiency Maine Business Program participant surveys, July–August 2006, QA2
Source: Efficiency Maine Business Program Nonparticipant Surveys, July–August 2006, QI2
*Statistically significant at the 95% confidence level, ±5%

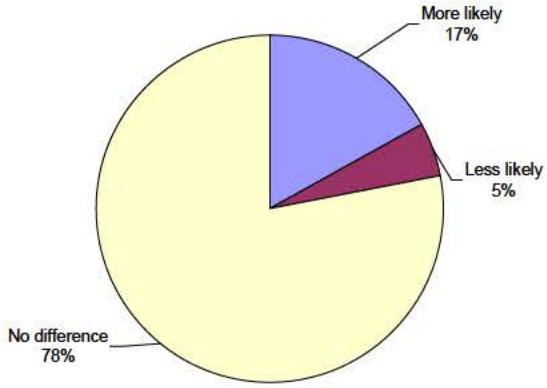
While over half of nonparticipants said they were interested in participating in the Program, schools had the greatest interest and small business customers the least.

- Fifty-eight percent of all nonparticipants indicated they are interested in participating in the Efficiency Maine Business Program.
- All of the interviewed school customers we spoke with were interested in the Program.
- All the customers who said they were not at all interested in the Program were small businesses, as defined by the Program (less than 50 employees).

State sponsorship of the Efficiency Maine Business Program may have a positive influence on participation, according to participants. While the majority of participants (78%) said that state-sponsorship of the Efficiency Maine Business Program had no effect on their likelihood of participating in the Program again, almost a fifth (17%) said it had a positive effect. (Figure 3-8)

Nonparticipants also view the state operation of the program as a positive. Seventy-four percent of nonparticipants said the state-sponsorship of the Efficiency Maine Business Program had no effect on their likelihood of participating and almost a fifth (17%) said it had a positive effect.

Figure 3-8
Does Efficiency Maine being a state government operated program make you more likely, less likely or have no effect on your likelihood of participating in the program again? (n=228)



Source: Efficiency Maine Business Program participant surveys, July–Aug 2006, QS3

The key factors influencing participating customers' equipment decision-making processes were similar for replacement of failed equipment and for discretionary retrofits and new projects. For all types of projects, the most important reported factor was overall cost, followed by electrical operating costs. There were two statistically significant differences in decision-making criteria based on the type of project—equipment failure or discretionary. One was a higher percentage of respondents with failed equipment reported the importance of information and education about energy efficiency. The second was a higher percent of respondents with discretionary projects reported the importance of the impact on company's financials. (Table 3-5)

Table 3-5. Key Factors in Customer Decision Making Process (n=228)

Key Factor	Percent reporting important factor when equipment fails	Percent reporting important factor for discretionary retrofit or new project
Overall cost	58%	55%
Electrical operating costs	40%	37%
Incentive availability	14%	15%
Impact on company's financials	10%	14%*

Key Factor	Percent reporting important factor when equipment fails	Percent reporting important factor for discretionary retrofit or new project
Fits standard design	6%	9%
Info/ed available	13%	9%*[6]
Meets payback	9%	8%
Lighting appearance	4%	3%
Help environment	2%	3%
Recommendation of contractor, etc	3%	2%

Source: Efficiency Maine Business Program participant surveys, July–August 2006, QD1

3.5.2 Barriers to increased involvement

Data collection with program staff, program allies and customers all confirm that one of the largest barriers to energy efficiency projects is the upfront costs to do the project, especially for small businesses. Other barriers include a perceived lack of need, lack of control over energy use, other cost concerns such as the incremental cost or insufficient payback and product availability.

Program staff interviewees identified the biggest barrier for customer participation as the up front cash to do the project. This was reported as especially true for small customers "*They are a tough crowd because of the payment upfront*." One interviewee reported that the program tries to leverage other funding sources and financing programs (e.g., the State Energy Program 3% small business loan) for customers to address this barrier. In addition, it was reported that one bank chain—TD Bank North—and possibly another is interested in working with the program to provide financing for energy efficiency projects. It was reported, however, that some small business customers don't want debt and often aren't open to financing. Evaluators did interview TD Bank North and at the time of the interview, while they had information on display, no customers had yet applied for financing for an Efficiency Maine project.

The partial participant and participant interviews confirmed upfront capital as a major obstacle. Most of the partial participants reported budgetary problems as the main—if not the only—reason why they did not complete the project for which they started the application process. One partial participant had a management change in the middle of the process, along with a budget reduction, which put the project on a back burner. Another partial participant reported that they tried to get a lighting project completed at one of their office locations, however, they leased the building, and they felt that the building owners were not receptive to allowing them to continue, so they stopped the project.

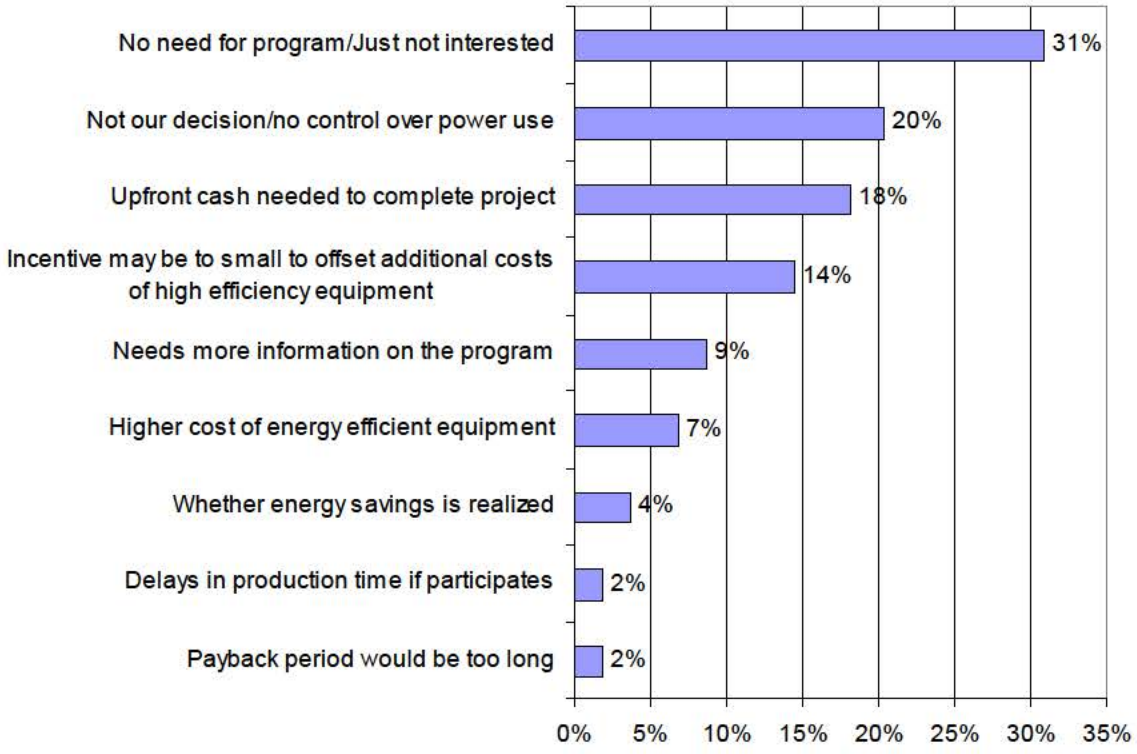
Thirteen percent of participants reported that they had implemented an energy project in the last two years where they purchased standard instead of high efficiency equipment. The main reason that these participants reported buying standard instead of high

[6] Statistically significant difference at 95% confidence level, ±5%.

efficiency equipment was cost concerns. Reported cost concerns included the incremental cost of the high efficiency equipment, the upfront capital costs and that the payback or energy savings were not sufficient for the high efficiency equipment. The second most commonly reported barrier was product availability.

The most commonly reported reason nonparticipants had for not being interested in participating was no need for the program (31%). The majority of these were small business customers. One-fifth of respondents indicated they have no control over the decision to participate or their power use, followed by upfront cash needed to complete the project. (Figure 3-9). The majority of customers reporting these as barriers were small businesses. The lack of control over power use is a common obstacle encountered in energy efficiency business programs. For example, some business areas, such as malls, do not have sub-metering making it difficult for businesses to reap the benefits of their individual energy efficiency improvements.

Figure 3-9. Why Not Interested in Participating in Efficiency Maine (n=23)



Source: Efficiency Maine Business Program nonparticipant surveys, July–August 2006, QI3

3.5.3 Business types

Manufacturing is the largest participating customer segment type both in terms of energy savings and percentage of participants, which is also found in other energy efficiency programs, mostly as a result of this sector's high energy consumption.

While Efficiency Maine appears to be capturing a good breadth of the different business segments, some industry types are better represented than others.

An analysis of Efficiency Maine business participants and the population of Efficiency Maine businesses indicates the Program is primarily serving the manufacturing sector. In terms of the percent of the Maine business population, manufacturing only represents 5% of the population, although manufacturing is a high energy consuming sector. The manufacturing industry usually represents a percentage of energy efficiency program participants because of their high energy consumption. Other sectors that are well-represented among Program participants are FIRE, lodging, agriculture, and K-12 schools. Sectors that appear to be under-represented among Program participants are the health care, services, public administration, restaurant, construction, and transportation/public utilities industries. The remaining eight business types participate in the Program roughly equal to their percentage of the Maine business population. (Table 3-6)

Table 3-6. Comparison of Efficiency Maine Business Program Participants and Maine Businesses by Business Type

Business Category	Percent of Maine Business Population	Estimated Percent of Efficiency Maine Business Program Participants
Manufacturing	5.4%	32.0%
Finance, Insurance & Real Estate (FIRE)	6.8%	13.2%
Retail trade	11.1%	11.8%
Lodging/Motel/Residence	2.2%	9.6%
Agriculture, Forestry & Fishing	3.7%	7.0%
K-12 schools	1.5%	5.7%
Personal Services	3.9%	3.9%
Wholesale trade	4.0%	3.1%
Church	2.2%	2.6%
Daycare	1.9%	2.2%
Food Sales/Grocery	2.1%	2.2%
Health care	5.2%	1.8%
Services	21.9%	1.8%
University/colleges	1.1%	1.3%
Nonclassified Establishments	.05%	.01%
Public Administration	2.7%	0.4%
Restaurant/Food/Tavern	3.6%	0.4%
Mining	0.1%	0.0%
Construction	10.4%	0.0%
Transportation & Public Utility	4.8%	0.0%

Source: Efficiency Maine Business Program participant surveys, July–August 2006

For marketing, one non-traditional ally pointed out that national chains are doing energy efficiency already. They have staff that looks at energy efficiency on the national level. She thinks the program needs to concentrate more on marketing to the independents. This is not readily available in the above firmographic information since national chains fall into many of the above categories.

3.6 PROGRAM GOALS

There is a lack of consensus regarding if the program goals are primarily a market transformation program or a resource acquisition program and the extent to which the Program is to serve the new construction market.

In 2002, the MPUC established five goals for the Efficiency Maine programs[7]:

1. Improve the efficiency of electric energy use by Maine residential consumers, businesses and other organizations

2. Increase consumer awareness of cost effective options for conserving energy

3. Create more favorable, sustainable market conditions for the increase use of efficiency products and services

4. Promote sustainable economic development

5. Reduce environmental damage associated with energy use.

In general program staff interviewees believe these are the right goals for the program. This year, there has been a focus on demand reduction in the legislature, which may become part of the program's goals at a future date. Program staff interviewees also discussed the tension in the goals between market transformation and resource acquisition. While a change in the goals may not be necessitated, program staff interviewees believe there may be a larger emphasis on resource acquisition than market transformation in the future as there is a regional shift in this direction. Some program staff interviewees would like clearer guidance from the MPUC about the program's focus since resource acquisition and market transformation can at times be competing goals.

The MPUC did not establish any numerical target objectives for the implementation team to meet. This differs from other state public run programs such as Efficiency Vermont. Efficiency Vermont selects an implementation contractor to achieve specific targeted goals. The implementer is then compensated on a performance basis. The MPUC did not take this direction originally because they wanted to allow the implementation team the flexibility to innovate and change the program without having to renegotiate contracts.

The implementation contractors established target objectives when they began the Program. These included energy savings goals. "*We set targets based on what we feel we can do, the size of the staff on the ground and the incentive budget, we have proposed goals every year*." They track their progress toward goals and report them weekly to the program manager. Contractor-established goals include:

- Annual kWh and kW savings
- Amount of incentives paid to small and large customers

[7] *Order Establishing Goals, Objectives and Strategies for Conservation Programs Implemented Pursuant to P.L. 2001, ch. 624, Docket No. 2002-162 (*Sept. 24, 2002*)*

- Number of program ally trainings
- Number of trade shows attended
- Number of completed speaking engagements

If an incentive based implementation contract were to be pursued, one program staff interviewee mentioned he would like to see it include goals beyond energy savings. These could include the number of participants served by the program; customers' improved understanding of the benefits of energy efficiency, and better informed program allies through training.

Another aspect related to program goals is the extent to which the program serves the new construction market. New construction was not part of the original program design. Interviewees report that the Program has evolved to include more new construction projects. This is viewed as a positive change so that the program does not lose opportunities. While new construction projects are not sought out, the Program does not turn them away. There was a desire expressed to keep new construction part of the existing business program instead of making it a separate program.

3.7 PROGRAM DESIGN

While there are many benefits of the trade-ally based model, there is substantial evidence that this approach is resulting in some missed opportunities for participant savings, although capturing the major cost-effective savings opportunities. In exploring other program design elements, customers were most interested in receiving project reviews from Efficiency Maine and small businesses were interested in a direct install program.

Program design and delivery interviewees had mixed opinions about whether a program ally-based model was the most effective model to deliver the program to reach its goals. Many interviewees believe that it is a workable model given limited staff. Other interviewees indicated that allies are not good drivers of the program because they have niche markets, are not interested in marketing the program because they are busy, and their primary goal is to make money. There was consensus on the part of program staff confirmed, by the site visit results, that a program ally approach does not result in a holistic approach to customer facilities.

"*What I see as the biggest weakness is that the allies have got their one thing to do (line of business), and that is what they are going to do, so there is no comprehensiveness, they are in business to sell whatever they are selling*." —Program staff

There were mixed opinions by program staff about the importance of customers receiving holistic treatment through the program. With limited dollars, some program staff interviewees feel it is okay for the program to, "*pick the low hanging fruit*" or the easiest savings opportunities to ensure cost-effectiveness. Interviewed program allies also indicated they have mainly been "*capturing the lower hanging fruit*." Some allies reported they would soon be shifting to capturing additional savings opportunities.

The on-site inspections verified that the trade-ally based model is resulting in less holistic practices, but missed opportunities have less energy savings than implemented projects. While on-site at customer facilities, evaluation team engineers determined if any significant

additional electric energy savings potential projects were available at sites that had participated in the programs. Primarily, the Quick & Easy Incentive, and the Pre-Established Incentives are designed for smaller business, and largely delivered by the allies/vendors. For most applications in these program paths, single end-uses were the only projects performed at the sites; that is the projects at the sites consisted of only lighting, motors, HVAC, etc. It was rare that a site project encompassed multiple end-uses. The on-site inspections confirmed that it is the tendency of trade allies to put their efforts towards selling their own particular type of equipment, and the activity in the program reflects this.

Multiple additional opportunities for installation of energy efficient measures were noted during the on-site visits of 36 projects. Table 3-7 below provides a summary of the number of sites that additional opportunities exist by application type and measure type.

Table 3-7. Additional Opportunities by Type of Project

			Motors		Ltg					Agricultural			
Program	Total Projects with Site Visit	Comp Air	Std to High Eff	VSD	HID/HPS/ MH to T8/T5	Inc to CFL	Exit Signs	Occ Sens	T12 to T8/T5	Milk Precooler	High Eff Refrig Comp.	Vend Miser	High Eff AC
Custom	8		6	2	2		1		5			2	
Pre-Established	13	1	2		1	1	1		3			4	
Quick & Easy	15		1		1		2	1	2	2	1	2	1
Total	36	1	9	2	4	1	4	1	10	2	1	8	1

Notice that additional measure opportunities appear distributed between the different application types. Five of the eight Custom Program projects were found to have fluorescent lighting opportunities**.** Each of the eight projects received mechanical system improvements, but lighting opportunities remain. However, custom program participants were found to be aware of energy efficiency and even though five of eight had additional lighting savings opportunities, most had already installed partial lighting improvements. Therefore, while this additional opportunity is available, it is not judged to be prevalent or to have large savings potential relative to the total site energy use. In reviewing the missed opportunities by type of business, the evaluation team found that:

- Overall, manufacturers were generally aware of the benefits of energy efficiency to lower energy costs. Five of the eight custom measure projects are compressed air system projects installed at manufacturing facilities. Manufacturing sites generally have the most opportunity for motor and VSD savings. The motors are typically replaced by attrition at these sites.
- In larger office buildings, residential/motel facilities, and manufacturing facilities, owners are more likely to provide vending machines. Eight of these compressed air or lighting system project sites were found to have remaining opportunities for vending machine savings.
- Applications for occupancy sensor savings opportunities exist in many office areas, though several of the warehouse and other high bay areas were found with occupancy sensors control installed.
- Dairy farmers are generally aware of the need to replace incandescent lighting and are doing so, but HID high bay fixtures are still installed—some are retrofits from T12 fluorescent fixtures.

- Owners with multiple business tenants within a building or owners of multiple buildings did not always install measures throughout their properties. The measures were either installed as a prerequisite for tenant occupancy, or as the space became vacant.

While several additional opportunities were observed at specific sites, there does not appear to be a large energy savings potential from these opportunities. One main reason for this is that most of the smaller projects in the program are lighting, and lighting is the biggest end-use typically in the facilities. Other measures, such as HVAC (air conditioning dominated) motors, and VSDs had limited applications at typical sites. Other observations on missed opportunities by equipment type included:

- Air conditioning systems at many sites were typically fewer than five years old, which is a limiting factor to the potential in this measure. However, one new construction project site that received lighting incentives through Efficiency Maine did not receive incentives for the new high efficiency air conditioners. The customer was not aware of the available air conditioning incentives.
- Motors were generally found replaced on failure or near end of their life. In lead/lag situations when only one motor was replaced the more efficient motor was operated first. In most manufacturing facilities, many of the existing motors were not premium efficiency.
- Vending machine control opportunities still exist at the five project sites where vending machines were observed.
- Standard T-12 fluorescent lighting was observed in many of visited sites in areas that were not affected by a lighting project. Some very large lighting sites are being installed in phases. This may be due to capital improvement budgets or implemented to optimize available incentives.

In addition to the ally-driven model not being holistic, program staff voiced that this model can result in missed opportunities for smaller, maintenance projects. Because allies are busy, they think of the program for large projects, but not small projects. This was substantiated in the ally interviews as some interviewed allies reported that they do only 'sell' the program for larger projects, not for smaller projects because it is not worth the hassle for smaller projects.

"*If someone is going to re-light a whole store, they will think of Efficiency Maine but perhaps not for just a storeroom. I think these are what fall through the cracks." —Program staff*

Program staff's defense of the program ally model included the fact that most of the businesses in the Maine market are small and can only afford to do one or two improvements at a time. However, it was acknowledged that some customers do seek information about what opportunities exist in their facilities, according to program staff. Customers confirmed that a lack of information was one aspect of the Program they were disappointed with.

As discussed under Program Marketing, the customer surveys indicate that while trade allies are doing a good job getting the word out about the Program, other Program marketing activities are needed if the trade-ally based design continues.

Some program staff interviewees would like to see the program develop a technical assistance component where program implementation staff work directly with customers to identify energy efficiency opportunities at their facility. In their view, what customers want is unbiased, objective analysis of their facility and energy efficient improvements they can make.

Another option is to provide more customer education through program allies. Interviewed program allies discussed the need for incentives for providing audits and trainings for operation and maintenance practices to get optimum performance. While it was reported that this was done on a rudimentary basis, some allies believe additional savings could be realized by more in-depth, thorough educational efforts. However, it was reported that these audits are expensive to deliver, between $5,000 and $10,000.

The customer survey confirmed the need for the Program to increase provided information. Participants were asked their interest level on a 5-point scale (1 = not at all interested, 5 = very interested) in four different design options that were brought up in the evaluation process interviews with either program design and delivery staff or program allies. While the majority of participants were interested in all of the presented options, the option that participants were most interested in was Efficiency Maine staff reviewing information for a major addition or new building to make recommendations. (Table 3-8)

The second program option of great interest to small business respondents was a type of direct install program for small business customers. (Table 3-8). Some program staff interviewees mentioned that a direct install program for smaller customers might be more effective than the current program design. One interviewee said that a direct install program was not originally the best option to meet the program's goals, but if the program shifts toward a more resource acquisition model than a market transformation model, it may be a better option (see related discussion above on program goals).

Table 3-8. Participant Interest in Program Design Options
(1 = not at all interested, 5 = very interested)

Program Design Options	Average (Mean)	Percent interested (4 or 5)
For a major addition or a new building, Efficiency Maine staff would review the architectural drawings in order to identify all of the specified equipment that qualified for incentives. Staff would then make recommendations for replacing specified equipment that does not qualify for the program incentive with equipment that does qualify for incentive money. Staff would then assist in providing incentive moneys as equipment was purchased during the construction process. *(n=228)*	4.4	94%
For small business customers, Efficiency Maine would send a contractor to the customer facility to directly install energy efficient equipment such as lighting technologies, occupancy sensors, better thermostats, and timers. Efficiency Maine would pay a set percentage of the cost, which would be at least 50%. *(n=129)*	3.9	82%
Efficiency Maine would hire and oversee a pre-qualified firm that would quantify the potential energy savings opportunities at customer facilities. Efficiency Maine would cover at least half the cost of this service. This would include a detailed report of expected savings. *(n=228)*	3.6	71%

Program Design Options	Average (Mean)	Percent interested (4 or 5)
Efficiency Maine staff would walk through customer facility to determine whether energy saving opportunities exist before an outside vendor is called. Detailed energy savings calculations would not be made. *(n=228)*	3.5	71%

Source: Efficiency Maine Business Program participant surveys, July–August 2006, QC1-C4

3.8 INCENTIVE LEVELS

Research with program staff, program allies and customers suggest that incentive levels are set fairly well, but tweaks are needed for certain equipment types and to reduce free ridership by taking into account changes in standard practice. The change in the customer incentive cap to $100,000 every two years was viewed as positive by both program staff and allies, although some believe the incentive cap should be based on energy usage.

Program design and delivery staff reported that they developed incentives to be similar to those offered in other New England states. "*We do try to harmonize the incentive levels with those in use at other programs around the region. We monitor what is going on with CEE and NEEP and other implementers in the region*." —Program staff

There was consensus among program staff that the prescriptive incentive levels are close to accurate because they are reviewed and refined regularly. For example, recently it was determined that the incentive for HIDs were not large enough so the levels were increased.

One program staff interviewee pointed out that the review also needs to take into consideration changes in standard practice in Maine. This interviewee believes Efficiency Maine has been good at raising the bar. As a result, Maine now has the highest penetration of "super T-8s" compared to other programs in the region.

Incentives for custom projects are tied to payback. There was discussion that incentives should not "disappear," but instead taper down when the payback period decreases. One program staff interviewee reported that there are hard feelings with customers when the incentives disappear.

The program had a $50,000 incentive cap per customer a year. During the 2006 program year, this was changed to $100,000 every two years. There is no lifetime cap. Program staff interviewees view this change as a positive development. Program allies concurred, although only two interviewed allies reported running into the incentive cap that prevented projects from going forward. For large customers or new construction, interviewees think the $100,000 incentive cap is limiting. One program staff interviewee suggests that large customers do need to be directed to one technology because of the cap. Two other program staff suggested that the incentive cap should be based on customer usage or rate class so that it takes into account the amount customers pay into the Program. However, it was discussed that the MPUC does not have access to usage or consumption data. A second point raised about the incentive cap is that it is based on taxpayer id number. This can unfairly discriminate against customers because they have different practices

regarding their taxpayer id number. For example, it was reported that one national restaurant chain has a different taxpayer id number for each of its restaurants whereas other chains only have one taxpayer id number for several locations throughout Maine.

As discussed above under *Program Satisfaction*, while the majority of customers are pleased with program incentives, some customers do not feel that incentive levels are high enough to make the project payback low enough or compensate for the incremental cost between standard and high efficiency equipment.

Program allies were split about their opinion of incentive levels. While most felt incentive levels were sufficient, they did note that Efficiency Maine incentives are lower than other New England states.

"*The incentive seems to be enough to motivate customers to go with high efficiency*."
—Non-key Ally

Two allies think the Efficiency Maine incentive levels are too "*stingy*,"—specifically reported for T5 HOs—but said they would rather have some incentives than none.

Another ally disagrees with how the incentive is structured for single-phase power. He said that customers have to have double the starter with single-phase power. For example, a 5 horsepower (HP) motor needs a 10 HP drive. The program only provides incentives for the 5 HP. He thinks it should be for the 10.

A non-key ally also reported that the incentive levels for HVAC are difficult. She said now that the federal government has adopted the 13 SEER standards, there are not many things that exceed the standards, so it is hard to qualify for the program. She also discussed that the program does not give any rebate for rooftop economizers because they are a mechanical device. She said there are thousands of broken or inefficient ones throughout Maine.

An air compressor ally reported that 75% of their air compressor business qualifies for the Program. While they do some pump projects, there are more energy savings for air compressors. Even with the program incentive, he said pump project paybacks are still 3–4 years. Air compressors on the other hand have 1.5–3 year paybacks so they are an easier sell.

3.9 THE PROGRAM TRACKING SYSTEM

While the Efficiency Maine tracking system has a number of strengths, improvements should be made to increase data consistency and completeness and provide more accessible data to track the program's progress.

The evaluators submitted a data request to GDS to obtain the data on participants necessary to support primary data collection for the evaluation. The data that was provided in response to the data request was clean and consistently formatted, especially the text fields.

There are several date fields in the database including date received, date of pre-approval, date of approval and check date. GDS informed evaluators that the check date field was the most consistently filled. However, we assert that check date is not the most

appropriate reference point for discussing a participant's project. The date of pre-approval or approval would have been closer to the project implementation and a better reference point for the participant.

One consistency issue that we became aware of when working with the sample involved the way the Project type variable was filled. Forty percent (47/117) of Custom applications did not have an associated equipment type in the Project type field. GDS was able to send us that equipment information eventually. Another 18% of cases had no application type indicated (106/604), which GDS was also able to provide from a separate query. Both pieces of information were made available later in the project but would have been useful for classification of cases prior to data collection and site selection.

GDS's initial response to the data request was to suggest that we access the information via the web interface to the tracking data. This was not a practical approach as the data can only be viewed one record at a time and there is no ability to download the data to an electronic file. With over 600 records relevant to the time period covered by the study this is not an efficient method for analysis. We were provided a user name and password to access a web interface that made it possible to access individual customer project information as needed. This proved to be a valuable resource for filling in gaps in information in the data file received. There are options for running reports, but they provided only customer contact information without any additional fields such as dates, costs, or kWh.

The tracking database has its strengths but has a number of issues related to data consistency and completeness that we have noted in other energy efficiency program tracking systems. Suggestions for improvement are to:

- Have separate fields for the application type and the equipment type and make them required fields
- Populate the date fields—an installation date would have been helpful for this project in helping participants reference the project we were discussing
- Capture total project costs—this is an important input into many Benefit/Cost tests
- Add a function to the web interface that will allow data such as dates, cost, and kWh to be downloaded from the tracking system along with the contact information.

Table 3-9 below shows the typical fields that we request for business program free ridership studies and what GDS was able to provide.

Table 3-9. Typical Business Program Data Requests

Data Fields Requested	Data Fields Received (tracked at project level)
Program code (in cases with more than one program)	For this program we used Application Category (QE, Pre-established or Custom) Available in *Projecttype* field.

Data Fields Requested	Data Fields Received (tracked at project level)
Utility code (in cases where more than one utility company offers the program)	*Electricutility*. Company name only (103 of 604 missing)
Business ID	
Business name	Received as Participants.company
Contact person (1st)	Received as *Contact*
Contact person (2nd, if available)	NA
SIC	NA
Area code and telephone number (1st contact)	Received as *Phone*
Area code and telephone number (2nd contact, if available)	NA
Address where equipment was installed (including street, city, state and zip code)	Received as Address, City, State, Zip
Square footage of facility	Received as *Sqrfootage* (304 of 604 missing)
Carryover participant indicator, if applicable (e.g., 1=yes) (this occurs in cases where the customer applied in the previous year but the installation was completed during the evaluation year)	NA
Application number	Received as *ProjectID*
Application date	Available but inconsistent – not sent.
Installation date	Available but inconsistent – not sent. Instead sent *Datemailed*. This was the data the incentive check was mailed.
Design Professional/vendor/contractor information (including vendor number, company name, phone number, and contact name)	Received as *Tradeallies.company*. Company name only (41 of 604 missing)
Total project cost	NA
Measure code	Not received as a separate variable, required syntax to pull out of *projecttype* and *projectsubtype*.

Data Fields Requested	Data Fields Received (tracked at project level)
Measure category	Available in *Projecttype* variable for QE and Pre-established applications. Available in *Projectsubtype* for Custom applications.
Measure description	Not received. Manually checked the website for cases where we needed more detail for the survey interviews.
Engineering estimates of kW savings by measure	Not received until second request during analysis as *kwsave*.
Engineering estimates of kWh savings by measure	Received as *kwhsave*.
Total cost of measures by measure	NA
Utility incentives by measure (amount requested by customer and amount utility gave to customer)	Received as *Checkamount*.
Indicator of whether or not customer received a Technical Assessment Study by measure	No Technical Assessments. Indicator of Audit, however not usually available to GDS for entry in database. *Sepaudit* only flagged on 3 cases.
Technical Assessment Study total cost by measure	NA
Technical Assessment Study firm name and other contact information.	NA

In addition, evaluators requested project information to track the program's progress from year to year. This request included number of projects implemented, number of unique customers served, and percentage of annual program funds expended. We assert that these types of metrics should be readily available in the program database so that the MPUC program manager can easily track the program's progress.

3.10 PROGRAM ADMINISTRATION, PROCESSES, AND RESOURCES

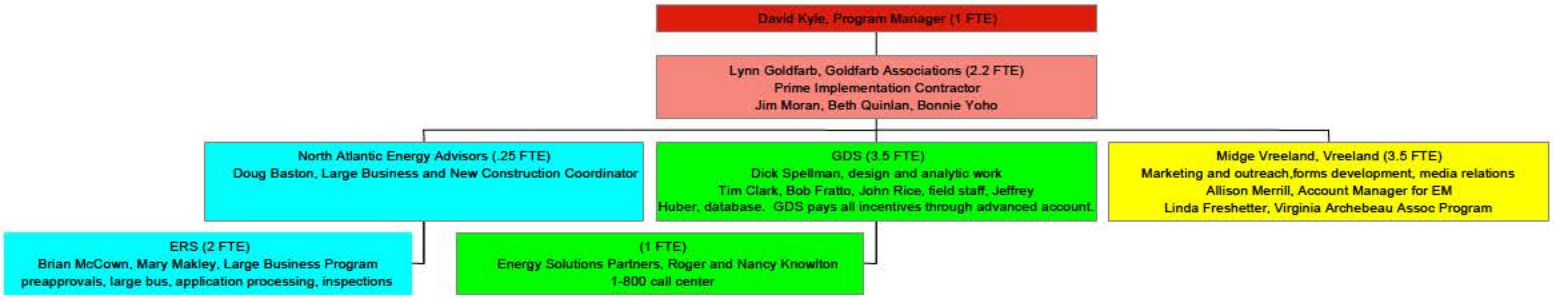
The Program's contractor team has added more field staff and the MPUC has recently added two supporting positions. Areas for improvement in program administration include more informal, internal communication among the program staff, more formal feedback to the program implementation team from the MPUC's Director of Energy and the re-design and content of the Efficiency Maine website. To-date, program overspending has not been an issue, but this is a situation that

program staff would like to avoid in the future. Program funding affects the program strategies in relation to direct marketing and serving the new construction market.

There is general consensus on the part of interviewees that the Efficiency Maine Business Program implementation team is running smoothly with only a few minor tensions. The Program's implementation team is a combination of two different pilot programs – the small and large business programs. Therefore, the implementation team includes more contractors than originally intended, although interviewees believe the expanded team has learned to work well together. While MPUC staff is limited, interviewees generally feel sufficient support from the MPUC and recognize the MPUC's "*championship*" of the program. At the same time, the dedication to the program on the part of the contractors is also widely recognized by interviewees.

Figure 3-9 presents an organizational chart of the Efficiency Maine Business Program implementation team. The program is implemented with streamlined staff. In total, approximately 15 full-time equivalents (FTEs) are involved in the program—less than 2 FTEs at the state-level and 13 FTEs at the contractor level.

Figure 3-9. Efficiency Maine Business Program Organizational Chart



At the MPUC level, the MPUC has only one full-time in house staff member dedicated to the Efficiency Maine Business Program. That is the Efficiency Maine Business Program Manager[8]. The program manager handles day-to-day contact with and oversight of the implementation team. The program manager also handles customer appeals about the program incentive process and any program ally complaints. While the program manager did not report implementing formal quality control checks of the Program, she did report doing random checks by visiting program ally shows, on-site visits, and checking the program database information.

The MPUC's Director of Energy Programs role is limited to primarily handling policy, public relations and other special issues as they arise because of the multiple other responsibilities of this position. Interviewed implementation contractors did express a desire for greater feedback on their performance from the Director of Energy Programs and interaction with the Director.

The MPUC has recently added a new communication director position. While the MPUC had a press contact to handle communications about reactive functions like rate cases,

[8] The Business Program Manager position turned over in June 2006. The discussion of the program manager's role is based on the interview with the first program manager (2002–June 2006).

they did not have someone who could do proactive messages about the program. The new communications coordinator's job will be to provide proactive outreach for all of the Efficiency Maine programs and to coordinate the messaging of the Business Program and the efficient products residential program with any of the MPUC's broader message objectives. The MPUC also hired a deputy director in August 2006 who brings added support to the program.

The implementation team consists of five different contractors. The team has one central administrator, Goldfarb Associates, who coordinates efforts for all team members and reports directly to the MPUC program manager on behalf of the contractor team. The implementation team has several committees to foster coordination and communication and "*team building*." Committees include the:

- Operating Committee, which consists of the heads of each of the implementation contractors plus the field work coordinator. The Operating Committee discusses and reaches decisions on overall policy and procedure issues.
- The Technical Committee reviews new information trade allies or customers bring to them about a project or equipment to see if it should become part of the program design.
- The Forms and Requirements Committee reviews and makes adjustments to the program's paperwork.
- The Field Staff Committee covers progress in the field working with allies and now customers.
- The Marketing Committee discusses the program's marketing message and other outreach activities.

The Operating and Marketing Committee meets monthly while other committees meet periodically as needed. Interviewees view the committees as a positive aspect of administration. "*The committee structure is a way to have our diverse group of people get together and interact as needed. It makes it easy to resolve issues without the clutter. There is good cross pollination which spreads responsibility so that everyone feels they are important*."

The MPUC program manager sits on all committees. While open communication with the MPUC program manager is important, it was also voiced that the implementation team does need to have some meetings without the MPUC program manager in attendance so that they can "*let their hair down*" and freely air issues and tensions without the "*boss*" present. One meeting just amongst the implementation contractors had taken place at the time of the interviews and interviewees reported this was successful in allowing the team to iron out some of its differences and tensions.

In addition, it was voiced that it would be more beneficial to have open discussion with MPUC staff about where the Program is going and what changes could be made to improve the Program. Some interviewees believe the program's big picture is not discussed in the committee structure or other venue.

Interviewees reported that the program has increased its field staff and this has had positive effects. There is now more field time with program allies to recruit, train and assist them with the program requirements. In addition, expanded field responsibilities have included providing some direct assistance to customers when approached by a customer or ally to do so. Interviewees expressed this has resulted in being able to identify additional energy-efficiency opportunities at customer sites. It has also helped allies sell high-efficiency projects by providing an objective assessment of the customer's situation.

While interviewees did not feel there are significant gaps in the implementation team, several identified the need for more field staff. These interviewees believe that field staff should take over the program's application process from program allies and provide more objective technical assistance to customers. A need was also expressed for field staff to have more technical skills in order to provide the additional kind of assistance needed by customers. One interviewee expressly thought another full time field person was needed for Western Maine. Another option discussed was training trade allies to provide technical support for energy-efficiency opportunities within the scope of their business. For this option, it would be good to have field staff alert customers that there is an opportunity, but a "specialist" in HVAC, lighting, compressed air, etc., would assess the opportunity.

The implementation contractor team maintains a program database that is accessible to all team members through GDS Associates' Internet site. In addition, Vreeland acts as the Webmaster for the Efficiency Maine website; however, this website is currently being re-designed by an outside vendor at the direction of the MPUC. Therefore the website format is not within the implementation contractors' control although they do maintain the ability to update its contents. Vreeland uploads updated information monthly. They will be able to continue do so on the new website when it is finished, which is reported as an important functionality by interviewees. At the time of interviews, the newly designed website was reported as significantly behind schedule—a source of frustration for several program staff who believe the program needs a better organized "*landing space*" than the site they are currently working with. Another source of frustration for program staff regarding the new website is they do not believe it will result in added functionality. For example, several interviewees reported that an interactive Internet application could include error checking and other capabilities to result in a more efficient application process as now incomplete applications are often submitted. These errors then result in considerable time spent by program implementers in calling applicants and getting the forms completed before processing. They do not believe the new website will have these types of enhancements.

Efficiency Maine funding limitations have not been an issue to-date. Efficiency Maine funding has been ramping up as utility contracts are phased out. The program under spent its incentive monies the first three years as it was ramping up. "*Nobody knew what Efficiency Maine was when we first started, but now the word is getting out*." It was projected that the Program would expend more in Program Year 2006 than its annual funding. However, it would not have a shortfall because of carryover from prior years. But this did not happen as completed projects were less than expected. Program staff interviewees believe a shortfall could happen in future years. "*The curve is rising on incentives being paid out, but the intake revenue will level off*." The funding directly affects program strategies. For example, some program staff interviewees are cautious of direct marketing efforts to customers because they do not want the program to become over-subscribed. It was also discussed that underspending the program can have negative public relation issues as well as make the monies vulnerable to raiding.

Program funding is also an issue in terms of a new construction component of the program. Because new construction has the potential to use up much of the available incentive dollars, its role in the program will need to be thought out carefully if funding limits become an issue.

Another issue discussed if funding becomes an issue is incentive levels. Interviewees reported that allies are more open to reducing incentive levels across the board then eliminating incentives for certain measures.

If increased funds are available, most interviewees would like to see the funds spent on more field staff.

4. IMPACT EVALUATION

This section describes the methodology and results of the impact evaluation of the Efficiency Maine Business Program. The primary objective of the impact evaluation was to develop best estimates of the gross and net energy savings from the Program. At the same time, the impact evaluation was used to inform the process evaluation in terms of whether the program is operating efficiently in cost-effectively achieving its energy savings goals. The impact evaluation assesses levels of free ridership, measure persistence, and missed opportunities for the participants—each of which should be considered in reviewing program design and delivery. In addition, the impact evaluation examined the methodology for calculating and tracking measure and project energy savings estimates with suggestions for improvements. Finally, the impact evaluation included a qualitative review of the program non-energy benefits and overall market effects that cannot be easily quantified but should be considered in reviewing program influence.

4.1 OVERVIEW OF THE METHODOLOGY

The impact evaluation begins with the gross reported impacts from the program tracking system. **Gross savings** are defined as the energy savings based on engineering algorithms that use equipment specifications and usage patterns as inputs. The series of activities for the impact evaluation are used to gather better data to adjust the gross savings estimates or to confirm the original data to arrive at a final **"best" estimate of annual gross energy savings**.

In developing the "best" estimates of gross energy savings, the PA/SAIC team began by reviewing the tracking system and discussing the procedures for calculating and tracking measure and project energy savings with the program design and delivery staff. SAIC engineers then conducted a detailed review of a sample of 77 project files before completing on-site inspections for 36 of those 77 file review projects. The 77 project file reviews were drawn from the sample of the completed surveys for 303 participant projects (note surveys were completed with 228 participants, but some had multiple projects).

Table 4-1. Project File Review and Site Visit Samples by Program and Measure Type

	Quick & Easy		Pre-Qualified		Custom		Total	
	File	Site	File	Site	File	Site	File	Site
Compressed Air					14	5	14	5
HVAC	2		1	1	1		4	1
Lighting	20	11	22	12	2		44	23
VSD					1		1	0
Motors	5	1	1				6	1
AG VSD	2	2					2	2
AG Scroll Compressor	1	1					1	1
Appliance	2						2	0
Economizer					1	1	1	1
Plumbing					1	1	1	1
Refrigeration					1	1	1	1
AG Vent Fan	2						2	0
Totals	34	15	24	13	21	8	79	36

For each of the 77 sampled sites, SAIC reported the gross savings from the tracking system, the project file review, and the site visit for 36 of the sampled sites. The gross savings from the file review and site visit, if completed, were used to develop the "best" estimate of kW and kWh savings for each sampled project. The site visit survey gross energy savings will have been adjusted for measures that were purchased but never installed. Persistence factors such as measures that were removed and not replaced with energy-efficient equipment, snapback and snapforward, and changes in operating hours are also covered in the adjusted gross energy savings estimates.

The sum of the "best" gross energy savings estimates for the sample group (at the program level) was compared to the sum of the original tracking system (program reported) estimates for the same sample group to calculate gross realization rates. These gross realization rates were then applied to the total program tracking system estimates for each group to estimate total ***program adjusted or verified gross energy savings***.

To calculate the realization rate for any segment, the sum of the best engineering estimate of savings is divided by the sum of the tracking system savings as shown in the following equation.

$$GRR = \frac{\sum_{i=1}^{n} BE_i}{\sum_{i=1}^{n} TSE_i},$$

where GRR is the gross realization rate, BE_i, is the best estimate from site i, and TSE_i is the tracking system estimate from site i.

The program adjusted or verified gross energy savings, after applying the gross realization rates, were then adjusted for ***free ridership and participant like spillover*** in determining total program "net" energy savings. The process used for estimating free ridership was developed by PA's market analytics staff for utilities in Massachusetts and has been used over the past several years for numerous utilities such as National Grid's Design 2000 and Energy Initiative Program. The approach consists of a set of carefully crafted questions to determine free ridership and spillover and to check for the consistency of responses.

Each of the steps in the impact evaluation data collection and analysis are discussed with the results in this section of the report.

4.2 GROSS REPORTED SAVINGS FROM PROGRAM TRACKING SYSTEM

The first step was to review the tracking system data and summarize the participants by type of program and end-use measure or equipment type category as shown in the following table and graph.

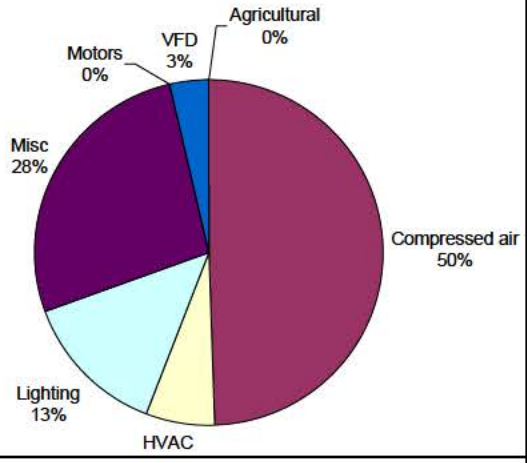
The results of the analysis indicated that the majority (over 57%) of the program reported savings of 28,132,786 kWh for the period from January 2005 through June 2006 came from the custom incentive applications. Pre-established incentive projects account for 22% of the program reported savings. Pre-established incentive projects average just over 35,400 kWh of savings compared to 131,530 kWh per project for Custom Incentive projects and 11,975 kWh per project for Quick & Easy Incentive projects. The Quick &

Easy Incentive projects account for less that 12% of the program reported savings for this period, with the remaining percentage (8.7%) attributed to "Pilot" projects that were implemented in the early stages of the program.

Table 4-2 Program Reported Energy Impacts by Application Type and Equipment Type (All projects from January 2005–June 2006)

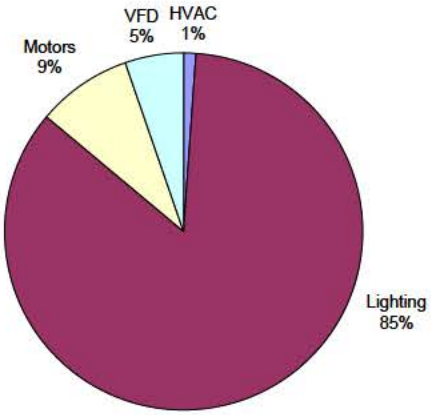
Application/ Equipment Type	Number of Projects	Program Reported kWh	Percent of kWh Savings	Program Reported kW	Percent of kW Savings
Custom					
Agricultural	1	13,069	0.0%	0	0.0%
Compressed air	62	7,929,126	28.2%	718	9.0%
HVAC	6	1,039,639	3.7%	381	4.8%
Lighting	14	2,146,053	7.6%	249	3.1%
Miscellaneous	25	4,356,161	15.5%	3,835	48.3%
Motors	1	2,420	0.0%	0	0.0%
VFD	13	561,071	2.0%	6	0.1%
Total	**122**	**16,047,539**	**57.0%**	**5,189**	**65.3%**
Pre-established					
HVAC	7	68,832	0.2%	89	1.1%
Lighting	154	5,426,709	19.3%	1,166	14.7%
Motors	15	546,462	1.9%	74	0.9%
VFD	4	332,047	1.2%	22	0.3%
Total	**180**	**6,374,050**	**22.7%**	**1,350**	**17.0%**
Quick & Easy					
Agricultural	39	745,120	2.6%	135	1.7%
Appliance	11	90,960	0.3%	15	0.2%
HVAC	25	203,473	0.7%	47	0.6%
Lighting	169	2,182,047	7.8%	803	10.1%
Miscellaneous	2	7,438	0.0%	49	0.6%
Motors	27	40,472	0.1%	13	0.2%
Total	**273**	**3,269,510**	**11.6%**	**1,061**	**13.4%**
Pilot					
Appliance	1	0	0.0%	0	0.0%
HVAC	2	57,353	0.2%	0	0.0%
Lighting	22	2,334,089	8.3%	324	4.1%
Miscellaneous	1	48,330	0.2%	19	0.2%
Motors	3	1,915	0.0%	1	0.0%
Total	**29**	**2,441,687**	**8.7%**	**345**	**4.3%**
Business Program	**604**	**28,132,786**	**100%**	**7,945**	**100%**

Figure 4-1. Custom Incentives Applications Savings by Equipment Type



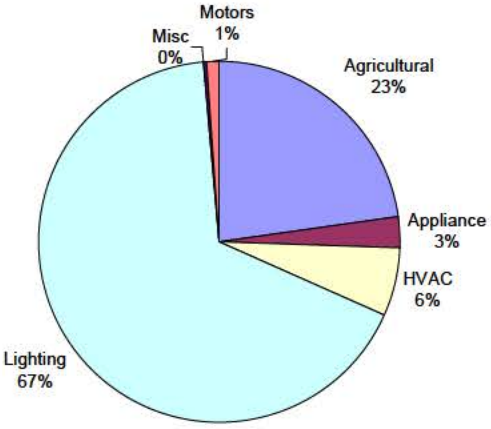
- Just over half of the projects and just less than half of the savings for the custom incentive applications are compressed air projects.
- The miscellaneous ("Misc") category accounts for 28% of the savings resulting from custom incentive projects. This includes projects such as installation of a campus wide building automation system at a private academy, a complete reconfiguration of refrigeration space at a food products warehouse, and upgrades to snow making equipment at a ski resort.
- Lighting projects account for 13% of the custom incentive projects.

Figure 4-2. Pre-established Incentives Applications Savings by Equipment Type



- Lighting projects account for 85% of the pre-established incentive projects
- The remainder of the savings is primarily motors (9%) and VFD's (5%)

Figure 4-3. Quick & Easy Incentives Applications Savings by Equipment Type



- Lighting projects account for 67% of the savings from Quick & Easy incentive projects
- Agricultural projects implementing a variety of measures account for 23% of the savings from Quick & Easy incentive projects

4.3 GROSS ENERGY SAVINGS ADJUSTMENTS BASED ON FILE REVIEWS

The program reported savings estimates from the tracking system were reviewed and adjusted to reflect project file reviews and other information on energy savings calculations. There were at least minor adjustments in kW and or kWh to about 90 percent of the 79 projects from the file reviews with an unweighted impact of +2 percent on the tracking system or reported program savings. At the same time, some of the changes made to individual projects as a result of the project file reviews were adjusted based on data collected on-site so it is important to use both verifications together in developing the final "best" estimate of savings for the projects. The details of the adjustments made by site are included in the appendix.

4.3.1 Program Tracking and Project File Review Methodology

The first step in developing the adjusted gross energy savings for the impact evaluation was to draw a sample from the completed participant surveys for the project file review. The participants who responded to the telephone survey were asked if they would also agree to participate in a site visit.

SAIC reviewed and assessed the technical file information from 79 completed participant surveys. Since two were from the pilot, only 77 were used for the impact evaluation. These 77 projects selected for file reviews represented about 16 percent of the total savings for the program. The sampling was designed to ensure they were representative of the population of projects in terms of application type and end-use measure category.

The file review process began by obtaining available electronic files from the Efficiency Maine online database for the sample projects including the applications, project reports, invoice data, and memos. Two of the program implementers, GDS and ERS, provided additional spreadsheets that were used to calculate the electric savings entered into the database. The review included engineering parameters, manufacturer's product information, support documents, and electronic calculation spreadsheets provided by GDS and ERS. The review process also included relevant applicant responses from the customer phone survey regarding program participation motivation such as if it was for failed equipment.

SAIC reported program savings estimates from the tracking system and any adjusted savings estimates following the file reviews along with the factors that led to the adjustment. The program processes for estimating energy savings were reviewed at the same time.

4.3.2 Calculating Gross Energy Savings

As discussed in the Introduction, customers receive incentives through three distinct process paths: 1) the Small Business Quick & Easy Incentive Program, 2) the Business Pre-Established Incentive Program, and 3) the Business Custom Incentive Program. Each application type has eligibility requirements and provides incentives for a variety of energy efficiency improvement measures. In addition, each application type uses a unique approach for estimating kW and kWh savings.

Small Business Quick & Easy Incentive Program is designed to be a simplified process and to minimize application requirements. The program uses deemed annual energy

savings for individual measures from established publications to determine the annual kWh savings. The deemed kWh savings are available for each measure in the Program and the energy savings are determined by multiplying the deemed savings per unit by the quantity of measures (e.g. lighting fixtures). The demand savings as reported in the database are calculated by dividing the total deemed annual kWh savings by the applicant-reported annual operating hours—therefore reflecting the *average demand savings*, not peak demand. The deemed per unit energy savings are constant per each unit of the measure, and consider a fixed set of operation conditions, including annual operation hours. This approach keeps the energy savings estimating process simplified in that it does not make any project-specific adjustments to the energy savings based on the applicant-reported operations hours.

The **Business Pre-Established Incentive Program** applies a more detailed prescriptive approach. The demand for each *new* technology in the project is calculated by either using a standard reference table (such a lighting fixture wattage look up table) or is calculated based on standard prescribed efficiencies (such as the calculation of motor kW using horsepower and a prescribed efficiency). A predetermined percent demand savings (based on the demand difference between the new technology and the deemed estimates of the average baseline technology demand) is applied to lighting and variable speed drive measures. For lighting measures, the percent demand savings is different for retrofit fixtures and new fixtures because the average baseline fixtures are considered to be different. For premium efficiency motors and high efficiency HVAC equipment calculations, the new and baseline equipment demand is based on equipment capacity and a prescribed set of baseline efficiencies and applicant entered new technology efficiencies. The Pre-Established Program multiplies the demand difference by the measure quantities and *operating hours* to calculate kWh savings. For lighting, motor, and VSD measures, the operating hours are provided by the applicant, but for high efficiency HVAC measures, 777 equivalent full load operating hours are used.

The **Business Custom Incentive Program** uses customized calculations for each energy efficient measure and considers most variables required to calculate the kWh and kW savings. Also the program accepts unique customer or vendor generated calculations that present the project parameters and electric savings.

Lighting Projects

The majority of the lighting projects are implemented through either the Quick & Easy Program or the Pre-Established Program and these program components have different approaches for determining annual energy saving. As a result, SAIC developed an independent spreadsheet to standardize the lighting savings estimates for the impact evaluation. The calculation uses baseline fixtures quantities and fixtures types, installed fixture quantities and fixtures types and estimated operating hours. A comprehensive table of fixtures wattages was used for all kWh and kW calculations.

Since the Quick & Easy and the Pre-Established Program tracks do not provide detailed information regarding the baseline system, it was necessary to establish a protocol to determine the baseline lighting systems. To characterize the baseline conditions and project installation motivations, information from both the application and the applicant responses to the customer phone survey questions were reviewed. Unless specifically indicated on the Quick & Easy Program application baseline information, linear fluorescent lighting systems were assumed to be installed with 34-Watt T12 lamps with efficient

magnetic ballasts (i.e. early replacement baseline). For the Pre-Established Program baseline, linear fluorescent lighting systems were assumed to be installed T8 lamps with electronic ballasts (i.e. new installation baseline) unless specifically identified as a retrofit project, in which case the baseline lighting was assumed as in the Quick & Easy Program evaluation. A protocol was used to consider comparable HID baseline lighting systems for high bay fluorescent fixtures. Compact fluorescent lighting systems were assumed to have replaced comparable baseline incandescent bulbs.

Non-Lighting Projects

File reviews were completed on the following system types;

- Compressed Air Systems (air compressors, air dryers, and receiver tanks)
- Appliances (Vend-misers, Snack Misers, and tankless water heaters)
- Agricultural systems (such as adjustable speed vacuum pumps and scroll compressors)
- HVAC Systems (high efficiency air conditioners, and programmable thermostats)
- Refrigeration systems
- Premium Efficiency Motors
- Variable Speed Drives for Motors

File review evaluations on non-lighting systems were accomplished primarily through adjustments to existing calculations. For example, motor or VSD calculations may have included adjustments for operating hours that appeared too high or low. In rare cases when a method of calculation could not be reviewed or a sensible calculation of relative scale was needed, such as equivalent full load operating hours for an HVAC measure, a parallel calculation using available parameters was done. In instances where supplied simulation calculation reports or monitored data were available, such as from a compressed air analysis report from a vendor, these data were used in the calculation.

Some of the key observations from the file reviews are discussed below.

4.3.3 Summary of File Review Findings and Recommendations

Overall, the program records and data were maintained well and were informative. Savings processes were consistent within each of the program tracks, and the central database tracking system reflected consistent data compared to the project files. Following program specifications, adequate information was available to define the quantities and types of the installed energy efficient measures. Invoices were useful in estimating equivalent baseline wattages of compact fluorescent fixtures in the Quick & Easy and Pre-Established lighting programs. They were also useful in estimating the number of lamps per fixture for the Quick & Easy Program linear fluorescent fixtures.

At the same time, documentation defining the baseline systems often required interpretation. It was often difficult to determine the true baseline in both the Quick & Easy and Pre-Established lighting programs. The applications do not explicitly capture kW and kWh savings in projects where the lighting technology type changes (i.e., when high bay

HID fixtures are retrofit with high performance T5 fluorescent fixtures) or when the fluorescent lamps per fixture are reduced (i.e., when replacing 4-lamp fluorescent fixtures with a 3-lamp fluorescent fixtures). Forms could be modified to allow a better description of the baseline systems. In the file review process, information from the application forms, other file information, and the customer telephone survey responses were used to provide guidance as to whether a measure was a new installation baseline, or an early replacement baseline.

In the Quick & Easy Program, where demand is calculated by dividing the deemed kWh savings by the applicant-reported hours from established references, the average demand results can be misleading. This is especially true when the applicant-reported hours of operation are drastically different than those considered in the deemed kWh value. For example, a motor estimated to save 1,500 kWh on a deemed basis has savings based on a deemed operation time of 6,000 hours per year. At 6000 hours, the average demand would be 0.25 kW (1,500 kWh/6,000 hours). However, using the applicant-reported hours, the average demand reported in the database is 1.5 kW (1,500 kWh/1000 hours). In some cases it was observed that the database kW savings were greater than equipment could be at full load. If a deemed kWh approach to savings is employed, one method to improve this could be to use a corresponding deemed kW to determine the demand savings. The total demand and energy savings could then be calculated by multiplying the corresponding savings by the measure quantity, similar to the process of the Pre-Established Program calculations. Another alternative could be to adjust the kWh savings by a ratio of the assumed operating hours in the deemed values to the applicant-reported hours.

The Pre-Established lighting program applies a deemed percent reduction in the applicant-reported operating hours to calculate lighting control measure savings. However, it is not clear if the operating hours reported on the applications represent the lighting system use with the controls operating, or without the controls operating. The form could be modified to clarify this data.

Lighting control savings under the 2006 Quick & Easy Program application now include separate application inputs for wall-mounted sensors and remote mounted sensors. This is an improvement over the 2005 application form in that the controlled fixtures wattage can be drastically different. The remote mounted sensors include an input for the controlled wattage.

Premium efficiency motor applications could be improved by adding whether variable frequency drive or other control devices will be used to control the motor since the presence of a VSD would impact kWh savings estimates for the motor.

4.4 GROSS SAVINGS ADJUSTMENT BASED ON SITE VISITS

4.4.1 Site Visit Data Collection Methodology

Thirty-six (36) projects were selected as a subset of the 77 file review projects for on-site visits to obtain detailed insight towards project savings estimates. Once again, the sampling strategy was designed to be representative of the population in terms of program application type and end-use category. On-site inspections were scheduled using contact information and associated engineering/program documentation was developed from the application and program files.

The on-site visits were completed during the later part of September. Projects with limited access or contacts that could not accommodate scheduling were substituted with another comparable project based first on program measure type, then by measure savings amount. When possible, projects with larger savings than the project being replaced were selected.

Conduct On Site Data Collection: Site visits were performed to collect data to support engineering estimates of the project savings, and to field verify installation and operating conditions of the project measures. Site visit activities included the following elements:

- Verification of site information,
- Verification of measure installation, quantities, ratings, and usage,
- Collection of basic facility characteristics,
- Collection of engineering level information to determine energy and demand impacts, and
- Identification of additional opportunities for energy savings.

During the site visits, the participants were interviewed regarding general operations at the site and asked why they had installed the project measures. They also were asked if any changes had occurred since the installation of the project measures. In cases where the project implementation decision makers were not available on-site, a telephone interview was conducted. Characteristics of the baseline equipment and operations were investigated. The installed project measures were observed. The basic facility characteristics, equipment quantities, hours of operation, equipment loading parameters, nameplate data from equipment, and available documents that could support engineering level estimates of electric savings calculations were collected. Observations of other electric energy saving opportunities not yet implemented were also noted. These included measures such as vending machine controls, premium efficiency motors applications, variable speed drive applications, lighting system opportunities, high efficiency cooling equipment, and heat exchangers

Data Analysis and Site Savings Estimates: SAIC reviewed site-specific measure savings estimates for the projects selected for on-site visits. Data gathered during the on-site visits were used to better estimate the energy and demand impacts (savings) resulting from the installation of project energy saving measures. General findings from the on-site inspections, along the adjusted energy and demand savings analysis, were reported. The engineering parameters were also reviewed based on the on-site assessments. Data collected during the on-site visits were used to update the file review calculations to develop site review-based savings estimates. Hours of operation, part load estimates, equipment quantities, log records, specific efficiencies, and historical trend data were all used to support and update the file review kW and kWh savings calculations to obtain the most reasonable assessment of savings.

Document Results: The overall factors that affect the engineering estimates, specific data and analysis methods were determined and summarized. A spreadsheet presenting the individual site energy savings data was developed that contained the estimated savings at the file review and at the on-site review level along with notes that describe the causes for differences in the estimates. An assessment of additional energy electric savings

opportunities observed during the on-site visits was also provided. These details are provided in the appendices.

4.4.2 Summary of On-Site Review Findings and Recommendations

Overall, the site reviews found that the type, scale, and general characteristics of the measures at the sites were properly reflected in the program documentation. As expected, the most complete project information was available in the Business Custom Incentive projects, and the least project details were available for the Small Business Quick & Easy Incentive projects. (For example, the simplified design of the Quick & Easy program application does not differentiate between 3- and 4- lamp fluorescent fixtures.)

Lighting Projects

Site review proved very useful in determining how the lighting systems and fixtures were actually installed and used for the project. For several lighting projects, factors to account for diversity in operating hours within a project were estimated and applied to savings estimate calculations. The operating hours of several projects were reduced because portions of the project area were not being fully occupied or included occupancy sensor controls. In at least one of the projects, the tenant reduced the number of lamps per fixture and other fixtures were not being operated to reduce the lighting levels.

In both the Quick & Easy and Pre-Established lighting programs, the project fixtures may not have a direct one to one correspondence with baseline fixtures. For instance, the quantity of baseline fixtures of one project was twice that of the installed new fixtures as described by the customer. Three-lamp fixtures also replaced four-lamp baseline fluorescent fixtures.

However, while these above instances were found in the site reviews, they are not indicative of any program shortcoming, but are simply reflective of changes that occur in typical projects.

Non-Lighting Projects

For projects other than lighting, the site reviews affirmed system operations data to provide a sound basis for adjustment of the estimates. The visits sometimes revealed special site conditions that were not totally reflected in the savings estimates. The majority of the non-lighting projects were through the Custom Incentives path where a specific energy calculation was done for the project. Overall, these calculations were found to accurately reflect the measures; however, adjustments were most often made to reflect specific on-site conditions and operations of the measures as illustrated below.

- Since **compressed air projects** make up some of the largest savings for the Efficiency Maine Business Program, special attention was made to attempt to determine the loading profiles for the compressed air equipment. For two projects, the compressed air operators knew with significant confidence the system sequence of operation and typical operating speeds at different times of the day. Adjustments were made to the site review calculations to reflect this information. In one case, when the updated calculations were compared to the file documents, the compressor was now found to be more fully loaded. A call back to the operator confirmed this when he stated that two large injection-molding machines had been added to the production

line. As is currently being done by the Program, a review of custom measure calculations is necessary due to the complexity and variety of submitted calculations. However, one recommendation for compressed air (and variable speed drive) projects would be to have the application specifically request the baseline system control type and a brief statement regarding the basic sequence of operation for staging of multiple pieces of equipment.

- Historical flow data and daily motor operating hours were used to develop a daily load line model for estimating the savings of a new motor installed on an existing variable speed drive.
- The owner of a renovated mill was in the process of installing several of many small unit heaters throughout the seven story building with the intent of eventually removing the multiple air handling systems served by steam heating coils and large horsepower supply fans. The ten project unit heaters were modeled to provide the equivalent capacity for two floors of the mill. Therefore, the baseline supply fan system capacity was reduced to the supply fans on only the two floors and not the entire building.
- Dairy farmers knew with confidence the number of hours the adjustable speed driven vacuum pumps were operated for milking, sanitizing, and washing, but did not know the typical loading or speed for these operations. During milking, an estimate of average speed was developed from the drive display. Both farms that were visited with new variable speed vacuum pumping systems had left the baseline constant speed system in place as backup. The dairy farmers were aware of approximate refrigeration compressor run time.

4.5 ADJUSTED OR VERIFIED GROSS SAVINGS ESTIMATES

The “best” estimates (based on project file review and site visit, if applicable) were developed for each of the 77 projects in the sample. Realization rates were calculated and applied to the total program savings estimates from the tracking system. The gross realization rate for the overall program kWh savings is 1.08, which results in a total program adjusted or verified gross savings estimate of 30,518,964 kWh of annual energy savings. The gross realization rate for the kW demand reduction is 0.84 resulting in verified gross demand savings of 6,663 kW. These savings will continue over the useful life of the installed equipment that can range from five years to more than twenty years.

The following table summarizes the verified gross savings estimates for the program, applying the gross realization rates by application type to the program reported savings to provide verified gross energy impacts for the Program.

While there are downward adjustments to energy savings estimates for the custom incentive and the quick and easy incentive application projects, these are more than offset by the upward adjustment of the pre-established incentive application projects.

The downward adjustments to the energy demand estimates for the custom incentive and quick and easy incentive application projects are quite significant (over half of the demand impact for the quick and easy application projects). While the pre-established incentive application projects are adjusted up, it is not enough to offset the downward adjustments for the other application types.

Table 4-3. Verified Gross Annual Energy and Demand Impacts from the Efficiency Maine Business Program by Application Type for the Period January 2005–June 2006

Application Type	Number of Projects	Program Reported kWh	GRR kWh	Verified Gross kWh	Program Reported kW	GRR kW	Verified Gross kW
Custom Incentive	122	16,047,539	0.98	15,721,113	5,189	0.78	4,042
Pre-Established Incentive	180	6,374,050	1.46	9,327,815	1,350	1.34	1,810
Quick & Easy Incentive	273	3,269,510	0.86	2,821,248	1,061	0.49	522
Pilot	29	3,269,510	N/A*	3,476,547	345	N/A*	289
Business Program	**604**	**28,960,608**	**1.08**	**30,518,964**	**7,945**	**0.89**	**6,663**

* The GRR for the Business Program was applied to the pilot project

Table 4-3 provides information on the adjustments to the energy savings estimates for each equipment type within each application type. This information is for informational purposes only. The realization rates are applied at the application type level to calculate the net-to-gross ratio for the Program. This shows that for the Custom applications the energy savings estimates for compressed air, the most common equipment type installed, the energy savings tends to be overestimated and the energy demand tends to be underestimated in the tracking system. The custom incentive downward adjustments are primarily due to large compressed air system projects that had changes in loading and differences in calculations found in the file review.

For Pre-established applications the energy savings and demand impacts are significantly underestimated, while for the Quick & Easy applications the energy savings and demand impacts tend to be underestimated.

The quick and easy incentive downward adjustments are driven by several large lighting projects with changes in operating hours. The upward adjustment to pre-established were primarily influenced by some large changes in lighting savings after file review and on-site data collection.

Table 4-4. Gross Realization Rates (GRR) by Application Type and Equipment Type*

Application/ Equipment Type	N	Program Reported kWh	Best kWh*	GRR kWh	Program Reported kW	Best kW*	GRR kW
Custom							
Compressed air	14	2,163,898	1,992,514	0.92	152.4	185.0	1.21
HVAC	1	97,269	97,269	1.00	0.0	11.4	N/A
Lighting	2	756,120	756,120	1.00	86.8	86.9	1.00
Miscellaneous	3	188,182	233,142	1.24	159.6	26.9	0.17
VFD	1	20,153	80,964	4.02	0.0	0.5	N/A
Total	**21**	**3,225,622**	**3,160,009**	**0.98**	**398.8**	**310.7**	**0.78**
Pre-established							
HVAC	1	5,958	5,618	0.94	7.7	7.2	0.94
Lighting	21	953,924	1,413,309	1.48	233.8	321.8	1.38
Motors	1	13,674	5,780	0.42	5.5	2.1	0.39
Total	**23**	**973,556**	**1,424,707**	**1.46**	**246.9**	**331.1**	**1.34**

Quick & Easy							
Agricultural	5	67,641	63,987	0.95	20.4	0.5	0.03
Appliance	1	6,462	6,462	1.00	0.0	0.0	N/A
HVAC	2	19,620	14,424	0.74	4.2	4.2	1.00
Lighting	20	295,000	256,480	0.87	124.4	96.6	0.78
Motors	5	22,859	13,800	0.60	8.3	-23.9	-2.88
Total	**33**	**411,582**	**355,153**	**0.86**	**157.3**	**77.4**	**0.49**
Business Program*	**77**	**4,610,760**		**1.08**	**803.0**		**0.84**

*The realization rates are presented at this level of detail for informational purposes only. The realization rate applied for purposes of calculating verified gross impacts is at the application type level.

4.6 PARTICIPANT FREE RIDERSHIP AND SPILLOVER EFFECTS

The next step in the process is to estimate free ridership and spillover. These factors are then applied to the adjusted or verified gross savings to estimate net program savings for participants in the program.

4.6.1 Free ridership Definition and Methodology

A program's ***free ridership rate*** is the percentage of program participants deemed to be free riders. A ***free rider*** refers to a customer who received an incentive through an energy efficiency program who would have installed the same or a smaller quantity of the same high efficiency measure on their own within one year if the program had not been offered. For free riders, the Program is assumed to have had no influence or only a slight influence on their equipment purchase decision. Consequently, none or only some of the energy savings of equipment purchased by this group of customers should be credited to the energy efficiency program. Free riders account for costs but not benefits to the program, driving benefit-cost ratios down.

For programs that offer monetary incentives for multiple measure categories (e.g., motors, lighting, HVAC), it is important to estimate free-ridership by specific measure category when the number of sample points allow calculations at the measure level. The participant survey for this evaluation of Efficiency Maine's Business Program used the census of program participants from the last 18 months in estimating free-ridership and spillover. In that context, there were 228 customers who completed surveys for 253 projects out of the 604 projects. These respondents represented 53% of the energy savings. Given that there are three distinct program approaches (Custom, Quick & Easy, and Pre-Established) that may affect free ridership, we felt it was important to estimate free ridership at that level. In many cases, the number of completed projects was not sufficient to make meaningful estimates of free ridership at the equipment level within each of those application-types.

It is also important to measure the *extent* of free-ridership for each customer. Pure free riders (100%) would have installed exactly the same quantity and type of equipment within one year in the absence of the program. Partial free riders (1–99%) are those customers who would have installed some equipment within one year on their own, but a smaller quantity and/or a lesser efficiency. Thus, the Program had some impact on their decision.

Non-free riders (0%) are those who would not have installed any high efficiency qualifying equipment within one year in the absence of the program services. The total free-ridership estimates in this report include pure, partial, and non-free riders.

PA's approach to estimating free riders follows the approach outlined in the Massachusetts Standardized Methods report, which consists of a sequential question technique to identify free riders. This sequential approach asks program participants about the actions they would have taken if the program had not been offered. This approach is considered an accurate method of estimating the actual level of free-ridership among program participants because it addresses the program's impact upon project timing, measure quantity, and efficiency levels while explicitly recognizing that the cost of energy-efficient equipment can be a barrier to installation in the absence of utility-sponsored energy efficiency programs. This method is also recommended because it walks survey respondents through their decision process with the objective of helping them recall the program's impact upon all aspects of project decision-making.

4.6.2 Participant "Like" Spillover Estimates Methodology

Spillover refers to additional energy-efficient equipment installed by a customer due to program influences but without any financial or technical assistance from the Program. ***Participant "like" spillover*** refers to the situation where a customer installed equipment through the program in the past year and then installed additional equipment of the same type due to program influences. In contrast to free-ridership, spillover adds benefits to the program at no additional cost, increasing the program benefits and benefit-cost ratio.

Survey free-ridership questions were followed by questions designed to measure "like" spillover. These questions asked about recent purchases (since program participation in 2005-2006) of any additional energy-efficient equipment of the same type as installed through the Program that were made *without* any technical or financial assistance from the utility. A "like" spillover estimate was computed based on how much more of the same energy-efficient equipment the participant installed outside the program and did so because of their positive experience with the program.

One of the issues with attempting to quantify spillover savings is how to value the savings of measures installed outside the Program since we are relying on customer self-reports of the quantity and efficiency of any measures installed. *We used a conservative approach and reported only those measures installed outside the Program that were of exactly the same type and efficiency as the ones installed through the Program.* Our conservative approach allowed customers to be more certain about whether the equipment they installed outside the Program was the same type as the program equipment. This, in turn, makes it possible for us to use the estimated program savings for that measure to calculate the customer's "like" spillover savings.

Table 4-5 presents the free ridership and spillover rates by application type for energy and demand savings. The free ridership rate for the custom incentive projects is lowest of the three application types at 23%. This is just slightly lower than the 27% free ridership rate for custom compressed air projects, which accounts for approximately half of the energy savings from custom incentive projects.

The free ridership rate for the pre-established application type is just slightly higher than the custom application type at 27%. This is driven by the lighting equipment which had a

free ridership rate of 28% and accounts for over 85% of the energy savings from pre-established applications. Other types of equipment installed through pre-established applications include HVAC, motors, and VFD's.

The quick & easy applications had the highest level of free ridership at 42%. Like the pre-established applications, this is also driven by the lighting equipment which had a free ridership rate of 52% and account for approximately 67% of the energy savings from quick & easy applications. Other types of equipment installed through quick and easy applications include agricultural measures, appliances and motors.

Participant Like Spillover was only realized from the compressed air equipment for custom incentive participants and lighting equipment for pre-established and quick & easy incentive participants.

Table 4-5 Free Ridership and Spillover Rates by Application Type

Application Type	N Surveyed	Gross kWh Surveyed	Free Rider Rate kWh	Spillover Rate kWh	Free Rider Rate kW	Spillover Rate kW
Custom	63	11,007,840	0.23	0.01	0.22	0.00
Pre-established	77	2,364,510	0.27	0.04	0.26	0.04
Quick & Easy	113	1,444,146	0.42	0.02	0.37	0.07
Business Program	**253**	**14,816,496**	**0.27**	**0.02**	**0.25**	**0.02**

4.7 NONPARTICIPANT SPILLOVER ESTIMATES

It is important to recognize that the additional energy savings from market effects of the Program, including nonparticipant spillover, are not captured in the impact evaluation. Additional research would be needed to quantify nonparticipant spillover. There is strong evidence that the Program has impacted the market and should be credited with additional energy savings as discussed later in the chapter.

Nonparticipant spillover refers to energy efficient measures installed by program nonparticipants due to the Program's influence. The Program can have an influence on design professionals and vendors as well as an influence on product availability, product acceptance, customer expectations, and other market effects, all of which may induce nonparticipants to buy high efficiency products.

The data to estimate nonparticipant spillover can be collected from nonparticipants directly or from the design professionals and vendors who recommended, sold, and/or install qualifying high efficiency equipment. PA's approach for other studies was to survey the design professionals and vendors primarily because they can typically provide much more accurate information about the efficiency level of installed equipment than can the customers themselves. Our past experience has shown that customers cannot provide enough data about the new equipment they have installed to allow for accurate estimates of the energy savings achieved from the equipment. While they usually can report what type of equipment was installed, they typically cannot provide sufficient information about the quantity, size, efficiency, and/or operation of that equipment to allow us to determine

whether the equipment is "program-eligible." On the other hand, design professionals and equipment vendors who have worked with programs are typically more knowledgeable about equipment and are familiar with what is and is not "program-eligible."

To determine nonparticipant spillover, design professionals, and equipment vendors would be asked (by measure category they installed in the program) what percent of their sales were program-eligible and what percent of these sales did not receive an incentive through the Programs. We would then ask about the program's impact on their decision to recommend/install this efficient equipment outside the Program. Using the survey responses and measure savings data from the program tracking system, the participating vendor nonparticipant like spillover savings could be estimated for each design professional/vendor and the results extrapolated to the total program savings.

However, again this method of estimating nonparticipant spillover would be a *conservative* estimate for two reasons. First, not all design professionals and equipment vendors will be familiar with the Program installed equipment. Thus, we would miss any nonparticipant spillover that was associated with these other design professionals/vendors (although it is less likely these design professionals/vendors had nonparticipant spillover if they were not involved with the Program). PA has recently been involved in two nonparticipant spillover research studies. In these studies, additional savings from nonparticipants spillover ranged from two to five percent.

4.8 "NET" ENERGY AND DEMAND SAVINGS ESTIMATES

The estimates of participant free ridership and spillover were applied to the adjusted or verified gross savings estimates. These represent total program impacts for the participants in the Program. The following table indicates that the energy impacts realized through the Program are just over 80 percent of the gross savings recorded in the tracking system. This is the net realization rate also referred to as the net-to-gross ratio. This is based on the gross realization rate discussed above and the attribution rate which is equal to 1-(free ridership rate + spillover rate) and indicates the proportion of the energy impacts that are attributable to the program initiatives.

Looking more closely at the numbers for the Program, the net realization rate for the energy savings ranges from 0.52 for the quick & easy incentives to 1.13 for the pre-established incentives. Attribution rates for the custom incentive and pre-established incentive application types are similar at 0.78 and 0.79. While the attribution rate for the quick and easy applications is 0.60, indicating that 40% of the energy impacts from the projects installed through that program would have occurred even if the quick & easy incentives were not offered. In that context, further analysis should be done to determine standard practice for lighting equipment being promoted through the Program.

Table 4-6. Net Energy Savings (kWh) Impacts by Application Type

Application Type	Number of Projects	Program Reported kWh	GRR kWh	Verified Gross kWh	Attribution	Net kWh	Net Realization Rate
Custom Incentive	122	16,047,539	0.98	15,721,113	0.78	12,314,330	0.77
Pre-Established Incentive	180	6,374,050	1.46	9,327,815	0.77	7,199,044	1.13
Quick & Easy Incentive	273	3,269,510	0.86	2,821,248	0.60	1,690,902	0.52
Pilot	29	2,441,687	N/A*	2,596,304	N/A*	1,974,148	0.81
Business Program	**604**	**28,132,786**	**1.08**	**30,518,964**	**0.76**	**23,219,535**	**0.83**

* The GRR for the Business Program was applied to the pilot project

The components of the attribution rate are free ridership and spillover. It is important to note that the attribution rate as reported here only includes participant like spillover and does not recognize the overall market effects including nonparticipant spillover that were not captured by this impact evaluation. Measurement of nonparticipant spillover would very likely result in an increased attribution rates.

The net realization rate for the demand savings ranges from 0.34 for the quick & easy incentives to 1.04 for the pre-established incentives. Attribution rates for the custom incentive and pre-established incentive application types are similar at 0.78 and 0.78. While the attribution rate for the quick and easy applications is 0.70, indicating that 30% of the energy impacts from the projects installed through that program would have occurred even if the quick & easy incentives were not offered

Table 4-7 Net Energy Demand (kW) Impacts by Application Type

Application Type	Number of Projects	Program Reported kW	GRR kW	Verified Gross kW	Attribution	Net kW	Net Realization Rate
Custom Incentive	122	5,189	0.78	4,042	0.78	3,170	0.61
Pre-Established Incentive	180	1,350	1.34	1,810	0.78	1,409	1.04
Quick & Easy Incentive	273	1,061	0.49	522	0.70	364	0.34
Pilot	29	345	N/A*	289	N/A*	224	0.65
Business Program	**604**	**7,945**	**0.84**	**6,663**	**0.78**	**5,167**	**0.65**

While it is always difficult to make comparisons between energy efficiency programs because of differences in approaches, markets, objectives, budgets, and other factors, it can be helpful for putting numbers into perspective.

Spillover for the Wisconsin Focus on Energy business program is conservatively estimated to be about 1.5% of verified gross savings, but the high end estimate is as much as 15% of verified gross savings. However, these savings are not included in the reported net energy impacts, but are reported separately as non-tracked impacts. Table 4.4 below shows the realization rates for Wisconsin Focus on Energy's business program reported by sector. These rates are significantly lower than those for Efficiency Maine.

Table 4-8. Realization Rates for Wisconsin's Focus on Energy Business Program by Sector

Sector	Realization Rate (kWh)	Realization Rate (kW)
Agriculture	.40	.30
Commercial	.47	.44
Industrial	.41	.38
Institutional	.46	.46
Overall	**.43**	**.41**

Source: Focus on Energy Public Benefits Evaluation Semiannual Report (FY06, Year-end)

Below is a table presenting NYSERDA's equivalent of a realization rate. Their report shows reported impacts, adjusted impacts and the percent of adjusted to reported. Overall, their realization is higher than Efficiency Maine, but the rates for energy savings range 64.5 for their Smart Equipment Choices program to 129.4 for their New Construction Program.

Table 4-9. Adjusted Impacts as a Percentage of Reported Impacts for NYSERDA's Business and Institutional Programs

Program	Adjusted as % of Reported (kWh)	Adjusted as % of Reported (kW)
New Construction Program	129.4	129.6
C/I Performance Program	98.7	74.5
Peak Load Reduction	103.4	97.4
Technical Assistance	113.2	113.2
Enabling Technologies	N/A	65.9
Smart Equipment Choices	64.5	64.8
Energy Smart Loan Fund	78.6	127.7
Premium Efficiency Motors	88.6	70.2
Small Commercial Lighting	109.2	109.2
Hospitality Lighting	100.0	100.0
Overall Business & Institutional	**96.9**	**88.0**

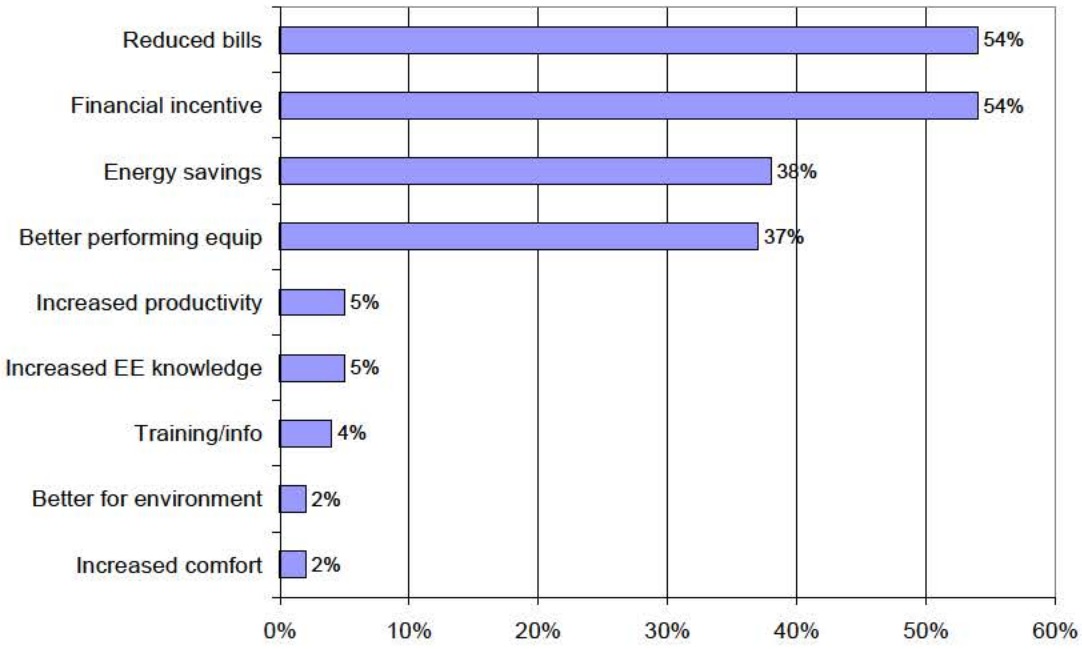
Source: New York Energy Smart Program Evaluation and Status Report May 2006

4.9 PROGRAM NON-ENERGY BENEFITS

Participants are realizing non-energy benefits from the Program with better performing equipment topping the list.

When asked about the main benefits their business received from participating in the program, energy and monetary savings did top the list, as normally seen for energy efficiency programs. Over half of participants said reduced bills or the financial incentive was one of the main benefits they received. Over a third reported energy savings. However, respondents also reported several non-energy benefits of program participation. The most often reported non-energy benefit was better performing equipment, reported by over a third of respondents. Other non-energy benefits included increased productivity, increased energy efficiency knowledge, more training/information on equipment, operations that are better for the environment and increased comfort (Figure 4-4).

Figure 4-4
Efficiency Maine Business Program Benefits to Participants (n=228)



Source: Efficiency Maine Business Program participant surveys, July–August 2006, QS4

4.10 PROGRAM MARKET EFFECTS

Program ally interviews indicate market effects in high efficiency lighting on both the supply and demand side. The market effects were not measured by this evaluation but could result in additional energy savings from nonparticipants that were not captured by the impact evaluation.

Interviewed program allies reported that Efficiency Maine is directly resulting in an increased number of energy efficiency projects being implemented in Maine.

"*The program is having a significant effect on pulling inefficient equipment out of the field*."—Key Ally

Ally interviews also indicate that there are improvements in the Maine energy efficiency market both on the supply and demand side. This is most apparent in efficient lighting. According to interviewees, manufacturers and distributors have increased their inventory of energy efficient lighting equipment. For example, one ally reported that their manufacturer has changed their procedures from hand-punched to machine-punched energy efficiency bulbs, making them much more affordable. Lighting allies report they are stocking and selling many more high efficiency lights and ballasts now.

Program impacts, however, are much more limited for non-key allies. Non-key allies report little inventory or project changes resulting from the program.

As discussed above, allies believe the program, and other energy efficiency marketing efforts, over the years have now made customers much more receptive to high efficiency equipment.

"*One thing that has definitely changed in the last few years is that customers are on board with energy savings. We no longer have to sell the value of energy efficiency*."—Non-key Ally

It was specifically reported that the program is definitely moving the market toward T5s.

"*T-5s are becoming a much easier sell. We can't keep T5 hybrids on the shelf now*." —Key Ally

It was also reported that IOP ballasts are also coming close to standard practice for new construction.

5. CONCLUSIONS AND RECOMMENDATIONS

Efficiency Maine is successfully raising awareness of energy efficiency and getting energy efficiency projects implemented. There are several quantitative indicators of program success including:

- The annual increase in customer projects since the Program began
- A strong program ally infrastructure to deliver the Program that covers the state and a range of customers and equipment types
- High customer and program ally satisfaction with the Program
- Significant energy impacts
- Evidence of non-energy benefits resulting to customers
- Evidence of market effects, particularly in energy efficient lighting

5.1 RECOMMENDATIONS

The evaluation results suggest the Program is making significant progress in meeting the Program's goals outlined in the Introduction to this report. The Efficiency Maine Business Program is still a relatively new program and interviewees indicate the Program has greatly improved during its first three years. At the same time, free ridership is fairly high for some sectors and some program improvements were identified in both program processes and energy impacts.

In general the evaluation results indicate the Program is "on the right track." Given the energy environment of the next upcoming years and the increasing applicant numbers with stable Program funds, we believe the greatest challenge the Efficiency Maine Business Program faces is being able to effectively, efficiently and equitably serve Maine businesses.

Given this environment, we offer the following recommendations for policy makers and program managers to consider based on the key findings discussed in this report.

1. **Review the Program's goals, clearly communicate the Program's goals to the implementation team, and make sure the Program design is in-line with meeting those goals**. The clear definition and prioritization of program goals must be the first step in setting the stage for program refinements and strategies for going forward. This is particularly true for balancing market transformation and resource acquisition goals as well as any possible demand reduction goals down the road. For example, there is clear evidence that the Program's current design is not resulting in a holistic treatment of customer facilities. At the same time, the Program's design is capturing the highest energy savings projects. From a resource acquisition point of view, the lost opportunities are not significant missed energy savings. However, from a market transformation point of view, the Program is losing opportunities to educate customers about the range of energy savings potential in their facilities, particularly for those measures that may be cost-effective but not large enough projects on their own.

2. **Enhance the energy efficiency project information provided to customers by the Program.** The results of the interviews with program staff, program allies and customers all support the need for objective energy efficiency project information for customers. This is the program design element customers were most interested in when surveyed. Increasing project information provided by the Program could also decrease program free ridership while increasing the Program's total net energy impacts. Customers who do not need additional information on the equipment or project and are confident in their decision may go forward without the Program, but take advantage of the incentive ("free riders"). However, there is another group of customers who need more reassurance and objective proof about the benefits of the energy efficient equipment before going forward with the projects. These customers who are convinced to move forward as a result of project information as well as the incentive are not free riders.

3. **Increase marketing activities to business customers and take the Efficiency Maine message beyond just money savings to promote other benefits of energy efficiency including positive impacts on the environment.** Given that the Program is not oversubscribed in terms of program budget, both customer and program ally participation can be increased through more direct marketing of the Program to customers. The Program would benefit from a market push-pull strategy if the objective is to transform the market to more efficient equipment. At the same time, the marketing should build upon already available effective venues such as sector-specific case studies, the Efficiency Maine newsletters, and Efficiency Maine representatives out in the field. The customer marketing should also reflect key messages that go beyond saving money. The nonparticipant survey showed that customer motivators for energy efficiency projects include the importance of saving energy and the benefits to the environment.

4. **Continue to streamline the application process by creating an on-line application, adding more 'prescriptive' measures, and reducing the paperwork that must be completed multiple times by the participating program allies.** Although it was reported the program application process has improved, it still remains a barrier to greater participation on the part of some customers and non-key program allies. Program staff and allies both advocate an on-line application, which could also increase participant satisfaction with the Program and decrease administrative costs. Some participants were not satisfied with the time it took them to get their incentive because the application was returned because of incomplete information. In addition, it takes staff time to process and return incomplete applications. An on-line application can be designed and structured so that all pieces of required information have to be submitted. Program allies also reported having to submit the same cut-sheets multiple times. Allowing program allies to submit 'cut-sheet' templates that they can then refer to on program applications could reduce paperwork.

5. **Consider *defining* and *serving* small business customers based on energy use instead of number of employees and through a direct install program.** Small businesses are defined for the Program as 50 or less employees as defined by the National Small Business Association. A positive benefit of this definition is that it is based on information that the MPUC can readily obtain and verify from customers and also allows coordination with other small business programs. To a large extent, this definition also overlaps with small energy users. The Program could continue defining small businesses based on 50 or less employees, but allow customers to be identified

as a small business if they meet a criterion for energy consumption. The customer would be required to submit energy bills to confirm that they are a small business in terms of energy usage. The level of energy usage defining a small business will need to be defined by the MPUC but could be based on criteria used by other similar Programs. A direct install program should be considered if there is a need to encourage more small businesses to participate. Small business customers had the least amount of interest in the Program and the most barriers to participating in the Program of the different customer segments interviewed. The Program strives to overcome these barriers through intensive fieldwork and handholding of small business customers. A direct install program may be a more cost-effective strategy for small business customers since they did indicate significant interest in a direct install program. This type of strategy, however, will need to be guided by the Program's goals. While a direct install program is likely to increase the Program's energy savings objectives and encourage more participation by small customers, it may decrease the Program's market effects.

6. **Address the gaps in program participation for types of customers served and types of projects implemented.** This evaluation effort did not include a thorough gap analysis, which Efficiency Maine might consider conducting in the near future. A gap analysis would include more in-depth analysis of the type of customer segments, regions served and measures implemented by the Program and identify 'gaps' that need to be addressed. The evaluation's comparison of program participants to the population of Maine's businesses did show that there are several business sectors that could be better targeted through the Program. In addition, the qualitative assessment of the program ally infrastructure showed that some types of firms are less represented than others among program allies. For example, if the program objectives include increasing a new construction component of the Program, the Program would need to expand the participation of A&E firms.

7. **Explore program strategies to further reduce the identified barriers to increased participation (beyond the application process) such as upfront capital costs, lack of awareness of energy efficiency and benefits of increased efficiency, and product availability.** Cost concerns continue to be the largest barrier to implementing energy efficiency projects. In addition to the incentive, the Program is partnering with banks to offer financing options for Efficiency Maine projects that waive the lender processing fee. To date, participation in these programs has been limited. The Program may want to consider an interest rate buy-down program used by other state programs such as NYSERDA and utilities such as MidAmerican Energy. In any event, further research should be conducted on different financing strategies to overcome the first cost barrier. Barriers that include lack of awareness of energy efficiency and the benefits of increased efficiency could be addressed by expanded technical information provided by the Program as recommended above. There is some evidence that the Program is having a positive effect in reducing product availability barriers but these effects should be measured to see whether more could be done.

8. **Review the program staffing needs and consider using external contractors to fill gaps such as oversight of evaluations.** The Program has had several positive developments in terms of staffing including more Efficiency Maine field staff and a supporting outreach position at the MPUC to handle press releases for the Program. These have most likely helped raise awareness of the Program. The Program's staffing needs should continue to be assessed periodically and addressed when

needed to make sure the Program does not lose its momentum. A deficiency on the MPUC staffing that remains is an evaluation expert that is not involved in program administration or implementation. Because of the importance of evaluation to public benefits energy efficiency programs to improve programs and objectively assess programs' progress towards goals, the MPUC should consider adding an evaluation expert. The evaluation oversight position could be filled by an in-house staff person, which is the approach used by Wisconsin Focus on Energy, or an outside consultant, which is Efficiency Vermont's approach.

9. **Explore ways to reduce missed opportunities for additional energy savings at participating customer sites.** While the potential for additional opportunities found in the on-site inspections was limited in terms of energy savings, there are instances where they exist. The Program should consider ways for the program allies to be encouraged to promote measures that extend beyond their specific products. Educating the program allies about the variety of energy efficiency measures that are eligible for incentives through Efficiency Maine and possibly providing a networking medium for cross-education could increase energy efficient product penetration. Another way to encourage installation of multiple efficiency technologies installation is to change the incentive structure to encourage cost-effective multi-technology measures installations at the same site.

10. **Consider a study to review customer standard practices for purchasing efficient equipment for sectors or equipment where estimates levels of free ridership are increasing.** One effective way to decrease free ridership is to understand what is standard practice in Maine for different customer segments and not provide incentives to those customers for efficient equipment that is standard practice. Custom and pre-established projects can be screened based on payback but does not work for the quick & easy application type. The quick & easy application has the highest level of free ridership at 42% and it is driven by lighting equipment, which makes up the majority of the savings for that application type. The eligible measures should be reviewed in the context of current standard practice and incremental costs to decide whether changes in incentives for various equipment are appropriate.

11. **Implement a study or add to the evaluation work scope to assess nonparticipant spillover and market effects of the Program.** The evaluation has enough qualitative evidence of Program's market effects that it would be worthwhile for the MPUC to fund a study to quantify the Program's market effects so that the Program can claim additional savings for these effects. In addition to quantifying nonparticipant spillover energy savings, the study should examine other market effects or trends that cannot be directly attributed to specific energy savings. These include increases in awareness of energy-efficient measures, increased marketing of measures, greater availability of energy-efficient equipment, decreased cost, and other factors that show evidence of market transformation.

12. **Review procedures for estimating and tracking energy savings to make improvements based on the findings of the project file review and site visits.** The evaluation project file review and the site visits identified the need to review current procedures and data used to calculate project energy savings as follows:

Lighting

- Q-E: Based on program track ease of use philosophy, increase baseline fixture details that correspond with the new project, i.e., break out incandescent lamp wattages, number of lamps per fixture, etc.
- P-E: Provide additional space to enter quantity and type of baseline fixtures to capture fixture reduction and fixture technology changes.
- P-E: Clarify the title on the reported hours of operation on the Lighting Controls Calculation Worksheet. The title should request the reduced annual hours of operation resulting for the installation of the lighting control.

Motors

- Q-E: Use applicant reported hours of use and a deemed kW to determine savings. Request limited baseline nameplate data similar to the P-E motot program (make model, serial number, motor type, horsepower, RPM, efficiency, and function. Request baseline control type.
- P-E: Request limited baseline nameplate data similar to the P-E motor program (make model, serial number, motor type, horsepower, RPM, efficiency, and function. Request baseline control type.

Compressed Air Systems

- Custom: Request the sequence of operation and existing control of the baseline system.

All programs: Ask the question: Why are you installing the energy efficiency equipment? This can assist in estimating baseline assumptions.

In addition, there are a number of opportunities for improvement that were identified in using the program tracking system for the customer surveys and other elements of the evaluation. Some of the key suggestions include:

- Have separate fields for the application type and the equipment type and make them required fields
- Populate the date fields—an installation date would have been helpful for this project in helping participants reference the project we were discussing
- Capture total project costs—this is an important input into many Benefit/Cost tests
- Add a function to the web interface that will allow data such as dates, cost, and kWh to be downloaded from the tracking system along with the contact information.

APPENDIX A: PRIMARY DATA COLLECTION INSTRUMENTS

This Appendix contains primary data collection instruments.

Efficiency Maine
Business Program Process and Impact Evaluation
Program Design and Delivery Staff Interview Guide
May 2006

I. Roles and Responsibilities

A. What are your responsibilities regarding this Program? What role do you play, if any, in:

- planning, designing, managing, and implementing the program,
- planning, designing and disseminating program information
- marketing the Program to trade allies
- marketing the Program to customers
- establishing cash incentive levels
- assisting trade allies
- assisting customers
- estimating and tracking the energy impacts of the Program, and
- other aspects of the Program?

13. Who do you interact with regarding this Program and what are their responsibilities? Are responsibilities well-defined?

B. Do you feel you have sufficient resources to conduct your responsibilities related to the program? What additional support (staff, budget, training, software, equipment, etc.) would be helpful?

II. Program Goals and Objectives

A. What are Efficiency Maine Business Program's formal goals and informal goals (no targets, but generally understood program ambitions) and objectives for the Program?

B. Are these goals reasonable? Why or why not?

C. Are all of those goals being met? If not, what factors prevented certain goals from being met? What could increase the program's performance in relation to these goals?

III. Program Design

A. How has the program's design changed since it began three years ago? Have those changes been effective? Are there additional program design changes being considered?

B. How were the following program components decided upon?
   a) incentive levels
   b) qualifying equipment
   c) the definition of a "small business customer"
   d) caps on incentive levels (starting in 2006, $100,000 every two years)
   e) the role of trade allies
   f) program marketing
   g) program education
   h) Other components

14. Are incentive levels optimally set to encourage participation while maximizing the cost-effectiveness of the program? Do you feel there need to be any changes in the incentive?

C. How do you think the program's design could be refined to attract more customers and provide the greatest energy impacts?

IV. Program Ally Infrastructure

A. How are program allies recruited to the Program? What types of program allies are targeted and why? Probe in terms of business types, retrofit vs. new construction, geographic location, and traditional (trade allies who sell directly to customer) versus non-traditional allies (e.g., market intermediaries such as the Maine Department of Agricultures, Associated Grocers of Maine, etc).

B. Do program allies have a clear understanding of the Program?

C. What are barriers to program allies' increased participation in the program?

D. How has program allies' participation in the program evolved over the last three years?

E. What program support (eg., training, marketing assistance) is available to program allies? How does this help them effectively implement the Program?

F. Are program allies effectively conveying program information and encouraging customer participation? How could they do this more effectively?

G. How can the program continue to leverage the program ally infrastructure?

V. Customer Recruitment and Participation

A. How are customers targeted for the Program? What types of customers are targeted and why? Probe in terms of business types, retrofit vs. new construction and geographic location.

B. Are there issues with the current rate of participation by customer types? Are there certain target segments that are reluctant to participate?

C. How effective do you think program marketing has been?

D. Should there be more emphasis on direct marketing to customers? Why?

E. Are there customer segments that marketing efforts should specifically target? What are strategies for effectively marketing the program to identified customer segments?

F. Why do customers typically participate in the program? Do reasons vary by customer types?

G. How effective do you feel the incentive is in getting customers to participate (probe about new construction, retrofits and discretionary retrofits)?

H. Are customers generally satisfied with the Program? Why do customers typically not participate in the program? Do reasons vary by customer types?

I. What program changes could increase participant satisfaction? How is customer feedback tracked and responded to?

J. Are there markets Efficiency Maine is missing? Who is the ideal candidate for this program?

VI. Application and Rebate Process

A. How is the application and rebate process working for trade allies? Customers?

B. Are there opportunities to streamline the application and rebate process for trade allies? Customers?

C. What types of feedback have you received about the application and rebate process?

VII. Program Impacts

- What are the program's key successes? Future challenges?
- What impact has the Program had on the market in terms of greater availability of efficient products?
- Is the balance of treatments between retrofit and new construction optimal?
- Is the tool used to screen custom incentives projects adequate? Is the process for estimating project impacts reasonable?

- To what extent are customer facilities receiving holistic treatment – are there missed opportunities? Are trade allies and customers knowledgeable about the importance of a holistic approach to maximize energy savings? Can the program better address the comprehensiveness of services delivered through training of trade allies and education of customers?

EFFICIENCY MAINE
BUSINESS PROGRAM EVALUATION
PROGRAM ALLY INTERVIEW PROTOCOL

1.1 KEY RESEARCHABLE QUESTIONS

- How can the Program continue to leverage the trade ally infrastructure?
- What impact has the Program had on the market in terms of greater availability of efficient products?
- Are there opportunities to streamline the application and rebate process for both trade allies and customers?
- Are trade allies effectively conveying program information and encouraging customer participation in incentives?
- How effective is the marketing of program? Are there customer segments that marketing efforts should specifically target? What are strategies for effectively marketing the program to identified customer segments? Should there be more emphasis on direct marketing to customers?
- To what extent are customer facilities receiving holistic treatment—are there missed opportunities? Are trade allies and customers knowledgeable about the importance of a holistic approach to maximize energy savings? Can the Program better address the comprehensiveness of services delivered through training of trade allies and education of customers?
- What is the correct definition of "small business consumer" by the Program that ensures an equitable distribution of benefits and follows the Legislature's mandate?
- Are incentive levels optimally set to encourage participation while maximizing the cost-effectiveness of the program?
- Is the level of pre-established and customer incentives appropriate—of a sufficient level to cause customers to act—are there instances where overpayments or underpayments occur?
- Should there be caps on rebate amounts, particularly on customized rebates? Is the cap per calendar year of $50,000 and $100,000 over a two-year period on large customers appropriate?
- Are "discretionary" retrofits (e.g., adding supplemental technologies, removing working but inefficient equipment) sufficiently incentivized?

1.2 INTRODUCTION

Note: Because senior staff will be conducting interviews, program ally interviews will be semi-structured. Therefore the following interview protocol is only a guide to ensure certain topics are covered, but evaluators will follow the flow of the interview and modify questions as needed to fit the interviewee's circumstance.

NAME: _____

COMPANY:_____

TITLE: _____

PHONE: _____

INTERVIEWER: _____

DATE COMPLETED: _____ **LENGTH:** _____

1.3 TYPE OF TRADE ALLY [FROM SAMPLE INFORMATION]

1. Traditional key program ally (manufacturers, distributors, contractors, wholesalers, vendors, etc. who sell services or products that qualify for Efficiency Maine incentives)

2. Non-traditional (e.g., market intermediary program ally—professional trade associations who influence the practices and decisions of customers but do not sell products or services)

3. Traditional non-key program ally (traditional program allies who have been involved in less than 3 projects that qualified for Efficiency Maine incentives)

My name is _____, with PA Consulting Group. The Maine Public Utilities Commission has hired us to evaluate the Efficiency Maine Business Program. I would like to ask you some questions about your experience with the program. The information you provide will assist us in identifying ways for the program to better serve Maine business customers. This interview should take approximately 20 minutes of your time (10 to 15 minutes for non-key allies). Can we take some time now to do the interview? (If no, when would be a convenient time?)

1.4 FIRMOGRAPHICS – ALL

Research company website before interview to learn about company.

F1. To get us started, could you briefly tell me a little bit about your business (or position)? What types of products and services do you offer?

If traditional ally, continue, otherwise skip to next section.

F1A. How many (lighting, HVAC, motors, compressed air, etc.) projects did you complete in 2005? What percent of your 2005 projects/equipment sold are in Maine? What percent qualified for Efficiency Maine incentives?

F1B. What percent of the projects that you completed in 2005 were for small businesses (versus large businesses)—those with 50 employees or less?

F2. What geographic areas of Maine do you primarily work in? (County Names perhaps or municipal area)

F3. How many employees (full-time equivalents) does your company employ?

F4. Are you a subsidiary or branch of a bigger company? (Other options: franchise, dealer, manufacturers rep).

1.5 PROGRAM AWARENESS AND INVOLVEMENT - ALL

P1. Could you describe for me your participation (or involvement or role for non-traditional allies) in the Efficiency Maine Business Program? Probe for reasons ally participates at the reported level of activity.

P2. When did you first get involved with the Efficiency Maine Business Program?

P3. How did you first hear about the Efficiency Maine Business Program? (Do not prompt. Circle all that apply)

Through the Maine Public Utilities Commission

Through an Efficiency Maine implementer

Attended workshop or training seminar and learned about the program

Through a manufacturer/supply house

Learned about the program at trade show

Saw/heard ads for the program (Where?_____)

Attended a program-sponsored information session

Efficiency Maine Website

Business Colleague

Business Customer

Other _____

Don't know/unsure

P4. Why did you decide to participate/get involved in the program? *(Do not prompt)*

P5. (For traditional allies) What percent of your total work in the business sector does your participation represent?

P6. Do you expect your participation/involvement in the program to increase, decrease or stay the same in the next 12 months? Why?

P7, What could the program do to make you more involved?

P8. Are there types of workshops or training events you would like to see Efficiency Maine sponsor to help you in your work in the Efficiency Maine Business Program? Probe about workshops/training/education for customers as well as allies.

P9. Do you feel there are adequate program communications? How do you like to receive communications about the program?

P10. Who do you typically interact with from the Efficiency Maine Program? For what purposes? How would you describe your interactions with Efficiency Maine program staff? (minimal, helpful, very involved, probe to characterize)?

P11. What Efficiency Maine resources or materials have you used? How useful have resources and materials provided by the program been? Probe about E-news, the quarterly newsletter, customer case studies and savings analysis worksheets. Which program resources and materials have been most valuable (and why) and which have been least valuable (and why)?

P12. What is the primary benefit(s) you receive from participating in the Efficiency Maine Business Program?

P13. Are there other types of energy efficiency programs in New England that you participate in /are aware of? If yes, do you think there are lessons learned for Maine from these other programs?

1.6 CUSTOMER INTERACTIONS (TRADITIONAL TRADE ALLIES ONLY)

C1. What percent of your customers already know about the Efficiency Maine program before you tell them about it? How do they find out about the program? What percent do you have to educate about the program?

C2. What are the primary reasons why customers typically want to participate in the Efficiency Maine Business Program? What reasons motivate them besides the financial incentive?

C3. What are the primary reasons why customers typically do not want to participate in the Efficiency Maine Business Program?

C4. On a scale of 1 to 5 where 1 is not at all difficult and 5 is very difficult, how difficult do you find it to sell high efficiency equipment or services to your customers?

C4a. Probe to understand why the high efficiency equipment is easy or difficult to sell for respondent and why there are “lost opportunities” for Efficiency Maine (e.g., projects that are not high efficiency that could have been). Characterize customer participation barriers (e.g., incremental cost of higher efficiency program) to the extent possible.

C5. What is the most valuable sales tool you have for getting your customers to participate in the Efficiency Maine Business Program?

C6. What additional tools or services could Efficiency Maine provide you to better sell high efficiency equipment/projects to your customers?

C7. What do you think are the main benefits your customers receive by participating in the Efficiency Maine Business Program?

C8. What additional services would you like to see the program provide customers?

C9. What can be done to increase the number of participating customers in the program?

C10. Are there other opportunities to promote energy-efficient products and services to business customers that Efficiency Maine's program is not currently addressing?

C11. Would you like to see the program do more direct marketing to customers? If yes, what kind of marketing would you like to added?

1.7 TRADITONAL TRADE ALLIES ONLY

E1. On a scale of 1 to 5 where 1 is 'not at all difficult' and 5 is 'very difficult', how would you rate the program's administrative burden (e.g., application requirements and rebate processing) for you? Why do you give this ranking?

E1a. What changes would you like to see in the program requirements?

E2. What is your involvement with the incentive portion of the program? What is working well about the incentive rebate process from the customer's point of view? Your point of view? How would you like to see the incentive process improved?

E3. Are the customer incentives offered through the program adequate? How would you like to see the incentive structure revised?

E4. The incentive limits customers to $100,000 every two years. Are any of your customers affected by the incentive limits? How would you like to see incentive limits changed?

E5. One of the purposes of the program is to encourage customers to purchase more efficient equipment than they would otherwise purchase. Do you feel the program is accomplishing this? Why or why not?

E5a. How could the program be more effective at getting customers to install equipment with higher efficiencies?

E6. How has your inventory of high-efficiency equipment changed as a result of the program? How have your sales of high-efficiency equipment changed? (Probe about specific equipment eligible through the program and what percent of their inventory met Efficiency Maine criteria before they participated in the program versus what percentage now meets the criteria.)

1.8 CONCLUSION

C1. What do you think is working best in the Efficiency Maine Business Program?

C2. What do you think is most in need of improvement?

C3. Is there anything else that we haven't discussed that you would like the evaluation to note?

Thank you for your time. This completes our interview.

Efficiency Maine Business Program—Participant Survey

Variable List From Program Database
<CONTACT> = Customer Contact Name
<CUST> = Customer/Facility Name
<ADDR> = Service address where equipment was installed
<MEASCAT1,MEASCAT2> = End-use Category (i.e. lighting) – If they did multiple measures, we will only ask about the first two
<MEAS1a-MEAS1h>, <MEAS2a-MEAS2h> = detailed measure descriptions
<INC1,INC2> = Efficiency Maine incentive for Measure categories

Introduction
Hello, my name is _____, from PA Consulting and I'm calling on behalf of the Maine Public Utilities Commission. May I speak with [CONTACT]?

The Maine Public Utilities Commission is in the process of evaluating the Efficiency Maine Business Program. Are you the person in your company who is most familiar with your firm's participation in the Efficiency Maine Business Program?

1 Yes
2 No ------> Do you know the name of the individual that I should speak with about this program? *(PROBE:* This could be an energy manager, facility engineer, maintenance supervisor, operations manager, owner, etc.)

I'm with PA Consulting Group, a professional research firm. We have been hired by the Maine Public Utilities Commission to follow-up with customers who recently participated in the Efficiency Maine Business Program to learn about their experiences with the program and suggestions for program improvements. You should have received a postcard from the Maine Public Utilities Commission recently explaining the purpose of this study. I'd like to assure you that your responses will remain confidential by PA and that this should only take about 15–20 minutes of your time.

(Why are you conducting this study: Studies like this will help the Maine Public Utilities Commission make improvements to existing programs and design new programs that meet the needs of businesses like yours.)

(Timing: This survey should take about 15 minutes of your time. Is this a good time for us to speak with you? *IF NOT, SET UP CALL BACK APPOINTMENT OR OFFER TO LET THEM CALL US BACK AT 1-800-454-5070)*

(Sales concern: I am not selling anything; I simply want to understand what you liked and disliked about participating in this program, and what the Maine Public Utilities Commission might do to improve the experience for businesses like yours. Your responses will be kept confidential by our firm. If you would like to talk with someone at the Maine Public Utilities Commission about this particular study, you can call David Kyle at 207-287-7327.)

(NOTE: For all questions, don't know and refused will be coded if offered as a response. The codes are 'd' for don't know and 'r' for refused. Do not offer these two responses.)

PROGRAM AWARENESS

A1A How did your company hear about the Efficiency Maine Business Program? *(PROBE: How else?) (DO NOT READ; INDICATE ALL THAT APPLY)*

1 From a program ally/contractor
2 Efficiency Maine Newsletter
3 Efficiency Maine Website
4 Trade Show
5 Efficiency Maine program representative
6 Newspaper advertisement
7 Newspaper article
8 Radio advertisement/public service announcement
9 Efficiency Maine promotional material
(Please specify: [e.g., brochure, case study]_____)
10 Program Meeting
11 Someone in my company told me about it
12 Referral from another business
13 Bill insert
14 Professional association
15 Other [specify]

A2 Why did your company decide to participate in Efficiency Maine? *(DO NOT READ; INDICATE ALL THAT APPLY: PROBE: Any other reason)*

1 Earn incentive payments
2 Improve the payback for higher efficiency equipment
3 To reduce maintenance costs
4 Equipment needed replacing
5 Had a positive experience with Efficiency Maine before
6 Help the environment
7 Reduce our energy bills/save money
8 To improve energy efficiency/save energy
9 Show good corporate citizenship
10 Position ourselves for future projects and incentives
11 Trade ally convinced me to participate
12 Reliability of the equipment
13 Occupancy/customer comfort
14 Worker safety
15 Other [specify]

A3 What concerns, if any, did you or other people in your company have about participating in the Efficiency Maine Business Program? *(DO NOT READ; INDICATE ALL THAT APPLY. PROBE: anything else?)*

1 The higher cost of the energy efficient equipment
2 The upfront cash needed to complete the project
3 Completing the required paperwork
4 Working with a contractor
5 Whether the energy savings would really be realized
6 That the payback period would be too long
7 If the equipment would be eligible for the incentive
8 The incentive is not large enough to offset the additional costs of the high efficiency equipment
9 The incentive cap
10 Reliability of the equipment
11 Occupancy/customer comfort
12 Worker safety
13 Used equipment is much less expensive and Efficiency Maine offers no assistance with purchasing used equipment
14 Reservation of participating in a state government-operated program
15 No concerns
16 Other (Specify_____)

A4 Have you had an energy audit conducted by the state energy program?

1 Yes
2 No

A5 Do you currently have more or less than 50 employees at your company?

1 Less than 50
2 50 or more

PROGRAM SATISFACTION

Next we have a series of questions about your satisfaction with the program.

S1 Using a scale of 1 to 5, where 1 is "not at all satisfied" and 5 is "very satisfied", please rate your satisfaction with each of the following specific aspects of the program. *(ROTATE LIST BUT ALWAYS LEAVE A. AS THE FIRST QUESTION)*

		Not at all Satisfied				Very Satisfied	NA
A.	Overall, how satisfied are you with the Efficiency Maine Business Program? (IF 1 OR 2) Why? _____	1	2	3	4	5	0
How satisfied is your firm with … ?							
B.	The amount of information your firm received about the program and how it works? (IF 1 OR 2) Why? _____	1	2	3	4	5	0
C.	The amount of information your firm received about the high efficiency equipment you purchased? (IF 1 OR 2) Why? _____	1	2	3	4	5	0
D.	The size of the incentive you received through the program? (IF 1 OR 2) Why? _____	1	2	3	4	5	0
E.	The paperwork you had to complete for the program? (IF 1 OR 2) Why? _____	1	2	3	4	5	0
F.	The equipment you purchased as part of the program? (IF 1 OR 2) Why? _____	1	2	3	4	5	0
G.	The amount of time it took to process your incentive payment? (IF 1 OR 2) Why? _____	1	2	3	4	5	0
H.	The contractor who implemented your Efficiency Maine project? (IF 1 OR 2) Why? _____	1	2	3	4	5	0
I.	The Efficiency Maine program staff you interacted with (IF 1 OR 2) Why? _____	1	2	3	4	5	0
J	(if A5=1) the small business energy audit conducted by the state energy program (IF 1 OR 2) Why? _____	1	2	3	4	5	0

S2 On a scale of 1 to 5, with 1 being not at all likely and 5 being very likely, how likely is your firm to participate in the Efficiency Maine Business Program again?

Not at all Likely				Very Likely
1	2	3	4	5

S2A (If S2=1 or 2) What could the program do to increase your likelihood of participating in Efficiency Maine again? (*RECORD VERBATIM*)

S2B Based on your experiences with the program, would you recommend this program to another business?

1 Yes
2 No--→Why not? _____

S3 Does Efficiency Maine being a state government operated program make you more likely, less likely or have no effect on your likelihood of participating in the program again?

1 More likely
2 Less likely
3 Have no effect

S4 What benefits has your firm received from participating in the Efficiency Maine Program? *(DO NOT READ; INDICATE ALL THAT APPLY)*

1 The financial incentive
2 Better performance of the high efficiency equipment
3 Reduced bills from the high efficiency equipment
4 The energy savings of the high efficiency equipment
5 Training/information provided to me by Efficiency Maine staff
6 Training/information provided to me by Efficiency Maine program ally
7 Increased knowledge of energy efficiency
8 Increased comfort
9 Increased productivity
10 Less impact on the environment
11 Don't like anything
12 Other (please specify:_____)

S5 What do you like least about the Efficiency Maine Program? *(DO NOT READ; INDICATE ALL THAT APPLY)*

1 The paperwork
2 The higher cost of the high efficiency equipment
3 The pre-approval process
4 Working with program ally
5 Working with Efficiency Maine staff
5 No issues
6 Other (Please specify:_____)

S6 Have your or a member of your company attended the Builder Operator's Certification program sponsored by Efficiency Maine?

1 Yes
2 No

CUSTOMER DECISION MAKING PROCESS

I would like to get an understanding of how (CUST) makes energy equipment purchasing decisions.

D1 What are the most important factors that influence your company's decision when determining whether to install energy efficient equipment to replace equipment when it fails? *(DO NOT READ; INDICATE ALL THAT APPLY)*

1 Appearance of the lighting
2 Fits standard design
3 Overall cost of the equipment or system
4 Availability of a rebate or financial incentive
5 Information and education on the benefits of energy-efficient technologies
6 Electrical operating costs
7 Helps the environment
8 Shows we are a good corporate citizen
9 Meets payback criteria
10 Impact on company financials
11 Recommendation of contractor, manufacturer, distributor or other vendor)
12 Recommendation of Efficiency Maine staff
13 Meets codes
14 Other (specify:_____)

D1A What are the most important factors that influence your company's decision when determining whether to install energy efficient equipment for a new project or discretionary retrofit? *(DO NOT READ; INDICATE ALL THAT APPLY)*

1 Appearance of the lighting
2 Fits standard design
3 Overall cost of the equipment or system
4 Availability of a rebate or financial incentive
5 Information and education on the benefits of energy-efficient technologies
6 Electrical operating costs
7 Helps the environment
8 Shows we are a good corporate citizen
9 Meets payback criteria
10 Impact on company financials
11 Recommendation of contractor, manufacturer, distributor or other vendor)
12 Recommendation of Efficiency Maine staff
13 Meets codes
14 Other (specify:_____)

D2 Have there been energy projects your company has completed in the last 2 years when you have decided to purchase standard efficiency instead of high efficiency equipment?

1 Yes
2 No

D2a (If D2=1) Why did you decide not to purchase the high efficiency equipment? (*RECORD VERBATIM*)

Now, I'd like to ask you some questions about your decision to install <MEASCAT1> equipment.

[IF THERE IS ALSO A SECOND MEASURE]

Then, I'll repeat these questions for <MEASCAT2> equipment.

INTRO2: [IF SECOND MEASURE]

Now I'd like to review the <MEASCAT2> equipment you installed.

D3 Did your company/facility have specific plans set aside to install any of this high efficiency equipment <u>before</u> you talked with anyone about the program?

1	Yes	
2	Yes, but don't remember specifics	[SKIP TO D3]
3	No	[SKIP TO ATXT3]
D	(DK)	[SKIP TO ATXT3]
R	(REFUSED)	[SKIP TO ATXT3]

D3b (IF YES) What plans existed? (RECORD VERBATIM)

D4 Was it necessary to change the timing of the installation, the quantity of equipment or the efficiency level of the <MEASCAT1,MEASCAT2> equipment in order to qualify for Efficiency Maine?

1	Yes	
2	Yes, but don't remember specifics	[SKIP TO ATXT3]
3	No	[SKIP TO ATXT3]
D	DK	[SKIP TO ATXT3]
R	REFUSED	[SKIP TO ATXT3]

D5 What changes were necessary?

1 Installation occurred SOONER than planned
2 Installation occurred LATER than planned
3 Installed MORE equipment than planned
4 Installed LESS equipment than planned
5 Equipment was MORE efficient than planned
6 Equipment was LESS efficient than planned
7 Other - specify

FREE RIDERSHIP

ATXT3

According to our records, Efficiency Maine paid about <INC1, INC2> of the total cost of the <MEASCAT1,MEASCAT2> equipment installed through the program.

FR1 If Efficiency Maine had not paid a portion of the equipment cost, would your company/facility have purchased any <MEASCAT1,MEASCAT2> equipment <u>within one year of when it was installed</u>?

1	Yes	
2	No	[SKIP TO FR8]
D	(DK)	[SKIP TO FR8]

FR2 Without the program, would your company/facility have purchased the <u>exact same quantity</u> of <MEASCAT1,MEASCAT2> equipment within one year?

1	Yes	[SKIP TO FR3]
2	No	

FR2a What percent of this <MEASCAT1,MEASCAT2> equipment do you think your company/facility would have purchased on its own within one year?
(PROBE: Would you have purchased about one- fourth (25%), one-half (50%), three fourths (75%) of what you installed through the program?)

____ ENTER PERCENTAGE (0-100%, 998=DK)
(IF=0, SKIP to FR4)

FR3 You said your company/facility would have installed [IF FR2=1 SHOW: all the] [IF FR2=2 OR FR2=D SHOW: at least some] <MEASCAT1,MEASCAT2> equipment on its own if the program had not been available. What percent of this equipment would have been of the same efficiency or higher efficiency as what was installed through the program?
(PROBE: Would about one-fourth (25%), one-half (50%), three fourths (75%) been of equal efficiency?)

____ ENTER PERCENTAGE (0-100%, 998=DK)

IF FR1=1 AND FR2=1 AND FR3=100%, ASK FR4 TO FR7; ELSE SKIP TO FR8

FR4 Now I want to focus on what it would have cost your company/facility to install this equipment on its own without the program. Do you think your company/facility would have paid the additional <INC1,INC2> on top of the amount you already paid, to install the same quantity and efficiency of <MEASCAT1,MEASCAT2> equipment within one year?

1	Yes	[SKIP TO FR8]
2	No	

FR5 How would you have adjusted your purchase to accommodate the fact that you wouldn't have paid all of the costs? Would you have purchased less equipment, lower efficiency equipment, or done something else? [INDICATE ALL THAT APPLY]

1	Purchased less equipment	[ASK FR6]
2	Purchased lower efficiency of equipment	[ASK FR7]
3	(Done something else, specify)	[SKIP TO FR10]
D	(DK)	[SKIP TO FR10]

[IF FR5=1]

FR6 What percent of the <MEASCAT1,MEASCAT2> equipment do you think your company/facility would have purchased on its own at that same time? (PROBE: Would you have purchased about one- fourth (25%), one-half (50%), three fourths (75%) of what you installed through the program?)

____ ENTER PERCENTAGE (0-100%, 998=DK)

[IF FR5=2]

FR7 What percent of the <MEASCAT1,MEASCAT2> that your company/facility would have purchased on its own would have been of a lower efficiency than what was installed through the program? (PROBE: Would about one-fourth (25%), one-half (50%), three fourths (75%) been of lower efficiency?)

____ ENTER PERCENTAGE (0-100%, 998=DK)

ASK FR8 IF (FR1=2 OR FR1= D) OR (FR1=1 AND FR2=1 AND FR3=100 AND FR4=1);

ELSE SKIP TO FR10.

FR8 Was the information or advice you received from a program ally or program staff a crucial factor in your decision to install this high efficiency equipment through the program at the time you did?

1 Yes
2 No
3 No information received
D (DK)

ASK FR9 IF ((FR1=2 OR FR1=D) AND (P4=3 OR FR8=2)) OR

((FR1=1 AND FR2=1 AND FR3=100% AND FR4=1) AND (P3=3 OR P4=1 OR P4=2 OR FR8=1));

ELSE SKIP TO SPILLOVER

FR9 I'd like to better understand your purchase decision. Maybe you could just describe in your own words what impact, if any, the program had on your decision to install the energy efficient <MEASCAT1,MEASCAT2> equipment at the time you did?

RECORD VERBATIM

(ASK F10 ONLY AFTER FIRST MEASURE, SKIP WHEN LOOPS THROUGH SECOND MEASURE, IF APPLICABLE)

F10 Did your company/facility participate in Efficiency Maine's program before (DATE)?

1 Yes
2 No [SKIP TO S1]
D (DK) [SKIP TO S1]

(ASK F11 AFTER EACH MEASURE IF F10=1)

F11 I'm going to read you 3 statements. For each statement, please tell me whether you agree or disagree that this statement applies to your company/facility. There are no right or wrong answers; we just want your honest opinion.
(REPEAT IF NECESSARY)

1 Disagree
2 Agree
D (DK)

A. The energy savings performance of equipment installed through the Efficiency Maine program in earlier years was a primary reason why we decided to install energy efficient <MEASCAT1,MEASCAT2> through the program in DATE.
Do you agree or disagree with this statement?

B. We asked our contractor to look into energy efficient options for <MEASCAT1,MEASCAT2> when developing project plans as part of my last project because of our previous experience with the performance of energy efficient equipment installed through the Efficiency Maine program, and what we learned by participating in the program.
Do you agree or disagree with this statement?

C. We took into account the cost-effectiveness of installing energy efficient <MEASCAT1,MEASCAT2> when evaluating different options because of our previous experience with the performance of energy efficient equipment installed through the Efficiency Maine program, and what we learned by previously participating in the program.
Do you agree or disagree with this statement?

SPILLOVER

SO1 Now I'd like you to think of the time since you participated in Efficiency Maine. Has your company/facility purchased and installed any <MEASCAT1,MEASCAT2> equipment on its own for this or other facilities served by Efficiency Maine?

1 Yes
2 No [SKIP TO PROGRAM DESIGN OPTIONS]
D (DK) [SKIP TO PROGRAM DESIGN OPTIONS]

SO1a Was this equipment of THE SAME EFFICIENCY LEVEL OR A HIGHER LEVEL OF EFFICIENCY as the equipment you installed through the program?

1 Yes
2 No [SKIP TO PROGRAM DESIGN OPTIONS]
D (DK) [SKIP TO PROGRAM DESIGN OPTIONS]

SO2 About how much energy efficient <MEASCAT1,MEASCAT2> equipment did your company/facility purchase on its own since participating in this program most recently?

(PROBE: We're looking for a percent compared to the amount installed through the program. For example, was it about one- fourth of what you installed through the program, one-half of what you installed through the program, the same amount as you installed through the program, twice as much as what you installed through the program or some other amount?)

____ ENTER PERCENTAGE

SO3a Did a recommendation by the contractor or designer who you worked with under the Efficiency Maine program influence your decision to install some or all this efficient <MEASCAT1,MEASCAT2> equipment on your own?

1 Yes
2 No
D (DK)

SO3b Did your experience with the energy efficient equipment installed through the Efficiency Maine program influence your decision to install some or all this efficient <MEASCAT1,MEASCAT2> equipment on your own?

1 Yes
2 No
D (DK)

SO4 Why didn't you purchase this <MEASCAT1,MEASCAT2> equipment through the Efficiency Maine program?

DO NOT READ - SELECT ALL THAT APPLY

01 (Too much paperwork)
02 (Cost savings not worth the effort of applying)
03 (Takes too long for approval)
04 (The equipment would not qualify)
05 (Vendor does not participate in program)
06 (Outside Efficiency Maine's service territory)
07 (No time - needed equipment immediately)
08 (Thought the program ended)
09 (Didn't know the equipment qualified under another program)
10 (Just didn't think of it)
11 (Unable to get rebate—unsure why)
12 (Other - specify)
13 (DK)

GO TO SKIP1 IF SO4 NOT=04

SO4a. Why wouldn't the equipment qualify? RECORD VERBATIM

PROGRAM DESIGN OPTIONS

In the next set of questions, I'm going to present some ideas for program changes, and I would like you to tell me how attractive each change would be to your firm. Please use a scale of 1 to 5, with 1 being not at all attractive and 5 being very attractive.

C1 Efficiency Maine staff would walk through your facility to determine whether energy saving opportunities exist before an outside vendor is called. Detailed energy savings calculations would not be made. How attractive would this be?

Not at all Attractive				Very Attractive
1	2	3	4	5

C2 Efficiency Maine would hire and oversee a pre-qualified firm that would quantify the potential energy savings opportunities at your facilities. Efficiency Maine would cover at least half the cost of this service. This would include a detailed report of expected savings. How attractive would this be?

Not at all Attractive				Very Attractive
1	2	3	4	5

C3 If you build a major addition or a new building, Efficiency Maine staff would review the architectural drawings in order to identify all of the specified equipment that qualified for incentives. Staff would then make recommendations for replacing specified equipment that does not qualify for the program incentive with equipment that does qualify for incentive money. Staff would then assist in providing incentive moneys as equipment was purchased during the construction process.

Not at all Attractive				Very Attractive
1	2	3	4	5

C4 (For small business customers) Efficiency Maine would send a contractor to your facility to directly install energy efficient equipment such as lighting technologies, occupancy sensors, better thermostats and timers. Efficiency Maine would pay a set percentage of the cost, which would be at least 50%. How attractive would this be?

Not at all Attractive				Very Attractive
1	2	3	4	5

C5 Which other features of the program, if any, would you change?

FIRMOGRAPHICS

These last few questions are for classification purposes only.

F1 What does your firm use the majority of the space for at this location? *(DO NOT READ)*

1 office building (including public administration, bank, real estate office)
2 retail
3 restaurant/fast food/tavern
4 food sales/grocery
5 personal services (e.g., hair salon, Laundromat, etc.)
6 K-12 school
7 University/college
8 Daycare
9 Hospital
10 other health care services
11 lodging/hotel/motel/residence
12 refrigerated warehouse
13 nonrefrigerated warehouse
14 manufacturing/industrial
15 agriculture
16 church
17 garage/parking
18 other (RECORD VERBATIM; DO NOT CODE)

F2 Does your business own or lease the space you occupy at this location?

1 own all
2 lease all
3 own some and lease some
4 manage property
5 other (RECORD VERBATIM; DO NOT CODE)
D DON'T KNOW

F3 Which describes the form of ownership at this location? (READ CODES 1-7)

1 Independent with one location
2 Independent with more than one location
3 Part of a regional or national chain or corporation
4 A franchise
5 Government
6 Non-profit/Church
7 School
8 Other [specify]
D DON'T KNOW

F4 Approximately what percentage of your total operating expenses, including payroll, is accounted for by the total electric bill?

_____%

(IF DON'T KNOW) Would you say it was … ? *(READ LIST)*

1 2% or less
2 3-5%
3 6-10%
4 11-20%
5 over 20%

F5 Which of the following best describes your role at your company? Are you primarily in an energy management role, a management role, a financial role, an administrative role, a facility management role or some other role?

1 Energy management role
2 Management role
3 Financial role
4 Administrative role
5 Facility management role
6 Other, Please describe_____

IMPACT EVALUATION

I1 As part of the evaluation of Efficiency Maine, an independent engineering firm will be conducting on-site inspections at a sample of customer facilities to make sure equipment was properly installed. Is it okay if this firm conducts an on-site inspection? There will be no cost to you and we will try to minimize any inconvenience of the inspection.

1 Yes
2 No

I1a Are you the person the engineering firm should contact for the site visit?

1 Yes
2 No (*Ask for name and telephone number of who they should contact)*

CONCLUSION

COM Do you have any other comments about the Efficiency Maine program?

(If yes, RECORD VERBATIM)

That concludes our interview. Thank you for your time in this important study.

Efficiency Maine Business Program—Nonparticipant Survey

<CONTACT>
<SMALLBUS>
<SCHOOL>

INTRODUCTION

Hello, my name is _____, from PA Consulting and I'm calling on behalf of the Maine Public Utilities Commission. May I speak with the person at your firm who is most knowledgeable about your firm's electric use? This could be an energy manager, facility engineer, maintenance supervisor, operations manager, or owner.

Are you the person in your company who is most familiar with your firm's electric use?

1 Yes
2 No ------> Do you know the name of the individual that I should speak with about your company's energy use? *(PROBE:* This could be an energy manager, facility engineer, maintenance supervisor, operations manager, owner, etc.)

I'm with PA Consulting Group, a professional research firm. We have been hired by the Maine Public Utilities Commission to conduct research with business customers in the state of Maine. I'd like to assure you that your responses will remain confidential by PA and that this should only take about 10 minutes of your time.

(**Why are you conducting this study**: Studies like this will help the Maine Public Utilities Commission make improvements to existing programs and design new programs that meet the needs of businesses like yours.

(**Timing:** This survey should take about 10 minutes of your time. Is this a good time for us to speak with you? *IF NOT, SET UP CALL BACK APPOINTMENT OR OFFER TO LET THEM CALL US BACK AT 1-800-454-5070)*

(**Sales concern**: I am not selling anything; I simply want to understand how the Maine Public Utilities Commission can best serve businesses like yours. Your responses will be kept confidential by our firm. If you would like to talk with someone at the Maine Public Utilities Commission about this particular study, you can call David Kyle at 207-287-7327)

(NOTE: For all questions, don't know and refused will be coded if offered as a response. The codes are 'd' for don't know and 'r' for refused. Do not offer these two responses.)

PROGRAM AWARENESS

A1 Efficiency Maine is a program administered by the Maine Public Utilities Commission that provides financial incentives to Maine businesses for installing high efficiency instead of standard efficiency equipment. Types of equipment included in the program are lighting, HVAC, motors and compressed air as well as other custom projects that result in electric savings. Before today had you heard of the Efficiency Maine Business Program?

1 Yes
2 No (Skip to P1)

A1A How did your company hear about the Efficiency Maine Business Program? *(PROBE: How else?) (DO NOT READ; INDICATE ALL THAT APPLY)same changes as part*

1 From a program ally/contractor
2 Efficiency Maine Newsletter
3 Efficiency Maine Website
4 Trade Show
5 Efficiency Maine program representative
6 Newspaper advertisement
7 Newspaper article
8 Radio advertisement/public service announcement
9 Efficiency Maine promotional material
(Please specify: [e.g., brochure, case study]_____)
10 Program Meeting
11 Someone in my company told me about it
12 Referral from another business
13 Bill insert
14 Professional association
15 Other [specify]

Projects

P1. In the last two years, has your company purchased and installed the following types of equipment? Do you know if the equipment was standard or high efficiency? Could you tell me what type of [equipment] you purchased? (*See response categories for lighting, record others verbatim*)

Equipment	Purchased & Installed	Efficiency of Equipment	Type of equipment
A. Lighting equipment	1 Yes 2 No		
B. Hand dryers	1 Yes 2 No		
C. Motors	1 Yes 2 No		
D. HVAC equipment	1 Yes 2 No		
E. Adjustable speed drives for HVAC equipment	1 Yes 2 No		
For small businesses and existing schools			
F. LED exit signs	1 Yes 2 No		
G. Programmable thermostats	1 Yes 2 No		
H. Occupancy sensors or controls	1 Yes 2 No		
I. VendingMisers for your vending machines	1 Yes 2 No		
J. Other energy equipment project?	1 Yes 2 No		

P1A. Lighting response categories:

1 metal halide lamps
2 high-pressure sodium
3 T8 fluorescent lamps
4 Super T8 fluorescent lamps
5 T5 fluorescent lamps
6 Electronic ballasts
7 task lighting
8 reflectors
9 compact fluorescent lamps
10 incandescent bulbs
11 T-12 fluorescent lamps

P2. (If A1=1 and any P1=1) Could you please tell me why you did not participate in Efficiency Maine for the (P1 Measure(s)) projects you completed recently? (*RECORD VERBATIM)*

PROGRAM INTEREST

As I mentioned earlier, Efficiency Maine is a program administered by the Maine Public Utilities Commission that provides financial incentives to Maine businesses for installing high efficiency instead of standard efficiency equipment.

I1 On a scale of 1 to 5 where 1 is not at all interested and 5 is very interested, how interested would your company be in participating in Efficiency Maine?

I2 (IF I1=4, 5) Why would your company be interested in participating in Efficiency Maine? *(DO NOT READ; INDICATE ALL THAT APPLY)*

1 Earn incentive payments
2 Improve the payback for higher efficiency equipment
3 To reduce maintenance costs
4 Equipment needed replacing
5 Had a positive experience with Efficiency Maine before
6 Help the environment
7 Reduce our energy bills/save money
8 To improve energy efficiency/save energy
9 Show good corporate citizenship
10 Position ourselves for future projects and incentives
11 Trade ally convinced me to participate
12 Reliability of the equipment
13 Occupancy/customer comfort
14 Worker safety
15 Other [specify]

I3 (IF I1=1, 2) Why would your company not be interested in participating in Efficiency Maine? *(DO NOT READ; INDICATE ALL THAT APPLY)*

1 The higher cost of the energy efficient equipment
2 The upfront cash needed to complete the project
3 Completing the required paperwork
4 Working with a contractor
5 Whether the energy savings would really be realized
6 That the payback period would be too long
7 If the equipment would be eligible for the incentive
8 The incentive is not large enough to offset the additional costs of the high efficiency equipment
9 Delays in production time if participate
10 The incentive cap
11 Reliability of the equipment
12 Occupancy/customer comfort
13 Worker safety
14 Used equipment is much less expensive and Efficiency Maine offers no assistance with purchasing used equipment
15 Reservation of participating in a state government-operated program

16 No concerns
17 No concerns
18 Other (Specify_____)

I3B (IF I1=1,2) What could the program do to increase your likelihood of participating in Efficiency Maine? (RECORD VERBATIM)

I4 Does Efficiency Maine being a state government operated program make you more likely, less likely or have no effect on your likelihood of participating in the program?

I5 Have you participated in any other energy-related program?

1 Yes (Please specify:_____)
2 No

I5A Why did you decide to participate in [program from I5] but not Efficiency Maine? (*RECORD VERBATIM*)

CUSTOMER DECISION MAKING PROCESS

I would like to get an understanding of how your company makes energy equipment purchasing decisions.

D1. What are the most important factors that influence your company's decision when determining whether to install energy efficient equipment to replace equipment when it fails? *(DO NOT READ; INDICATE ALL THAT APPLY)*

1 Appearance of the lighting
2 Fits standard design
3 Overall cost of the equipment or system
4 Availability of a rebate or financial incentive
5 Information and education on the benefits of energy-efficient technologies
6 Electrical operating costs
7 Helps the environment
8 Shows we are a good corporate citizen
9 Meets payback criteria
10 Impact on company financials
11 Recommendation of contractor, manufacturer, distributor or other vendor)
12 Recommendation of Efficiency Maine staff
13 Meets codes
14 Other (specify:_____)

D1A. What are the most important factors that influence your company's decision when determining whether to install energy efficient equipment for a new project or discretionary retrofit? *(DO NOT READ; INDICATE ALL THAT APPLY)*

1 Appearance of the lighting
2 Fits standard design
3 Overall cost of the equipment or system
4 Availability of a rebate or financial incentive
5 Information and education on the benefits of energy-efficient technologies
6 Electrical operating costs
7 Helps the environment
8 Shows we are a good corporate citizen
9 Meets payback criteria
10 Impact on company financials
11 Recommendation of contractor, manufacturer, distributor or other vendor)
12 Recommendation of Efficiency Maine staff
13 Meets codes
14 Other (specify:_____)

D2. (If any P1=1 and purchased standard efficiency) For the [equipment from P1] project(s) that you completed recently, why did you decide not to purchase the high efficiency equipment? (*RECORD VERBATIM*)

FIRMOGRAPHICS

These last few questions are for classification purposes only.

F1 What does your firm use the majority of the space for at this location? *(DO NOT READ)*

1 office building (including public administration, bank, real estate office))
2 retail
3 restaurant/fast food/tavern
4 food sales/grocery
5 personal services (e.g., hair salon, Laundromat, etc.)
6 K-12 school
7 University/college
8 Daycare
9 Hospital
10 other health care services
11 lodging/hotel/motel/residence
12 refrigerated warehouse
13 nonrefrigerated warehouse
14 manufacturing/industrial
15 agriculture
16 church
17 garage/parking
18 other (RECORD VERBATIM; DO NOT CODE)

F2 Does your business own or lease the space you occupy at this location?

1 own all
2 lease all
3 own some and lease some
4 manage property
5 other (RECORD VERBATIM; DO NOT CODE)
D DON'T KNOW

F3 Which describes the form of ownership at this location? (READ CODES 1-6)

1 Independent with one location
2 Independent with more than one location
3 Part of a regional or national chain or corporation
4 A franchise
5 Government
6 Nonprofit/Church
7 School
8 Other [specify]
D DON'T KNOW

F4 Approximately what percentage of your total operating expenses, including payroll, is accounted for by the total electric bill? _____%

(IF DON'T KNOW) Would you say it was … ? *(READ LIST)*

1 2% or less
2 3-5%
3 6-10%
4 11-20%
5 over 20%

F5 Which of the following best describes your role at your company? Are you primarily in an energy management role, a management role, a financial role, an administrative role, a facility management role or some other role?

1 Energy management role
2 Management role
3 Financial role
2 Administrative role
3 Facility management role
4 Other, Please describe_____

CONCLUSION

CC1. Do you have any other comments about the Efficiency Maine program?

(If yes, RECORD VERBATIM)

That concludes our interview. Thank you for your time in this important study.

APPENDIX B: CUSTOMER SURVEY METHODOLOGY AND RESPONSE RATES

This appendix contains the survey methodology for the participant and nonparticipant data collection activities.

Surveys were completed with 228 participant and 70 non-participant customers for the evaluation. The customer surveys provide valuable input into the process evaluation by gathering information on a variety of program processes including outreach, program application and incentive processing, reasons for and barriers to participation, and satisfaction with services received through the Program. In addition, the completed participant surveys were used to support the data collection and analysis for the impact evaluation.

B.1 METHODOLOGY FOR PARTICIPANT SURVEYS

The participant instrument has survey modules that apply to all respondents (e.g., how did they learn about the program?) as well as specific modules based on certain participant characteristics (e.g., equipment purchased, small versus large customers, retrofit versus new construction). Screening and skip patterns were used to make sure respondents answered questions appropriate to their participation history.

The participant survey covered the following process issues:

- How they heard about the Program, their awareness of Efficiency Maine, their awareness that the program is brought to them by the MPUC, and their assessment of the effectiveness of various information sources about the Program, if there was more than one source
- Customer satisfaction and response to the Program including interaction with trade ally, program equipment, incentive levels, incentive processing and the application
- Barriers to participation
- The effectiveness of the different program components on satisfaction and energy efficiency understanding and implementation
- The value the Program is delivering from the customer's perspective
- The extent to which the Program and the trade ally did or did not influence their program purchasing decision (free rider) or has or has not affected future purchasing decisions (spillover)
- Firmographic information that is useful in analyzing how the program reaches, serves, and affects different customer segments

The participant survey was also be used to assess the customer's willingness to participate in the site survey that was conducted by SAIC engineering staff for the impact evaluation task. The project file reviews and site visit samples were drawn from the completed participant surveys to ensure the most comprehensive analysis of sample projects in assessing the final project savings.

The actual survey instruments for participants and nonparticipants can be found in Appendix A.

B.2 PARTICIPANT SAMPLE DESIGN

PA received data from GDS on all participants in the Efficiency Maine Business Program between January 2005 and June 2006. Cases were pulled by GDS based on the incentive mail date as this was the most consistently filled date they had available. Key variables provided included a project number, contact name, contact address and phone number, application and equipment information, project kWh savings, project incentive amount and incentive mailing date. All participants were included in the sample. Up to two applications were selected for each participant.

Participants were chosen for interviews based on the most recent application in each category and taking the following criteria into consideration:

- If the company name, address, and phone variables were unique, the application was selected.
- If the company name and application type variables matched but the date variable was different, the application with the latest date was selected.
- If the company name, application, and date variables matched, the cases were aggregated into one.
- If the company name and date variables matched but the application variable was different, the cases were flagged. These cases were then collapsed into “two-measure” cases. Two cases had three applications, each were low count applications and I kept all three for each.

B.3 PARTICIPANT TELEPHONE SURVEY PROCEDURES

Postcards were sent out to the sample list to improve their cooperation with the survey. The postcard explained that PA staff would be calling them to conduct a survey and the purpose of that survey. It also contained a toll-free telephone number that participants could use to contact PA at their convenience and a telephone number to contact MPUC with questions about the study. Postcards were mailed on July 31, 2006.

Survey calling started on August 1, 2006, and continued until August 25, 2006. On average, calls with participants lasted 16 minutes. Using the advance mail contact, telephone lookups, 800 line and follow-up phone procedures, PA Market Analytics staff achieved an overall response rate of 57% for program participants.

Table B-1. Participant Response Rate

Starting sample	**429**
Ineligible—no one knowledgeable	8
Ineligible—did not participate	1
Ineligible—location outside ME	3
Ineligible—other	3
Bad phone numbers	16
Adjusted sample	**401**
Refused call	28
Unavailable for duration	10
Language barrier/R incapable	0
Not reachable before end of field period	135
Completed surveys	**228**
Response Rate	**56.9%**
Target competes	**200**

Because we were calling business customers, most of the telephone interviewing was conducted between 8 a.m. and 5 p.m. Monday–Friday (local time). We varied the follow-up attempts across various times of the day and days of the week to complete interviews with hard-to-reach customers.

B.4 PARTICIPANT WEIGHTING

Because we worked with a census of projects conducted between January 2005 and June 2006, the customer level data was not weighted.

B.5 METHODOLOGY FOR NONPARTICIPANT SURVEYS

We conducted a nonparticipant survey to collect important process information such as awareness of programs, interest in participating, and barriers to participating. In addition, the nonparticipants may provide information on standard practices that can support the analysis of net program impacts.

The nonparticipant survey was designed to collect the following information:

- Measure awareness of Efficiency Maine and program marketing materials, and identify the sources of program information for those customers who are aware of Efficiency Maine
- Identify barriers to participation and program delivery methods that address these barriers
- Determine the characteristics of nonparticipants (firmographics, energy use patterns and behaviors, past participation, attitudes)
- Confirm standard practice in terms of energy-efficient equipment and practices.

B.6 NONPARTICIPANT SAMPLE DESIGN

Nonparticipant sample was developed from lists that Vreeland had purchased for Efficiency Maine. These included lists of all Maine businesses and superintendents for Maine K-12 schools. We stratified the sample by businesses and K-12 schools.

The files came with contact information, size and type variables, but no phone numbers. To prepare the nonparticipant sample, the following steps were taken:

- Flag each type of sample (Small = 1, Large = 2, School = 3)
- Pull schools from business files and add to the school file
- Select ONE case and Contact name for each Small/Large/School to exclude multiples
- Assign a random number
- Assign replicates of 25
- Look up phone numbers for 200 businesses and 100 schools to start
- After phone tracing, compare the nonparticipant sample to the list of participants. Remove any participants from the nonparticipant list.

B.7 NONPARTICIPANT TELEPHONE SURVEY PROCEDURES

No initial contact was made to the nonparticipant group of customers. Survey calling started on August 15, 2006, and continued until September 8, 2006. On average, calls with participants lasted 12 minutes. An overall response rate of 33.3% was achieved for nonparticipants.

Table B-2. Nonparticipant Response Rate

	OVERALL	Small	Large	Schools
Starting sample	**308**	**105**	**102**	**101**
Ineligibles—did participate	16	7	2	7
Ineligibles—other	20	6	7	7
Bad phone numbers	62	19	19	24
Adjusted sample	**210**	**73**	**74**	**63**
Refused call	31	9	19	3
R incapable	0	0	0	0
Unavailable for duration	15	7	6	2
Language barrier	0	0	0	0
Called out (more than 8 attempts)	0	0	0	0
Not reachable before end of field period	94	31	27	36
Completed survey	**70**	**26**	**22**	**22**
Response Rate	**33.3%**	**35.6%**	**29.7%**	**34.9%**
Target completes	**65**	**25**	**20**	**20**

As with the participant calls, because we were calling business customers, most of the telephone interviewing was conducted between 8 a.m. and 5 p.m. Monday–Friday (local time). We varied the follow-up attempts across various times of the day and days of the week to complete interviews with hard-to-reach customers.

B.8 NONPARTICIPANT WEIGHTING

We stratified the sample by businesses and K-12 schools. We then adjusted the nonparticipant survey results with weighting so that responses represent the nonparticipant population.