Nexus Market Research, Inc.

# Evaluation of the National Grid and NSTAR ENERGY STAR® Benchmarking Programs

**July 28, 2009**

**Submitted to:**

**NSTAR**

**National Grid**

**Submitted by:**

**Nexus Market Research**

22 Haskell Street, Cambridge, MA 02140

Phone: (617) 497-7544 Fax: (617) 497-7543

www.nexusmarketresearch.com

# Table of Contents

# Executive Summary

This report presents the findings of process evaluations of the ENERGY STAR® benchmarking programs delivered by NSTAR (ENERGY STAR Benchmarking Initiative - ESB) and National Grid (Whole Building Assessment Initiative - WBA) in the 2006 and 2007 program years.

# E-I. Program Descriptions

### National Grid Whole Building Assessment Initiative

Launched in 2005, National Grid's Whole Building Assessment (WBA) Initiative is designed to help commercial and government customers in their service territory assess the energy performance of their entire portfolio of building(s) across fuels, to take action to make the building(s) more efficient, and to sustain that efficiency over time. Participating buildings need to have annual demands of 200 kW to 2000 kW and range in size from 30,000 to 300,000 square feet. Each customer signs a Memorandum of Understanding requiring them to provide National Grid with utility bill data for any energy not provided by National Grid, water consumption data and information on building characteristics. The program uses EPA's Portfolio Manager to calculate the participating building's ENERGY STAR Energy Performance Rating and benchmarking score to gauge how its energy performance compares with similar buildings across the country. Buildings considered to be high in energy intensity qualify to have a Technical Scoping Study conducted.

The Technical Scoping Study provides efficiency recommendations including a list of low/no cost improvement strategies (with a payback of less than one year), cost-effective capital improvement measures, and a description of potential utility incentives available through the utility's energy efficiency rebate programs. The study also includes recommendations for longer-term and more complex energy efficiency opportunities. The Technical Scoping Study is followed by an Action Plan meeting with the customer to review the study findings, relevant utility program offerings, energy goals for the building and which projects the customer will undertake. Customers are encouraged to continue to monitor their energy use, re-benchmark their buildings, assess the energy performance of other buildings they may own and establish a long-term plan for achieving their energy efficiency goals.

### NSTAR ENERGY STAR Benchmarking Initiative

NSTAR's ENERGY STAR Benchmarking (ESB) Initiative helps eligible NSTAR customers use the ENERGY STAR Portfolio Manager benchmarking tool to gauge how the energy performance of their building(s) compares with similar buildings across the country. Participating buildings need to be one of the building types benchmarked by ENERGY STAR Portfolio Manager. These customers receive individual training on using Portfolio Manager and assistance in benchmarking their facilities.

Customers also receive, free of charge, technical assessments of their buildings with the findings summarized in Energy Efficiency Opportunity Assessment Reports that provide recommendations for specific energy efficiency improvements. To participate, NSTAR's customers must sign memoranda of understanding committing to continue to benchmark their facilities for a period of one year – at least quarterly and preferably monthly. In addition, they must commit to performing all identified no cost/low cost measures (i.e. projects with a payback of less than one year). Continuing support is provided to participants in identifying NSTAR energy efficiency rebate programs that provide financial incentives for the implementation of energy efficiency improvements and applying for this assistance.

## E-II. Evaluation Objectives

The 2008 evaluation of the NSTAR and National Grid benchmarking programs consisted of a process evaluation and a quasi-impact analysis. The overall objectives of the process evaluation were to explore:

- How the ENERGY STAR® benchmarking programs are received by customers and vendors; and
- The effectiveness of benchmarking tools in attracting customers and achieving energy savings compared with other energy efficiency initiatives.

A key focus of the evaluation was to assess the effectiveness of the programs in stimulating the installation of energy efficiency measures.[1] The findings from this evaluation were intended to be used to determine whether the utilities should continue the benchmarking programs, and if so, identify ways to improve the programs. The resulting recommendations took into account program changes put into place since 2007.

## E-III. Methodology

The process evaluation relied on in-depth interviews with various market actors and a telephone survey of program participants. In December 2008, Nexus Market Research (NMR) completed a total of 26 in-depth interviews with program staff, contractors and EPA and DOER program managers. The overall goal of these interviews was to obtain an understanding of the issues surrounding the design and implementation of the ENERGY STAR benchmarking programs.

Also in December 2008, NMR conducted ten in-depth interviews with program participants: five each from National Grid and NSTAR. The participant in-depth interviews informed the development of the quantitative participant telephone survey. The participant survey attempted to contact all companies or organizations that had participated in the National Grid or NSTAR programs in 2006 or 2007, including those who had completed the participant in-depth

[1] Note that in contrast to the evaluation focus on program effectiveness in stimulating installation of energy efficiency measures, the goals of the programs themselves were defined in terms of number of buildings benchmarked or audited.

interviews. Note that interviewing participants two or more years after program participation proved to be difficult because of staff turnover in the participating organizations and, even after reaching the correct staff person, recall of the participation experience sometimes was limited. The final sample consisted of 12 National Grid participants and 17 NSTAR participants who completed the survey between February 25, 2009 and March 27, 2009. Many of the customers, especially National Grid customers, had more the one facility audited through the benchmarking program. As a result, the sample of 12 National Grid participants had a total of 30 facilities audited through WBA; and the sample of 17 NSTAR participants had a total 19 facilities audited through ESB. Table 1 shows these data as well as the finite population adjusted statistical error margin at the 90% confidence level for the sample of 12 National Grid participants and 17 NSTAR participants. Note that even though the statistical error margins are fairly large, both the National Grid and NSTAR samples accounted for nearly half their respective populations of participants and provided a reasonably good representation of those populations.

**Table 1: Sample Size and Sampling Error**

| | 2006-2007 Total Program Participants | | Sample of Surveyed Participant | | |
|---|---|---|---|---|---|
| | **Total Audited Facilities** | **Unique Participants** | **Total Audited Facilities** | **Unique Participants** | **Sampling Error** (90% Confidence Level) |
| National Grid WBA | 58 | 24 | 30 | 12 | ±17.2% |
| NSTAR ESB | 40 | 38 | 19 | 17 | ±15.0% |

## E-IV. Participation Motivations and Barriers

This study revealed that participants in both programs had similar motivations and barriers regarding their decision to participate. Participants are motivated to participate in the programs primarily by the promise of financial benefits and secondarily by wanting to be perceived as being "green." Staff and contractors for both programs most commonly cited lack of time and access to building energy use data needed by the Portfolio Manager software as barriers to participating in the program. They additionally observed that some customers are intimidated by the program requirement that they commit to continue benchmarking participating buildings for at least one year.

## E-V. Benchmarking with Portfolio Manager

There were clear and notable differences between the two programs on the training on Portfolio Manager that was provided to participants. As described below, fewer participants in the National Grid program received such training than did participants in the NSTAR program.

### Portfolio Manager Training

One National Grid staff member, based on his experience with having a customer go through WBA, believes the customer is not really trained to use Portfolio Manager and the contractor operates the tool for them. This was partially confirmed in the in-depth interviews by a few WBA participants who reported that the program contractor performed all of the data entry for Portfolio Manager.

Fewer than half of the National Grid survey respondents (5 of 12) reported that someone on their staff was trained to use Portfolio Manager. The lack of training was further reinforced by respondent intentions to re-benchmark their facilities—of the sample of 12 respondents, only five reported plans to use Portfolio Manager to re-benchmark their facilities at least once a year. Note, however, that all of the respondents who mentioned receiving training, report that the training was sufficient for them to continue benchmarking their facilities.

In contrast, the majority of NSTAR survey respondents (13 of 17) reported that someone on their staff was trained to use Portfolio Manager and nearly all of these respondents (12 of 13) reported that the training was sufficient for them to continue benchmarking their facilities. The effectiveness of the training was further reinforced by the ratings that respondents' provided to different aspects of the value of Portfolio Manager—of all the aspects, the respondents rated the "help provided by program contractors or utility staff in using Portfolio Manager" as the most valuable.

### Value of Portfolio Manager

The survey of program participants asked respondents to rate the value of four aspects of Portfolio Manager on a scale of one to five, where one equaled "not at all valuable" and five equaled "very valuable." National Grid respondents gave high mean ratings to "identification of energy efficiency opportunities" (4.4) and "the whole building approach of Portfolio Manager" (4.4); and relatively lower mean ratings to "help provided by program contractors or utility staff in using Portfolio Manager" (3.6) and "comparisons to other similar facilities" (3.5).

Similarly, NSTAR respondents gave high mean ratings to "help provided by program contractors or utility staff in using Portfolio Manager" (3.9), "whole building approach of Portfolio Manager" (3.8) and "identification of energy efficiency opportunities" (3.7); and they gave relatively lower mean ratings to "comparisons to other similar facilities" (3.4).

## E-VI.Technical Audit Reports

The survey of program participants also asked respondents to rate their satisfaction with six different aspects of the technical audit report on a scale of one to five, where one equaled "not at all satisfied" and five equaled "very satisfied." Participants in both programs gave generally high overall satisfaction ratings to most aspects of the report. National Grid respondents gave every aspect of the report a mean rating of 4.0 or higher. NSTAR respondents gave high mean

satisfaction ratings to "usefulness of the information in making decisions about whether to implement the recommendations" (4.3), "overall quality of report" (4.1), and "format of the report" (4.1); and they gave low mean satisfaction ratings to the "amount of new information provided" (3.5).

A National Grid contractor observed that utility staff have been present at many of the presentations of the technical audit findings to customers. He believes this is an important factor in getting customers to follow through on the recommended measures. In contrast, according to NSTAR staff and contractors, NSTAR staff have generally not attended such presentations.

## E-VII. Participant Experience and Satisfaction

The survey of program participants asked respondents to rate their satisfaction with 12 different aspects of the benchmarking program on a scale of one to five, where one equaled "not at all satisfied" and five equaled "very satisfied." In general, both National Grid and NSTAR survey respondents reported a high level of satisfaction with all aspects of the respective benchmarking programs.

National Grid respondents gave the highest mean satisfaction ratings to "convenience of scheduled times for audits" (4.4) and "information provided about incentive programs" (4.4); and they gave the lowest mean satisfaction ratings to "information provided about incentives from other sources" (3.5),"timeliness of report" (3.9), and "outcome of program in terms of realized benefits" (3.9).

NSTAR survey respondents gave the highest mean satisfaction ratings to the "convenience of scheduled times for audits" (4.5) and "timeliness of report" (4.4); and they gave the lowest mean satisfaction ratings to "information provided about incentives available from other sources" (2.3) and "information provided about incentive programs" (3.5).

## E-VIII. Quasi-Impact Estimates

**It is important to note that the quasi-impact estimate of the WBA and ESB programs was limited to matching respondents' self-reported implementations with energy conservation measures recommended in their Technical Scoping Studies or Energy Efficiency Opportunity Assessment Reports. As such, the evaluation provides only an estimate of the impact and would require on-site visits to compare actual implementation savings with those reported by respondents in the survey and the savings provided in the scoping reports. Furthermore, a goal of this evaluation is to obtain a general estimate of the net impact and net value of WBA and ESB. In doing this, we are crediting the WBA and ESB programs with the full value of savings from associated implementations through National Grid and NSTAR Energy Efficiency rebate programs; a complete impact evaluation (with on-site measurement and verification of savings) would be needed to determine the actual savings realized from the implemented recommendations.**

In lieu of conducting a full impact evaluation of the direct and indirect energy efficiency improvements stimulated by the programs, this evaluation assessed program value through a comparative analysis of recommended and installed energy conservation measures. Since the benchmarking programs included scoping studies that generated estimates of annual energy savings for each recommended measure, the net value of the programs was assessed by matching the measures that the respondents to the participant survey reported installing to those recommended in their technical assessment studies and adjusting annual energy savings for free-ridership.[2]

### Categorization of Recommendations

The NMR team evaluated the technical audit reports provided to each participant. NSTAR participants received an average of 11 recommended measures per participant and National Grid participants received an average of 18 recommended measures per participant. Participants with multiple facilities received as many as 50 total recommendations. The technical audit reports categorized the recommended measures as either low/no cost or capital outlay measures. In order to limit the number of questions asked during the phone survey, low/no cost measures were subdivided into four general categories and measures requiring a capital outlay were subdivided into eleven general categories. For each measure category, participants were asked if they implemented any recommendations within the measure category, approximately what percentage of the recommendations in the measures category they implemented, and when they implemented the recommendations. If participants reported that they did not implement any of the recommendations for a category of measures, they were then asked if they had any plans to implement any measures in that category within the next year. The estimated savings in kWh and Therms reported for each recommendation in the technical audits were summed for each measure category for each participant. In some cases, participants received recommendations that did not include savings estimates; in these cases, participants were still asked about implementation but a value of zero was used for estimated savings in the quasi-impact analysis.

### WBA – Quasi-Impact Estimate

The 12 National Grid respondents received a total of 177 recommendations—46 low/no cost recommendations and 131 recommendations requiring a capital outlay. Based on the responses to a series of questions regarding 15 recommendation categories, NMR estimates that respondents implemented less than half (44%) of all recommended measures—about half (49%) of all recommended measures requiring a capital outlay and about one-third (32%) of all recommended low/no cost measures.

[2] We identified free-riders as customers who would have participated in other utility sponsored rebate programs in the absence of the benchmarking program or would have implemented energy saving measures in the absence of the benchmarking program.

**Table 2: WBA - Recommended Measures Implemented by Respondents**

| Measure Type | National Grid Whole Building Assessment | | |
|---|---|---|---|
| | Number of Recommendations | Estimated Percent of Recommendations Reported Implemented | Estimated Number of Recommendations Reported Implemented |
| Recommended Low/No Cost Measures | 46 | 32% | 15 |
| Recommended Capital Outlay Measures | 131 | 49% | 64 |
| All Recommended Measures | 177 | 44% | 79 |

According to the audit reports provided by National Grid, participants received energy efficiency recommendations amounting to a total of 8,994,000 kWh and 317,000 Therms of savings. The 12 National Grid respondents represent more than one-third (37%) of the total recommended electrical savings in 2006 and 2007 and more than half (57%) of the recommended natural gas savings. Based on the responses to questions regarding the percent of measures implemented in each measure category and free-ridership, the NMR team estimates that respondents implemented recommendations with total net savings in the amount of 995,000 annual kWh and 92,000 annual Therms. The NMR team therefore estimates net implementation ratios for the WBA program of 0.30 for electricity savings and 0.51 for natural gas savings. Applying these net implementation ratios to the total savings recommended to all 2006 and 2007 program participants, the NMR team projects the net impact of the WBA program to be 2,692,000 kWh and 163,000 Therms (Table 3).

**Table 3: WBA - Net Estimated Impact for 2006 and 2007 WBA Program Years**

| | National Grid Whole Building Assessment | |
|---|---|---|
| | kWh* | Therms* |
| Total recommended savings (Surveyed participants) | 3,324,000 | 179,000 |
| Net impact (Surveyed participants) | 995,000 | 92,000 |
| Net implementation ratio | 0.30 | 0.51 |
| Total recommended savings (All participants) | 8,994,000 | 317,000 |
| Projected net impact (All participants) | 2,692,000 | 163,000 |

*Given the relative imprecision of the quasi-impact analysis figures have been rounded to the nearest thousand

## ESB – Quasi-Impact Estimate

The 17 NSTAR respondents received a total of 166 recommendations—60 low/no cost recommendations and 106 recommendations requiring a capital outlay. Based on the responses to a series of questions regarding 15 recommendation categories, NMR estimates that respondents implemented one-third (33%) of all recommended measures—about three-tenths (29%) of all recommended measures requiring a capital outlay and nearly than four-tenths (38%) of all recommended low/no cost measures (Table 4).

**Table 4: ESB - Recommended Measures Implemented by Respondents**

| Measure Type | National Grid Whole Building Assessment | | |
|---|---|---|---|
| | # of Recommendation | % Recommendations Reported Implemented | # of Recommendations Reported Implemented |
| Recommended Low/No Cost Measures | 60 | 38% | 22 |
| Recommended Capital Outlay Measures | 106 | 29% | 31 |
| All Recommended Measures | 166 | 33% | 54 |

According to the audit reports provided by NSTAR, participants received energy efficiency recommendations amounting to a total of 11,554,286 kWh and 2,012,523 Therms of savings. The 17 NSTAR respondents represent more than two-thirds (66%) of the total recommended electrical savings and a small fraction (3%) of the recommended natural gas savings. Based on the responses to questions regarding the percent of measures implemented in each measure category and free-ridership, the NMR team estimates that respondents implemented recommendations with total net savings in the amount of 2,439,000 annual kWh and 13,000 annual Therms. The NMR team therefore estimates net implementation ratios for the ESB program of 0.32 for electricity savings and 0.25 for natural gas savings.[3] Applying these net implementation ratios to the total savings recommended to all 2006 and 2007 program participants, the NMR team projects the net impact of the ESB program to be 3,659,000 kWh and 503,000 Therms (Table 5).

[3] The estimates for NSTAR natural gas savings should be viewed with caution since the sample of NSTAR respondents account for only 3% of total recommended natural gas savings.

**Table 5: ESB - Estimated Net Impact for 2006 and 2007 ESB Program Years**

| | NSTAR ENERGY STAR Benchmarking | |
|---|---|---|
| | **kWh*** | **Therms*** |
| Total recommended savings (Surveyed participants) | 7,701,000 | 52,000 |
| Net impact (Surveyed participants) | 2,439,000 | 13,000 |
| Net implementation ratio | 0.32 | 0.25 |
| Total recommended savings (All participants) | 11,554,000 | 2,013,000 |
| Projected net impact (All participants) | 3,659,000 | 503,000 |

*Given the relative imprecision of the quasi-impact analysis figures have been rounded to the nearest thousand

# E-IX. Findings and Recommendations

## National Grid Findings and Recommendations

### Program Goals

**Finding.** National Grid staff believes that the ultimate goal of the WBA program is to increase energy savings by having customers implement energy efficiency recommendations. However, program goals and data tracking efforts do not include information regarding recommendations implemented.

- **Recommendation.** Without specific and measureable goals it is not possible to evaluate program performance. Therefore, National Grid should develop measureable goals for the WBA program. Based on interviews with program staff, goals should include the number of low/no cost recommendations implemented by participants, the number of capital outlay recommendations implemented by participants, and the number of recommendations implemented through National Grid rebate programs.
- **Recommendation.** In order to evaluate program performance, National Grid must track program goals. National Grid should develop a method for tracking the goals adopted by the program.
- **Recommendation.** In addition to program goals, National Grid should track program WBA program costs, including labor, marketing, and administration. Having accurate cost information is crucial to evaluating the cost-effectiveness of the WBA program.

### Program Marketing and Promotion

**Finding.** The majority of WBA program participants have been schools.

- **Recommendation.** National Grid should consider diversifying program participants by making efforts to recruit customers from other Portfolio Manager categories such as hospitals, warehouses, office buildings, hotels, retail stores, medical offices, and supermarkets.

**Finding.** Most of the National Grid survey respondents said they first heard about the WBA program from a utility staff person. The role of utility staff as a primary source of information about WBA also was corroborated by respondents to the in-depth interviews.

- **Recommendation.** National Grid should consider utilizing program contractors more for marketing and promotion. By utilizing contractors to market and promote the WBA program National Grid can effectively increase the marketing without incurring additional expenses.

**Finding.** The large majority of respondents to both the in-depth interviews and the survey reported financial benefits as their primary motivation for participating in the WBA program.

- **Recommendation.** Continue to include messages such as "reduce energy costs" and add details in the program literature about the financial savings that can be derived from program participation. The examples provided on the WBA website include information on energy savings. National Grid should consider also providing case studies on its website showing the financial savings of past WBA participants.

**Finding.** National Grid staff also believes that customers may be concerned about expenses associated with implementing any recommended measures.

- **Recommendation.** Program marketing should emphasize measures that do not require a capital outlay as well as the identification of National Grid energy efficiency rebate programs that offer incentives for implementation of recommended measures.

**Portfolio Manager**

**Finding.** Among the various benefits and services of Portfolio Manager, survey respondents gave the highest ratings to "whole building approach of Portfolio Manager."

**Finding.** While the majority of respondents cited no barriers to participating in the program they did express a lack of time to continue benchmarking activities. Respondents said that National Grid entering the data into Portfolio Manager for them was very beneficial.

**Finding.** Program contractors also believe that data gathering requirements for the benchmarking study can be overwhelming for facility managers and that the data gathering form can appear intimidating to someone who is seeing it for the first time.

**Finding.** Program staff indicated that the longest delays occur in customers getting together all their energy usage data required by the Memorandum of Understanding.

- **Recommendation.** In an effort to help customers who may be overwhelmed or intimidated by data entry requirements, National Grid should work to make the data collection form more user-friendly. In addition, National Grid should provide support to customers trying to gather benchmarking data to enter into Portfolio Manager and

develop "tips" that may be offered to customers having trouble with data collection for Portfolio Manager.

- **Recommendation.** Consider using EPA's automated system for transferring utility data to Portfolio Manager so that participants can spend more time evaluating and benchmarking their facilities and less time performing data entry. This would also enable participants to routinely and regularly complete benchmarking activities.

**Finding.** Respondents who recalled receiving Portfolio Manager training reported that the training was sufficient for them to continue benchmarking their facilities. However, nearly half of the respondents surveyed reported that they did not receive training on Portfolio Manager. In the in-depth interviews, some respondents reported that a program contractor performed all of the work using Portfolio Manager for them.

- **Recommendation.** Take steps to ensure that participant staff have a hands-on knowledge of using Portfolio Manager and are capable of running it themselves. Note that implementation of this recommendation may not be necessary if WBA decides to move ahead with automated data entry.

**Finding.** When calling for the in-depth interviews, the NMR team encountered several participants whose primary program contact had left the company. In these cases, the contact generally took with them all knowledge of the WBA program and Portfolio Manager.

- **Recommendation.** Consider including routine phone calls to participants to help identify when contacts that have been trained to use Portfolio Manager leave the organization. When replacements are hired, meet with them to help ensure continuity on benchmarking activities.

## Benchmarking Scores and Audit Reports

**Finding.** In the in-depth interviews respondents expressed concern about the accuracy of the benchmarking scores. However, a few respondents also reported that the scores motivated them to investigate their facilities further and make improvements. In the reports provided to participants, the benchmarking score is not always apparent and the explanation of the score is not thorough.

**Finding.** NMR reviewed several technical scoping studies. The reports had no summary section and did not highlight the benchmarking score. Separate lighting reports provided to participants also have been highly technical and not user-friendly.

- **Recommendation** Respondents report that they are satisfied with the technical audit reports. However NMR staff believe that a few minor changes to the order in which information is presented will increase the clarity and accessibility of the reports. Consider changing the format of reports to include the benchmarking score on the first page, set apart from text. Provide a summary section on the first page that includes: a description of what the benchmarking score indicates and how it was determined, the table of

recommended measures and an estimate of the energy savings needed to achieve ENERGY STAR® designation.

- **Recommendation.** For capital outlay measures, also include a description of rebates available from National Grid energy efficiency rebate programs and the resulting project payback. Also seek to identify incentives available from other sources. Including this information in the technical audit report, will help ensure that all participants are made aware of the incentive and rebates available for the recommended measures.
- **Recommendation.** Develop a similar user-friendly format for the lighting reports. Provide any technical information or specifications in an appendix.

## Action Plan Meeting

**Finding.** The presence of National Grid staff at the Action Plan Meeting has been an important factor in facilitating customer follow-through and implementation of recommended measures.

- **Recommendation.** National Grid should continue to ensure that it engages customers after the Action Plan Meeting. This is a key step for deriving the full benefit and potential of the program for both participants and the utility.

**Finding.** The survey respondents reported financial considerations as the primary driver of their decision to implement recommended measures. Conversely, they reported lack of budget as the primary reason for not implementing measures.

- **Recommendation.** Paybacks and incentives available from National Grid energy efficiency rebate programs should be emphasized in the action plan meeting. Program staff attending the meeting should go prepared to recruit participants into the relevant National Grid incentive programs for recommended measures.

## Low/No Cost Measures

**Finding.** Respondents reported implementing 44% of all recommended measures but only 32% of low/no cost recommendations. Respondents cited a lack of resources as the primary reason for not implementing low cost/ no cost measures—two cited lack of time and one cited lack of budget.

**Finding.** Respondents reported plans to implement additional low/no cost measures totaling 25% of the recommended low/no cost electrical savings and 16% of natural gas savings within the next year.

- **Recommendation.** In an effort to increase the number of low/no cost measures that are implemented, National Grid should consider including a roadmap or a plan of action for low/no cost measures with the technical audit report. The plan should be customized for each participant and reviewed with them during the presentation of the final report. Seek a commitment from participants to follow the plan of action and implement all of the

low/no cost measures. National Grid staff should follow up with participants periodically and discuss any low/no cost measures that have not been implemented.

**Capital Outlay Measures**

**Finding.** Respondents reported implementing about half (49%) of the recommendations requiring a capital outlay.

**Finding.** Respondents reported that 75% of the implemented electrical energy savings and 84% of the implemented natural gas savings were implemented through National Grid's energy efficiency rebate programs.

**Finding.** Only one respondent reported prior plans to participate in National Grid's rebate programs before talking with someone about the WBA program; and all of respondents who reported implementing at least one capital outlay measure through a National Grid rebate program reported that the WBA program had a strong influence on their decision to implement recommendations through the rebate programs.

- **Recommendation.** Although, in the absence of cost information, it is not possible to make a definitive assessment of the WBA program's effectiveness, the program appears to have some value as conduit for funneling customers into National Grid energy efficiency rebate programs. Accordingly, NMR recommends that the WBA program should continue to be used as a mechanism to drive participation in the National Grid rebate programs but that its costs be tracked and the program's effectiveness be evaluated after an appropriate interval.

# E-X. NSTAR Findings and Recommendations

**Program Goals**

**Finding.** NSTAR staff expresses different perceptions of the short-term goals for the ESB program. The program manager says the short-term goal of the program is to drive participation in other energy efficiency programs and other staff members discuss the program's short-term goals in terms of educating customer about their buildings' energy usage and how it compares to similar buildings.

**Finding.** NSTAR staff agrees that the long-term goal of the ESB program is to increase energy savings through participants implementing recommended measures. While program contractors currently track implementations the program does not have specific goals regarding measure implementations.

- **Recommendation.** Without specific and measureable goals it is not possible to evaluate program performance. NSTAR should evaluate the goals for the ESB program and create specific and measureable performance goals. Based on interviews with program staff, goals should include the number of low/no cost recommendations implemented by

participants, the number of capital outlay recommendations implemented by participants, and the number of recommendations implemented through NSTAR rebate programs.

- **Recommendation.** In an effort to ensure employees have a clear understanding of the programs goals and objectives, NSTAR may want to provide ongoing education to ESB program staff.

**Program Marketing and Promotion**

**Finding.** ESB program participants have been primarily offices and, secondarily, schools and hotels.

- **Recommendation.** Pursuant to diversifying and expanding the reach of ESB, the program should try to recruit customers from other Portfolio Manager categories such as hospitals, warehouses, retail stores, medical offices, and supermarkets...

**Finding.** The ESB program manager believes cost savings are the primary motivator for participants and respondents reported a financial motivation as the most important reason for participating in the ESB program. Environmental concerns and ENERGY STAR® certification were also mentioned by some respondents.

- **Recommendation.** Include messages such as "reduce energy costs" and details about the financial savings available through program participation in program literature and when speaking to potential participants. Include details on the benefits of ENERGY STAR® certification and the impact on carbon footprint as secondary benefits of the program.

**Portfolio Manager**

**Finding.** Among the various benefits and services of the Portfolio Manager, survey respondents gave the highest ratings to "whole building approach of Portfolio Manager" and "identification of energy efficiency opportunities."

**Finding.** Program staff reported that customers are intimidated by the prospect of a lot of data gathering for their facility. A contractor also reported delays in getting the data needed for benchmarking facilities

**Finding.** The majority of respondents reported no barriers to program participation. Two respondents reported a lack of time and one respondent said the software was confusing and difficult to use.

- **Recommendation.** In an effort to help customers who may be intimidated by data entry requirements, NSTAR should work to make the data collection form more user-friendly. In addition, NSTAR should provide support to customers trying to gather benchmarking data to enter into Portfolio Manager and develop "tips" that may be offered to customers having trouble with data collection for Portfolio Manager.
- **Recommendation.** At time of customer sign-up, streamline gathering of usage data by obtaining any required authorizations from customers' organizations or facilities.

- **Recommendation.** Consider using EPA's automated system for transferring utility data to Portfolio Manager so that participants can spend more time evaluating and benchmarking their facilities and less time performing data entry. This would also enable participants to routinely and regularly complete benchmarking activities.

**Finding.** Program staff reported that large buildings with multiple tenants are particularly difficult to recruit to the program because NSTAR cannot provide data for the whole building to one tenant who may be interested in participating.

- **Recommendation.** In an effort to increase recruitment from buildings with multiple tenants, NSTAR should identify ways to facilitate obtaining tenant authorizations, e.g., provide supporting information on NSTAR letterhead, authorization letters, forms, etc.

**Finding.** A majority of respondents reported that at least one staff member was trained to use Portfolio Manager through the ESB program and most of them reported plans to benchmark their facilities at least once a year.

- **Recommendation.** The ESB program has been effective in training participants on using Portfolio Manager, which has facilitated the ongoing benchmarking of their facilities. NSTAR should therefore continue to provide training and support for Portfolio Manager.

**Finding.** When calling for the in-depth interviews, the NMR team encountered several participants whose primary contact had left the company. In these cases, the contact generally took with them all knowledge of the WBA program and on using Portfolio Manager.

- **Recommendation.** Consider including routine phone calls to participants to help identify when contacts that have been trained to use Portfolio Manager leave. When replacements are hired, meet with them to help ensure continuity on benchmarking activities.

**Benchmarking Scores and Audit Reports**

**Finding.** NMR reviewed several technical scoping studies. The reports prominently display the ENERGY STAR® performance rating on the first page; some summarize the findings and recommended measures at the beginning of the report as well. All the reports reviewed contain a summary table with estimated savings, simple paybacks, and applicable NSTAR programs followed by a short summary of each recommended measure, including action steps. In some cases, the summary table also presents payback periods after program rebates.

**Finding.** Survey respondents reported the lowest satisfaction levels with "information provided about incentives available from other sources."

- **Recommendation.** Respondents report that they are satisfied with the technical audit reports. However, NMR staff believe a few minor changes to the order in which information is presented will increase the clarity of the reports. Establish a standardized, consistent format for the report that includes the benchmarking score on the first page, set apart from text. Provide a summary section on the first page that includes: a description

of what the benchmarking score indicates and how it was determined, the table of recommended measures, and an estimate of the energy savings needed to achieve ENERGY STAR® designation. For capital outlay measures, also include a description of rebates available from NSTAR energy efficiency rebate programs and the resulting project payback; also seek to identify incentives available from other sources. Including this information in the technical audit report, will help ensure that all participants are made aware of the incentive and rebates available for the recommended measures.

**Finding.** In an in-depth interview, one respondent expressed disappointment with their score at the time of the audit and the minimal improvement after implementation of recommendations.

- **Recommendation.** In order to ensure that participants understand their benchmarking score, reports should include an explanation of the benchmarking score. So as to set realistic expectations, NSTAR should also consider including an estimate of the likely impact on the score from implementing the recommendations.

## Presentation of Audit Findings

**Finding.** According to program contractors, NSTAR staff have generally not attended the presentations of audit findings. The program manager said she notifies field staff when their customers request benchmarking and makes sure they receive draft reports and are invited to presentations. However, one staff member noted that he did not know when these presentations took place but would probably go if he were invited.

- **Recommendation.** Ensure that relevant account executives have the opportunity to review contractor's audit report and encourage them to attend the findings presentation. The presence of the account executives at this presentation is a critical step for channeling customers to the NSTAR energy efficiency rebate programs and for deriving the full benefit of the ESB program for both participants and the utility. Customer presentations provide excellent opportunities to foster customer awareness and education on energy efficiency and low/no cost measure recommendations. Finally, the utility's presence simply adds greater legitimacy and credibility to the entire process.

**Finding.** The survey respondents reported financial considerations as the primary driver of their decision to implement recommended measures. Conversely, they reported that lack of budget was the primary reason for not implementing measures.

- **Recommendation.** In an effort ensure that participants understand the full impact of participation in NSTAR rebate programs, paybacks and incentives available from NSTAR energy efficiency rebate programs should be emphasized in presentation of audit findings. Program staff attending the presentations should go prepared to recruit participants into the relevant NSTAR incentive programs for recommended measures.

## Low/No Cost Measures

**Finding.** Respondents reported implementing 38% of the recommended low cost/ no cost measures.

- **Recommendation.** In an effort to increase the number of low/no cost measures that are implemented, NSTAR should consider including a roadmap or a plan of action for low/no cost measures with the technical audit report. The plan should be customized for each participant and reviewed with them during the presentation of the final report. NSTAR should follow up with participants and verify that they are pursuing all of the low/no cost measures recommended.

## Capital Outlay Measures

**Finding.** Respondents reported implementing less than three-tenths (29%) of the recommendations requiring a capital outlay.

**Finding.** Respondents reported that about half (49%) of the implemented electrical energy savings were implemented through another NSTAR program and about one-fourth (24%) of the implemented natural gas savings were implemented through another NSTAR program.

**Finding.** One-third of the NSTAR respondents who reported implementing capital outlay measures through another NSTAR program, reported prior plans to participate in NSTAR programs.

**Finding.** Two-thirds of the NSTAR respondents reported prior plans to implement at least some of the capital outlay measures implemented through the ESB program and nearly half of the respondents reported prior plans to implement 50% or more of the implemented capital outlay measures. However, all of these respondents also reported that ESB strongly influenced their decision to implement recommendations that they had not previously planned to pursue.

- **Recommendation.** In the absence of cost information, it is not possible to make a definitive assessment of the ESB program's effectiveness. Additionally, there may be some free ridership in terms of plans to participate in other NSTAR programs and plans to implement recommended measures. Nevertheless, the program appears to have some value in motivating participants to actually implement measures that they had been considering as well as those that they had not previously considered. Accordingly, NMR recommends that the ESB program should continue to be used as a mechanism to drive participation in the NSTAR rebate programs but that its costs be tracked and the program's effectiveness be evaluated after an appropriate interval.

# E-XI. Comparative Findings and Recommendations

This section outlines a few additional cross-program comparative differences and lessons learned.

**Program Marketing and Promotion**

**Finding.** Both the NSTAR (32%) and National Grid (30%) benchmarking programs have been similarly effective in delivering electrical energy savings from their 2006 and 2007 program years.

**Finding.** The most significant difference in the energy savings achieved by the two programs is due to the size and type of participants. The primary participants in the National Grid program were schools (K-12) and the primary participants in the NSTAR program were office buildings.

- **Recommendation.** National Grid should consider promoting the WBA program to larger customers where greater energy savings can be realized.

**Finding.** National Grid has attempted to screen customers so that those who are more likely to benefit from WBA are offered the program. As of the end of 2008, buildings must have low-to-average ENERGY STAR® benchmarking ratings and high energy intensity ratings (kWh use per square foot) in order to qualify for a technical scoping study. Furthermore, non-government customers split the cost of the technical scoping study with National Grid. NSTAR has continued to offer ESB free of charge. Program staff members attempt to offer the program to customers that they judge will benefit from it, but there are no specific requirements that need to be met.

- **Recommendation.** NSTAR should consider utilizing similar approach to that of National Grid for screening customers. National Grid's screening criteria eliminates participants who will be unlikely to achieve large energy savings and, by sharing costs with participants, National Grid is able to further screen out customers who are not willing to make a modest investment in energy efficiency.

**Finding.** NSTAR program staff reported that large buildings with multiple tenants are particularly difficult to recruit to the program because NSTAR cannot provide data for the whole building to one tenant who may be interested in participating.

- **Recommendation.** In order to more effectively reach this market segment, National Grid may also want to consider identifying ways to facilitate obtaining tenant authorizations, e.g., provide supporting information on National Grid letterhead, authorization letters, forms, etc.

**Audit Reports**

**Finding.** Based on a review of technical reports by NMR staff, the NSTAR Energy Efficiency Opportunity Assessment reports provide a good summary of recommended measures up front with the benchmarking rating prominently displayed.

- **Recommendation.** NSTAR's report format is clear and concise. Including recommendations and benchmarking rating at the beginning of the report it calls the attention of participants. National Grid should seek to develop a similar format that summarizes the information in its technical scoping study reports.

**Presentation of Audit Findings and Follow-up**

**Finding.** The presence of National Grid staff at the presentation of audit findings to participants has been a key factor in facilitating customer follow-through and implementation of recommended measures.

- **Recommendation.** In an effort to increase customer follow-through and implementation of recommendations NSTAR should ensure that its staff and account executives are available to attend the presentation of findings to participants.

**Finding.** National Grid is putting in place a system to remind field staff people to call customers and follow up on recommendations made in the technical scoping study.

- **Recommendation.** In an effort to increase customer follow-through and implementation of recommendations NSTAR also should consider instituting such a system.
-

# 1 Introduction

This document presents the findings of process evaluations conducted on the ENERGY STAR® BPBenchmarking Programs delivered by NSTAR (ENERGY STAR Benchmarking Initiative) and National Grid (Whole Building Assessment Initiative) during 2006 and 2007. These programs were designed to assist commercial customers in improving their energy efficiency while reducing energy usage by identifying energy performance improvements opportunities..

The overall objectives of the process evaluation are to explore:

- How the ENERGY STAR® BPBenchmarking Programs are received by customers and vendors; and
- The effectiveness of benchmarking tools in attracting customers and achieving energy savings.

A key focus of the evaluation is thus to assess the effectiveness of the programs in stimulating the installation of energy efficiency measures as well as to estimate the "net value" provided by the programs. The evaluation relies on two main sources:

- In-depth interviews with program staff, contractors, benchmarking program managers at the Environmental Protection Agency (EPA) and Massachusetts Department of Energy Resources (DOER) and participants;
- A survey of 29 program participants.

The findings from this evaluation will be used to assist the sponsors in determining whether they should continue the benchmarking programs, and if so, how to identify ways to improve the programs. The resulting recommendations take into account program changes that have taken place since 2007.

# 2 Methodology

The evaluation methodology relies on in-depth interviews with various market actors and a telephone survey of program participants. The measures installed, as reported by the program participants, are then compared with the measures recommended in their technical assessment studies and used to estimate the net value of the program.

## 2.1 In-Depth Interviews with Program Staff, Contractors and EPA/DOER Managers

In December 2008, Nexus Market Research (NMR) staff conducted 26 in-depth interviews with staff and contractors associated with the National Grid and NSTAR benchmarking programs. These included 11 in-depth interviews with National Grid program staff and contractors, 11 in-depth interviews with NSTAR program staff and contractors, two in-depth interviews with EPA staff for Portfolio Manager, and two in-depth interviews with Massachusetts Department of Energy Resources (DOER) program managers. The latter run similar benchmarking programs for municipalities in the same territory. The overall goal of these interviews was to obtain an understanding of the issues surrounding the design and implementation of the ENERGY STAR benchmarking programs. Table 2-1 and Table 2-2 show the number of individuals interviewed at National Grid and NSTAR compared to the populations.

**Table 2-1: National Grid In-Depth Interviews**

| | Population | Sample |
|---|---|---|
| Program Manager | 1 | 1 |
| Assistant Program Manager (outside consultant) | 1 | 1 |
| Key Account Managers (large customers) | 11 | 3 |
| Energy efficiency Consultants (mid-size customers) | 6 | 2 |
| Technical support specialists | 2 | 2 |
| Implementation contractors (referring lighting and mechanical service vendors) | 8 | 2 |
| Total staff and contractor interviews | 29 | 11 |

**Table 2-2: NSTAR In-Depth Interviews**

| | Population | Sample |
|---|---|---|
| Program Manager (key contact) | 1 | 1 |
| Program Managers (program support) | 7 | 4 |
| Account Executives (program support) | 13 | 4 |
| Implementation contractors | 2 | 2 |
| Total staff and contractor interviews | | 11 |

Program staff and contractor interviews covered the following areas:

- Overall program process—how customers come to participate in the program and what services are provided to them
- Program goals and objectives over the short-, mid-, and long-term time frame
- Barriers to achieving goals and objectives as well as factors that help the program reach its targets
- Program resources and capacity for expansion
- Program marketing, including the customers targeted, potential customer groups not currently targeted and most effective methods
- Interface with customers, including contact and training, use of the benchmarking scores and technical assessments and follow-through to implement measures
- Why customers participate in the program as well as barriers to participation
- Interplay with other utility, state and federal programs
- Quality control including data tracking and communications procedures

The EPA and DOER interviews focused on:

- Interactions with National Grid and NSTAR staff and programs
- How to gauge success for benchmarking programs
- Strengths of the National Grid and NSTAR programs
- Goals and objectives of Portfolio Manager

It should be noted here that, while the objective of this study is to evaluate the programs as delivered in 2006 and 2007, most interviewees discussed the program operations and the issues they confronted in the present or recent past. Indeed, some interviewees had not begun to work on the programs until 2008. This is an inherent limitation of interviewing the staff and contractors of an ongoing program. The participant in-depth interviews and survey, described in the next section, deal with customers who participated in 2006 and 2007 and, thus, are more focused on conditions in those years.

Copies of the interview guides for program staff, contractors, EPA staff and DOER staff are found in Appendices A, B, C and D, respectively.

## 2.2 Participant In-Depth Interviews and Survey

Ten in-depth interviews were conducted with program participants: five each from National Grid and NSTAR. To the extent possible, the in-depth-interview participants were chosen to represent a range of sectors and program years as shown in Table 2-3.

**Table 2-3: Program Participant In-Depth Interviews**

| | National Grid | NSTAR |
|---|---|---|
| 2006 Total Participants | 19 | 13 |
| 2007 Total Participants | 39 | 27 |
| Sample Size | 5 | 5 |
| **Building Type** | | |
| Office | 1 | 2 |
| School | 1 | 1 |
| Hotel | 1 | 1 |
| Retail | 1 | -- |
| Library | 1 | -- |
| Hospital | -- | 1 |
| **Program Year** | | |
| 2006 | 2 | 1 |
| 2007 | 3 | 4 |

The participant in-depth interviews covered the following areas:

- How they learned about the program
- Why they chose to participate
- Barriers they needed to overcome to participate
- Process of participation and interactions with program staff and contractors from the customers' perspectives
- Use of Portfolio Manager, benchmarking scores and technical assessments
- Implementation of low/no cost and other measures recommended
- Measures that would have been implemented without the program (free-ridership)
- Benchmarking, technical assessments and measures implemented outside the program (potential spillover)

The participant in-depth interviews informed the development of the quantitative participant survey. This survey attempted to contact all companies or organizations that had participated in the National Grid or NSTAR programs, including those who had completed the participant in-depth interviews, in 2006 or 2007. Twenty-nine participants completed the survey from February 25 through March 27, 2009. Many of the customers, especially National Grid customers, had

more than one facility audited through the benchmarking program. As a result, the sample of 12 National Grid participants had a total of 30 facilities audited through WBA; and the sample of 17 NSTAR participants had a total 19 facilities audited through ESB. Table 2-4 shows these data as well as the finite population adjusted statistical error margin at the 90% confidence level for the sample of 12 National Grid participants and 17 NSTAR participants. Note that even though the statistical error margins are fairly large, both the National Grid and NSTAR samples accounted for nearly half their respective populations of participants and provided a reasonably good representation of those populations.

**Table 2-4: Sample Size and Sampling Error**

| | 2006-2007 Total Program Participants | | Sample of Surveyed Participants | | Sampling Error (90% Confidence Level) |
|---|---|---|---|---|---|
| | Total Audited Facilities | Unique Participants | Total Audited Facilities | Unique Participants | |
| National Grid WBA | 58 | 24 | 30 | 12 | ±17.2% |
| NSTAR ESB | 40 | 38 | 19 | 17 | ±15.0% |

* Some customers have participated in the programs with multiple buildings

Copies of the participant in-depth interview and survey guides are found in Appendices E and F, respectively.

## 2.3 Quasi-Impact Analysis

**It is important to note that the quasi-impact estimate of the WBA and ESB programs was limited to matching respondents' self-reported implementations with energy conservation measures recommended in their Technical Scoping Studies or Energy Efficiency Opportunity Assessment Reports. As such, the evaluation provides only an estimate of the impact and would require on-site visits to compare actual implementation savings with those reported by respondents in the survey and the savings provided in the scoping reports. Furthermore, a goal of this evaluation is to obtain a general estimate of the net impact and net value of WBA and ESB. In doing this, we are crediting the WBA and ESB programs with the full value of savings from associated implementations through National Grid and NSTAR energy efficiency rebate programs; a complete impact evaluation (with on-site measurement and verification of savings) would be needed to determine the actual savings realized from the implemented recommendations.**

In lieu of conducting a full impact evaluation of the direct and indirect energy efficiency improvements stimulated by the programs, this evaluation assessed program value through a comparative analysis of recommended and installed energy conservation measures. Since the benchmarking programs included scoping studies that generated estimates of annual energy savings for each recommended measure, the net value of the programs was assessed by matching the measures that the respondents to the participant survey reported installing to those recommended in their technical assessment studies and adjusting annual energy savings for free-

ridership.[4]

### 2.3.1 Categorization of Measures

The NMR team evaluated the technical audit reports provided for each participant; for the participant survey, the measures recommended for each participant in his or her technical study report were listed as either low/no cost measures or capital outlay measures. NSTAR participants received an average of 11 recommended measures per participant and National Grid participants received an average of 18 recommended measures per participant. The technical audit reports categorized the recommended measures as either low/no cost or capital outlay measures. Participants with multiple facilities received as many as 50 total recommendations. In order to limit the number of questions asked to participants during the phone survey, low/no cost measures were subdivided into four general categories and measures requiring a capital outlay were subdivided into eleven general categories. For each measure category, participants were asked if they implemented any recommendations within the measure category, approximately what percentage of the recommendations in the measures category they implemented and when they implemented the recommendations. If participants reported that they did not implement any of the recommendations for a category of measures, they were then asked if they had any plans to implement any measures in that category within the next year. The estimated savings in kWh and Therms reported for each recommendation in the technical audits were summed for each measure category for each participant. In some cases, participants received recommendations that did not include savings estimates; in these cases, participants were still asked about implementation but a value of zero was used for estimated savings in the impact analysis.

**Low/No Cost Categories**

1. **Education measures (EDU)** – Recommendations for employee education programs regarding energy efficiency.
2. **Turning off equipment (OFF)** – Recommendations concerning turning off equipment when not in use. This includes properly setting PCs and monitors as well as utilizing motion sensors for vending machines or specifying the use of ENERGY STAR® vending machines. This excludes recommendations regarding utilization of existing lighting controls and implementation of new lighting controls.
3. **Purchasing policy changes (PURCH)** – Recommendations concerning changes to purchasing policies to specify high-efficiency equipment such as ENERGY STAR® certified products.
4. **Demand response (DR)** – Recommendations to enroll in demand-response or demand-management programs.

[4] We identified free-riders as customers who would have participated in other utility sponsored rebate programs in the absence of the benchmarking program or would have implemented energy saving measures in the absence of the benchmarking program.

## Capital Outlay Categories

1. **Energy management systems (EMS)** – Recommendations to improve or install energy management systems or building automation systems.
2. **Lighting measures (LIGHT)** – Recommendations to retrofit lighting or install lighting controls such as motion sensors, dimmers, daylight sensors or timers.
3. **Heating and Air Conditioning (HVAC)** – Recommendations to improve, replace or install heating or cooling systems, such as chillers, furnaces, boilers or air conditioners.
4. **Ventilation (VENT)** – Recommendations for ventilation controls, CO2 sensors or other improvements to regulate the amount of outside air introduced into a building through the HVAC system.
5. **Variable Frequency Drives/High-efficiency motors (VFD)** – Recommendations to install variable frequency drives, variable speed drives or high-efficiency motors.
6. **Hot water/Steam (HW)** – Recommendations for improvements, replacements or installations of hot water or steam systems.
7. **Refrigeration (REF)** – Recommendations for improvements, replacements or installations of refrigeration systems.
8. **Building envelope (BE)** – Recommendations for improvements to the building envelope such as insulation, weatherization, high-efficiency windows or window film.
9. **Humidification (HUMID)** – Recommendations for improvements, replacements or installations of humidification systems.
10. **Laundry (LAUND)** – Recommendations for improvements, replacements or installations of laundry systems.
11. **Energy audits (EA)** – Recommendations to pursue building commissioning or perform energy audits.

# 3 National Grid Whole Building Assessment Initiative

Launched in 2005, the goal of National Grid's Whole Building Assessment (WBA) Initiative is to help commercial and government customers assess the energy performance of their entire building(s) across fuels, take action to make the building(s) more efficient and to sustain that efficiency over time.[5] Participating buildings need to have annual demands greater than 200 kW and range in size from 30,000 to 300,000 square feet. Each customer signs a Memorandum of Understanding (MOU) requiring them to provide National Grid with utility bill data for energy not provided by National Grid, water consumption data and information on building characteristics. The program uses the EPA's ENERGY STAR® Energy Performance Rating to calculate the participating building's ENERGY STAR® benchmarking score and gauge how its energy performance compares with similar buildings across the country. Customers are also provided with a web-based Portfolio Manager benchmarking tool. Buildings considered to be high in energy intensity qualify to have a Technical Scoping Study conducted.

The Technical Scoping Study provides efficiency recommendations including a list of low/no cost improvement strategies, cost-effective capital improvement measures and a description of potential utility incentives available through the existing energy efficiency programs. The study also includes recommendations for longer-term and more complex energy efficiency opportunities. This is followed by an Action Plan meeting with the customer to examine the study's findings, relevant utility program offerings, energy goals for the building and which projects the customer will undertake. Customers are encouraged to continue to monitor their energy use, re-benchmark their buildings, assess the energy performance of other buildings they may own and to establish a long-term plan for achieving their energy efficiency goals.

As of early 2009, potential participants are also required to re-benchmark their facilities preferably every month, but at least every quarter, for a period of a year and to pay half of the cost of the technical scoping study, if they are eligible to receive one. Municipalities are not responsible for scoping-study costs for the first facility if they undertake an energy efficiency project within a year.

## 3.1 Program Goals

National Grid staff initially describes the program goals in terms of the number of Technical Scoping Studies or audits that need to be completed. There is also a strong effort in 2009 to attract more municipal customers. Energy Initiative, the parent program providing incentives for energy efficiency measures, is offering municipal customers attractive financing terms and WBA is expected to play an important role in bringing in projects.

National Grid staff recognizes that the program's ultimate goal is to increase energy savings by

[5] National Grid's Whole Building Assessment Initiative 2009 ENERGY STAR ® Award Submission. Partner of the Year: Energy Efficiency Program Delivery Application. p. 1.

having customers follow through on the Technical Scoping Study recommendations and implement various measures. Customers requesting incentives for measures recommended by the WBA are scheduled to be tracked through the utility's project tracking system, but the program does not yet have any explicit goals based on number of recommendations implemented or energy savings.

National Grid staff also mentioned having program participants continue to benchmark over time (as noted earlier, the MOU requires them to do this for at least a year) as a goal, but was unclear on how much information is currently being captured.

## 3.2 Program Awareness and Participation

The participants surveyed were asked how they first learned of WBA and their reasons for participation as well as challenges or barriers that needed to be overcome to be able to participate. The program staff and contractors interviewed also provided their perceptions of participant motivations and barriers.

### 3.2.1 Participant Awareness

Most of the National Grid survey respondents (7 of 12) said that they first heard about the WBA program from a utility staff person and two reported first hearing about the program from a contractor or vendor. Only a single respondent reported first hearing about the program through a municipal contact (Table 3-1). The role of utility staff as a primary source of information about WBA is corroborated by the in-depth interviews—all five of the National Grid respondents reported first learning about the program through either a National Grid employee or through a building operator's certificate course offered by National Grid.

**Table 3-1: Ways Participants First Heard about WBA Program**

(all respondents; multiple response)

| | **Respondents** |
|---|---|
| n | 12 |
| Utility staff person | 7 |
| Contractor or vendor | 2 |
| Employee within participant company | 2 |
| Business associate or friend – word of mouth | 1 |
| Municipal contact | 1 |

A majority of the National Grid respondents reported that they did not participate in the webinar (9 of 12). Two respondents said that they participated in a webinar with National Grid staff to learn more about WBA; both of these respondents gave the webinars the highest rating of "very useful" on a one to five scale where one was "not at all useful" and five was "very useful" (Table 3-2).

**Table 3-2: Participation in Webinar with National Grid Staff**

(all respondents)

| | **Respondents** |
|---|---|
| n | 12 |
| Participated in webinar | 2 |
| Did not participate in webinar | 9 |
| Don't know/refused | 1 |

#### *3.2.1.1 Prior National Grid Program Participation*

Most of the National Grid respondents (7 of 12) said that they had participated in another National Grid energy efficiency program prior to participating in the WBA program. Five respondents said that they first participated in a National Grid program prior to 2005 and three of the respondents reported participating in another program prior to 2000. Three of the seven respondents were unable to identify the energy efficiency program they had participated in; three respondents reported participating in the Energy Initiative program, two in the Design 2000plus (D2) program, two in a lighting program and one in a premium efficiency motor program (Table 3-3).

**Table 3-3: Past Participation in National Grid Energy Efficiency Rebate Programs Prior to WBA Program**

(all respondents)

| | **Respondents** |
|---|---|
| n | 12 |
| Participated in other programs | 7 |
| Did not participate in other programs | 4 |
| Don't know/refused | 1 |
| **Year** | **Respondents** |
| n | 7 |
| Before 2000 | 3 |
| Before 2005 | 2 |
| Don't know | 2 |
| **Program** | **Respondents** |
| n | 7 |
| Energy Initiative (EI) | 3 |
| Design 2000plus (D2) | 2 |
| Lighting | 2 |
| Motors/Premium Efficiency Motors | 1 |
| Unspecified rebate program | 1 |
| Don't know/refused | 2 |

### 3.2.2 Motivations for Participation

#### *3.2.2.1 Staff and Contractor Perspectives*

National Grid staff believes that the possibility of obtaining an ENERGY STAR® designation, signified by a plaque that may be displayed in lobbies, motivates many customers to participate

in WBA. Four of the seven staff members interviewed mentioned ENERGY STAR® status, marketing, or upper management wanting to know the operations' carbon footprint. It is important to note that staff distinguishes WBA from the National Grid energy efficiency rebate programs in that WBA allows them to earn the ENERGY STAR® designation while the rebate programs are focused on helping customers save energy and money.

Three of the seven staff members interviewed also mentioned that municipal customers want to be able to demonstrate that they are doing as much as they can to extract the savings potential in public buildings and spending tax monies wisely.

Four of the seven staff interviewees also mentioned the customers' desire to save energy and money, though one noted that the desire to gain recognition for reducing the operation's carbon footprint became relatively more important as energy prices decreased (thus decreasing energy cost savings) and publicity about global warming increased. The program manager noted that WBA provides customers with EPA's Portfolio Manager software for benchmarking and a mechanical technical assessment audit (customers could get a free lighting audit through other programs) as participation motivators. In addition, as noted by several interviewees, it uses a whole-building approach with a subsequent audit to identify various energy-saving opportunities.

Three of the five National Grid field representatives interviewed said that customers who had previously participated in National Grid energy efficiency rebate programs were more likely to participate in WBA; one said that it was only true if the customer had had a good experience with the previous program and one said that about half the customers participating in WBA had not done much in the past.

All of the contractors commenting on customer motivators cited the desire to reduce energy costs. One contractor noted that customers are very eager to participate in energy efficiency rebate programs when annual rate changes are first put into effect but their interest then wanes over the course of the year. He believes this is due to property managers getting budget adjustments so that, even if the energy costs stay the same, the managers are no longer going over budget. Three of the four contractors commenting on customer motivators said that "wanting to be green" also plays a notable role. One contractor noted the value of WBA in this regard:

> *"There is also a drive to protect the environment....They don't really know what to do, so they are hoping if they go through this process, the answers will appear to them....someone with experience will come there and give them some guidance on what to do next, and where to go and what some of those numbers look like. Sometimes they have ideas, but don't know how to quantify them, prioritize them."*

In particular, another contractor noted, a customer with a relatively high benchmarking score, such as 70, is eager to learn how to get to 75 quickly so they can display the ENERGY STAR® plaque.

#### *3.2.2.2 Participant Perspectives*

Nearly all of the National Grid respondents (11 of 12) reported saving on energy costs or bills as the most important reason for participating in the WBA program (Table 3-4). Respondents reported similar motives in the in-depth interviews, with all of the respondents reporting a financial benefit as their primary motivation for participation. Respondents also reported establishing a baseline, becoming more efficient and going green as secondary motivations in the in-depth interviews. One respondent said,

> *"The lights did not go off when you left the room, so I felt there hadn't been any improvements in energy efficiency. I felt that if I had audits it would give me a baseline."*

These responses conflict with the perceptions of staff and contractors who believe participants are more interested in the benefits of ENERGY STAR® designation.

**Table 3-4: Most Important Reason for Participation in WBA Program**

(all respondents)

| Reason | Respondents |
|---|---|
| N | 12 |
| To save on energy costs/bills | 11 |
| To take advantage of program incentives | 1 |

### 3.2.3 Barriers to Participation

#### *3.2.3.1 Staff and Contractor Perspectives*

National Grid staff cited time and money as the most important barriers to participation; specifically, customers may question whether program participation would yield benefits that are commensurate with the necessary effort or expense. Five of the seven staff people interviewed cited time constraints on the part of customers; customers may not have the time to gather the energy usage data required for benchmarking or to escort contractors doing audits. One interviewee talked about concerns that energy efficiency would interfere with construction schedules.

Concern about expenses was also cited by five of the seven staff people interviewed. The assistant program manager does not believe that having commercial customers pay for one-half of the technical scoping study cost has deterred anyone, but customers may be concerned about the cost of installing recommended measures.

One staff member noted that customers may be reluctant to participate when they perceive that energy efficiency improvements may limit the future performance or capabilities of their buildings. For example, a downsized HVAC system may not be compatible if temperature requirements become more stringent.

One of the four contractors commenting on barriers to participation cited costs; customers need to have confidence that they will see enough savings to satisfy their payback requirements. This comment is somewhat contradicted by participants who report implementing a higher percentage of measures requiring a capital outlay (33% electric, 55% natural gas) than low/no cost measures (26% electric, 17% natural gas) based on energy savings. Another contractor believes that customers are deterred by having to sign the MOU committing to continue periodic benchmarking with the Portfolio Manager for at least a year; those who are not familiar with this tool are being asked to commit to using it every quarter and he believes many people will not see much difference in their scores, at least in the first year. A third contractor believes that the data-gathering requirements for the benchmarking study can be overwhelming for facility managers; this interviewee felt that this barrier was exacerbated by the fact that the data-gathering form looks intimidating to someone who is seeing it for the first time. The fourth contractor mentioned that customers may be concerned about unacceptable or deficient outcomes of energy efficiency upgrades, such as poorer lighting or heating quality.

#### *3.2.3.2 Participant Perspectives*

A majority of the National Grid respondents (10 of 12) reported no barriers to participation in WBA. Only two of the National Grid respondents said that they needed to overcome any barriers to participate in WBA; both cited too few monetary resources as the most important barrier they overcame. Similarly, in the in-depth interviews, only one of the five respondents interviewed reported needing to overcome a lack of resources to participate in the program. Some respondents reported that they were concerned that their purchasing rules would conflict with participation in the WBA program but they do not view this as a barrier (Table 3-5). The barriers are consistent with the perceptions of staff and contractors. It is important to note that all of the survey respondents were program participants and as such do not represent potential participants who were unable to overcome barriers to participation.

**Table 3-5: Barriers to Participation in Program**

(all respondents)

| **Existence of Barriers** | **Respondents** |
|---|---|
| n | 12 |
| No barriers existed | 10 |
| Barriers existed | 2 |
| Total | 12 |
| **Barriers reported** | **Respondents** |
| n | 2 |
| Too few monetary resources to participate | 2 |

## 3.3 Program Administration

The first step in the program cycle is identifying potential participants and marketing WBA to them. Once a customer signs an MOU, the process has four key steps: benchmarking, technical scoping study, action plan and implementation. There are potential delays and coordination issues in each step.

### 3.3.1 Marketing

National Grid markets the WBA Program to commercial and municipal customers with building types for which EPA's ENERGY STAR® Energy Performance Rating System maintains comparison data. Schools, offices and real estate companies managing multiple properties comprise the majority of the WBA Program's participants. The WBA program manager estimated that roughly equal numbers of WBA participants come to the program through the company's Energy Solutions field-staff marketing activities and through the EPA's ENERGY STAR® program marketing. These estimates are somewhat inconsistent with the responses provided by surveyed participants, none of which included the EPA or ENERGY STAR® as a primary motivation for participating in the program or as a source of awareness. Customers who are candidates for the WBA Program and who express interest in participating typically have a meeting with the program manager or assistant manager who reviews the program details and explains what customers should expect from participation.

#### *3.3.1.1 Marketing by the Utility*

Four of the five Energy Solutions staff people interviewed specifically mentioned marketing activities in describing their WBA responsibilities. One interviewee said she promotes WBA when customers mention that they would like to compare their building with others. Another interviewee who works with medium-sized customers emails them about WBA, sending a link to the program's website. However, one staff person also noted that National Grid already offers other programs to promote energy efficiency and WBA is worthwhile for customers who are really interested in the benchmarking. This seems to ignore the value of the scoping study in identifying the range of possible energy efficiency opportunities.

For customers with multiple facilities, National Grid normally recommends one building for benchmarking. Customers have come back to ask for services at additional buildings; these may be approved depending on how much money is left in the program's annual budget. For the 2009 program implementation, the decision was made to only allow one building to be benchmarked for each customer.

While WBA is being marketed to all eligible building types, the program manager would like to see more focus on types that have had little or no participation: notably hospitals and warehouses. One contractor would like to see more office buildings participate in the program and to work with property managers who are able to leverage recommendations across multiple facilities. For the 2006 and 2007 WBA program years participants included 38 schools, 12 offices, four colleges, one library, one airport, one retailer and one hotel.

#### *3.3.1.2 Leads through other Organizations*

Customers have also contacted National Grid as a result of the EPA ENERGY STAR® Program's efforts to promote its benchmarking tool, particularly to cities and towns. This is largely the cause for the large numbers of middle- and high-school buildings that have participated in the WBA. These buildings are likely to meet the 200 kW participation requirement.

The WBA program manager has also had a role in EPA ENERGY STAR® Program webinars, which has led to customer recruitment as well.

The Massachusetts Department of Energy Resources has launched a program for Massachusetts municipalities that provides similar services to those offered by the WBA. The waiting list for DOER services is substantial, as noted in Section 5.1. Particularly since the summer of 2008, the DOER has been referring municipalities to National Grid for WBA services if they are not scheduled to be served by DOER in the near future.

### 3.3.2 Benchmarking

#### *3.3.2.1 Staff and Contractor Perspectives*

As noted earlier, each customer signs an MOU in order to participate in WBA; as might be expected, this process requires different approvals on the customer side, including financial approval for cost sharing, which often result in delays. In 2006 and 2007, when WBA did not have an assistant program manager, the manager did not have time to follow up if a customer did not get back to her after the initial meeting; the manager currently appears to have more time and flexibility in this regard.

The longest delays occur, according to the program manager, in customers' getting together of all their energy usage data required by the MOU and for the benchmarking score calculation. This may require dealing with several utilities and can take months, delaying the benchmarking step. Once the energy usage data is available, benchmarking currently takes a day to a week. The benchmarking time in 2008 was shorter than in 2006 and 2007 since an additional staff member was brought on to expedite report approval.

Customers, mostly facility managers, are now offered training in the use of the benchmarking software so that they can re-benchmark their buildings. One staff member, based on his experience with having a customer go through WBA, believes the customer is not really trained to use Portfolio Manager and the contractor operates the tool for them. A contractor also believes the training provided on Portfolio Manager is not adequate but notes that National Grid has been responsive to customers requesting additional training and helping them in-person or over the telephone.

#### *3.3.2.2 Participant Perspectives*

The majority of the National Grid respondents (10 of 12) reported that they received an ENERGY STAR® benchmarking score as part of the program (Table 3-6). Notably, two respondents said that they did not receive an ENERGY STAR® benchmarking score. A review of the documents received from National Grid revealed that the score is included but not prominently displayed in the reports. Staff member concerns that the contractor operates the tool for the participants are somewhat confirmed in the in-depth interviews where one respondent said,

> *"I received training but I don't use [Portfolio Manager] because I don't have time, but [the contractor] spent a lot of time doing things for me."*

**Table 3-6: Provision of Benchmarking Score as Part of Program**

(all respondents)

| | **Respondents** |
|---|---|
| n | 12 |
| Provided with score | 10 |
| Not provided with score | 2 |

Six of the ten respondents who received a score reported using it to help them examine their energy usage or to set goals for the future: set goals for facility performance (2), monitor energy usage (2), identify poorly- performing facilities (1), set a baseline for future comparisons (1). A single respondent reported using the score to obtain an ENERGY STAR® rating and two respondents reported not using the score at all (Table 3-7). In the in-depth interviews, respondents revealed some doubts or reservations about the scores received through the program. In general, the respondents did not exhibit a great deal of confidence in the scores and expressed mixed feelings about the scores' usefulness. One respondent who received a high score expressed concern that the score was artificially high. Another respondent said,

> *"[The benchmarking scores] came out a little strange, but [they] highlighted our worst energy [using facility]. We used [the information provided] to do a performance optimization piece at that school and found a zillion things wrong."*

### Table 3-7: Primary Use of Benchmarking Score

(all respondents who said they received a benchmarking score; multiple response)

| Use | Respondents |
|---|---|
| n | 10 |
| To set goals for facility performance | 2 |
| To monitor energy usage | 2 |
| To identify poor performing facilities | 1 |
| To set a baseline for future comparisons | 1 |
| To obtain an ENERGY STAR® rating | 1 |
| Received a good score but have not used it since | 1 |
| Nothing | 1 |
| Don't know/refused | 1 |

Five of the twelve National Grid respondents reported plans to use Portfolio Manager to re-benchmark their facilities at least once a year and three respondents reported that they have no plans to re-benchmark their facilities using Portfolio Manager (Table 3-8). Notably, the three respondents who have no plans to benchmark their facilities in the future also reported that they did not receive training on Portfolio Manager through the WBA program. In the in-depth interviews, respondents reported a lack of time as a barrier to continuing to use Portfolio Manager. One respondent said,

> *"I was satisfied with the training but because of my other job responsibilities I just don't have time to use [Portfolio Manager]."*

### Table 3-8: Frequency of Planned Use of Portfolio Manager to Re-benchmark Facilities

(all respondents)

| Frequency | Respondents |
|---|---|
| n | 12 |
| Monthly or more | 1 |
| Quarterly | 1 |
| Biannually | 1 |
| Annually | 2 |
| Never | 3 |
| Don't know/refused | 4 |

#### *3.3.2.3 Training on Portfolio Manager*

Only three of the twelve National Grid respondents said that they had used Portfolio Manager before participating in the WBA program (Table 3-9).

**Table 3-9: Use of Portfolio Manager before Program Participation**

(all respondents)

| | Respondents |
|---|---|
| n | 12 |
| Had used before | 3 |
| Had not used before | 9 |

Five of the respondents reported that at least one staff member was trained to use Portfolio Manager to benchmark facilities and five respondents said that they did not receive any such training as part of the WBA program (Table 3-10). The five respondents who said they received Portfolio Manager training reported that the training was sufficient for them to continue benchmarking their facilities. In the in-depth interviews, respondents mentioned data entry as the most time-consuming and difficult part of using Portfolio Manager and reported that National Grid or contractors entering the data was beneficial. One respondent said,

> *"We were familiar with the Portfolio Manager prior to the WBA program so there was not a lot of training needed for me and my staff. The big help we got from National Grid is that they loaded data in for us. That's the hard part."*

**Table 3-10: Number of Persons Trained on Using Portfolio Manager to Benchmark Facilities**

(all respondents)

| | Respondents |
|---|---|
| n | 12 |
| One | 2 |
| Two | 1 |
| More than four | 2 |
| Did not receive training | 5 |
| Don't know/refused | 2 |

The majority of staff members trained through the WBA program is comprised of facility managers/directors (6) (Table 3-11).

**Table 3-11: Job Titles of Those Trained on Portfolio Manager**

(all respondents who said they received training on Portfolio Manager; multiple response)

| Titles | Respondents |
|---|---|
| n | 5 |
| Facilities Manager/Director | 6 |
| Engineer/Engineering Coordinator | 1 |
| Maintenance Project Manager | 1 |

The survey asked respondents to rate the value of four aspects of Portfolio Manager on a scale of one to five, with one being "not at all valuable" and 5 being "very valuable." As Table 3-12 shows, respondents gave high ratings to "identification of energy efficiency opportunities" and "the whole-building approach of Portfolio Manager." Respondents gave relatively lower ratings to "help provided by program contractors or utility staff in using Portfolio Manager" and "comparisons to other similar facilities." One-third of the National Grid respondents (4) did not rate any of the aspects of Portfolio Manager—these same four respondents also reported that they did not receive training on Portfolio Manager through the WBA program.

**Table 3-12: Value of Portfolio Manager Aspects**

(all respondents)

| Aspect | 1 to 5 Scale, 1 = "not at all valuable" and 5 = "very valuable" | | | | | | | Don't Know/ Refused |
|---|---|---|---|---|---|---|---|---|
| | n | 1 | 2 | 3 | 4 | 5 | Mean | |
| Identification of energy efficiency improvement opportunities | 7 | -- | -- | 1 | 2 | 4 | 4.4 | 5 |
| Help provided by program contractors or utility staff in using Portfolio Manager | 8 | -- | 1 | 3 | 2 | 2 | 3.6 | 4 |
| Whole-building approach of Portfolio Manager, as opposed to looking at individual equipment | 8 | -- | -- | 2 | 1 | 5 | 4.4 | 4 |
| Comparisons to other similar facilities provided by the benchmark score | 8 | -- | 2 | 3 | -- | 3 | 3.5 | 4 |

## 3.3.3 Technical Scoping Study

The technical scoping studies involve fewer delays than benchmarking since, other than scheduling the audit, National Grid does not need to wait for any customer action. The program manager estimated that it takes about two weeks to set up an audit once the benchmarking is completed. Contractors then take two to four weeks to provide the results of the technical scoping study to National Grid, with the lighting component taking the shortest time to complete

and the mechanical component the longest. Program staff members can take two to three weeks to approve the technical scoping study, though they believe this process is getting shortened with the 2008 addition of another person to do approvals. Another improvement in 2008 was the collecting of all the information needed from the customer at the outset of the process so that National Grid does not have to wait with partially completed reports for more inputs.

A contractor, however, noted that getting approvals from National Grid is a two-tiered process that still takes time. Reports often go to multiple staff persons. The person charged with approving technical scoping studies does not apply a rubber stamp but usually has questions, editorial comments and items that need changes. After this review, the report goes to the key account manager in the field who does a cursory review. After the report has been approved by the field staff, the program manager will schedule a presentation for the customer.

One contractor notes that National Grid staff has been present at many of these customer presentations. He believes that National Grid staff presence is an important factor in getting customers to follow through on the recommended measures.

The National Grid technical scoping studies reviewed for this evaluation begin with brief descriptions of the facilities studied (building, HVAC, lighting, controls, other equipment, schedules). The benchmarking score and energy-usage data graphs follow; last come a list of energy conservation measures for further study. A table of recommended measures includes cost and savings estimates and potential incentives, but there is no summary section at the beginning of the report, nor are the benchmarking score and measure recommendations highlighted in any way.

Some participants receive separate lighting reports. Some lighting reports contain handwritten data scanned into a PDF file. The recommended measures are identified by device codes which would not be recognizable by most customers, though the reports highlight the appropriate measure code in the appendix.

#### *3.3.3.1 Participant Perspectives*

Eight of the twelve National Grid survey respondents reported receiving a technical scoping study that identified energy efficiency opportunities from the WBA program (Table 3-13). In contrast, all twelve National Grid respondents said that they were provided with a separate lighting report identifying recommended lighting efficiency opportunities. This could indicate a communication problem with delivery of the technical scoping study.

**Table 3-13: Program Provision of Technical Audit Report Identifying Energy efficiency Opportunities Other than Lighting**

(all respondents)

| | **Respondents** |
|---|---|
| N | 12 |
| Report provided | 8 |
| Report not provided | 3 |
| Don't know/refused | 1 |

The survey asked respondents to rate their satisfaction with a number of aspects of the technical audit report provided by the WBA program using a scale of one to five, with one being "not at all satisfied" and five being "very satisfied." As Table 3-14 shows, respondents gave all of the aspects of the technical scoping study high satisfaction ratings.

**Table 3-14: Satisfaction with Aspects of Technical Audit Report Provided through Program**

(all respondents who received technical audit report identifying opportunities other than lighting)

| **Aspect** | **1 to 5 Scale, 1 = "not at all satisfied" and 5 = "very satisfied"** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **n** | **1** | **2** | **3** | **4** | **5** | **Mean** |
| Overall quality of report | 8 | -- | -- | 1 | 5 | 2 | 4.1 |
| Level of report detail | 8 | -- | -- | 1 | 5 | 2 | 4.1 |
| Range of energy efficiency recommendations | 8 | -- | -- | 1 | 4 | 3 | 4.3 |
| Amount of new information provided | 8 | -- | -- | 2 | 3 | 3 | 4.1 |
| Usefulness of the information in making decisions about whether to implement the recommendations | 8 | -- | -- | 1 | 5 | 2 | 4.1 |
| Format of the report | 8 | -- | -- | 2 | 4 | 2 | 4.0 |

All survey respondents reported that they were satisfied with the lighting report overall (d the "level of report detail."

Table 3-15). The respondents gave the highest ratings to "usefulness of the report" and the "level of report detail."

**Table 3-15: Satisfaction with Aspects of Lighting Report Provided through Program**

(all respondents)

| Aspect | 1 to 5 Scale, 1 = "not at all satisfied" and 5 = "very satisfied" | | | | | | |
|---|---|---|---|---|---|---|---|
| | n | 1 | 2 | 3 | 4 | 5 | Mean |
| Overall quality of report | 12 | -- | -- | -- | 5 | 7 | 4.6 |
| Level of report detail | 12 | -- | -- | -- | 3 | 9 | 4.8 |
| Range of energy efficiency recommendations | 12 | -- | -- | -- | 4 | 8 | 4.7 |
| Amount of information provided that was new to you | 12 | -- | -- | 1 | 4 | 7 | 4.5 |
| Usefulness of the information in making decisions about whether to implement the recommendations | 12 | -- | -- | -- | 1 | 11 | 4.9 |
| Format of the report | 12 | -- | -- | 1 | 3 | 8 | 4.6 |

## 3.4 Efficiency Measure Implementation

The staff and contractor interviewees commented on the factors surrounding measure installation. The participant survey also gathered information on the recommended measures installed, the measures planned for installation, the reasons for installation and the reasons that any recommended measures have not yet been installed. Section **Error! Reference source not found.** on the Impact Analysis described some of the overall survey findings regarding the measures installed. This section provides further detail regarding participant perspectives on measures installed.

### 3.4.1 Staff and Contractor Perspectives on Measure Implementation

The program manager noted that 38% of program participants implement some measures. Historically, the most commonly implemented measures involve lighting; this is still the case in 2008, though the program manager believes more customers are now implementing other measures as well. National Grid is putting in place a system to remind field staff to call customers and follow up on recommendations made in the technical scoping study. The staff interviewees stressed that communication is key. Customers need to understand the size of the rebate offered through National Grid's energy efficiency rebate programs and how it affects the project's payback period. One field staff member noted the importance of easing the way for implementation:

> *"Many times, you're aware of a vendor that has that particular expertise, and you say to the customer, 'Can I have X company come by and talk to you about this and give you a cost estimate?'"*

Staff interviewees believe the factors leading customers to implement recommended measures include a short payback period (typically less than two years), having equipment that is due to be replaced anyway, and having some prior awareness of the need for the measure before participating in WBA. For low/no cost measures, the ability to contract actions out as part of a maintenance agreement rather than having the organization's staff responsible for them increases likelihood of implementation.

Staff interviewees believe the factors preventing customers from implementing recommended measures include lack of time, money and interest as well as skepticism over the estimated energy savings.

Contractors emphasized the need for extensive follow up to promote measure implementation. One contractor noted:

> *"Overall, people have a hard time taking recommendations and implementing them. They only get a report and a couple of hours of face time. They may not believe the savings. They don't necessarily know where to go to get additional help or how to write up a scope of work or specifications. They don't know contractors whom they can trust, or they might not even understand the recommendation well enough to act on it.....There needs to be a clean vehicle for implementation that makes it easy for them."*

He went on to say that follow up was particularly important for non-lighting measures:

> *"We are in this field, and we know the terms and the typical savings and typical costs, but for someone looking at it for the first time, it can be pretty overwhelming. Lighting is much easier for people. They can see it, it's very obvious....A lot of this is much more behind the scenes. It's behind locked mechanical room doors….. they may never see some of this stuff going in or know what it's really all about....I get the sense that people are finding it hard to believe it or know that these recommendations are really commonplace and not just one person's opinion, but that these are valid recommendations, and they should really pursue them....It would be helpful to have some sort of white paper or fact sheet that goes behind it that adds some validity to it.... Examples of similar customers who had implemented similar measures would also be helpful"*

Lighting measure recommendations are also implemented more frequently, this contractor believes, because National Grid already has a system set up so that, once the customer agrees, the lighting installation proceeds without too much more involvement on the customer's part. Other measure recommendations are more complicated and often need more study or design work. Customers, however, often simply do the projects that require the least involvement on their parts.

### 3.4.2 Participant Perspectives on Measure Implementation

Owing to the large number of recommendations included in the Technical Assessment Studies and because of the existence of participants with multiple locations, it was not feasible to ask survey respondents about implementations of each individual measure. Accordingly, the survey

respondents were asked to report the overall percentage of recommended measures installed in each measure category, rather than about installations of each individual measure. Eight of the 12 National Grid (66%) respondents reported implementing at least one recommendation—seven (58%) reported implementing at least one low/no cost measure and six (50%) reported implementing at least one recommendation requiring a capital outlay. This exceeds the program manager's estimate of 38% of program participants implementing at least one measure. Lighting is the most frequently recommended measure and it is the most frequently implemented measure requiring a capital outlay, with four respondents reporting implementing lighting recommendations at 12 different facilities. These respondents reported utilizing National Grid rebate programs to help implement lighting measures at nine of the 12 facilities.

While the low/no cost recommendations are by far the least expensive measures they are not the most frequently implemented measures. Although they do not require significant investment of capital, they deal primarily with behavior changes which can be difficult to instill. It may be easier for respondents to change out equipment than to systematically change human behavior and habits. It is also possible that due to the low total savings from low/no cost measures that the measures are forgotten or overlooked as participants concentrate on larger energy savings. In the in-depth interviews, two respondents were unable to recall any of the low/no cost recommendations (Table 3-16).

**Table 3-16: Estimated Measure Costs and Percent of Measures Implemented**

| Measure Category | # of Measures | Average Estimated Savings | | Average Estimated Cost | Average Cost of Recommendations | | % of Recommendations Reported Implemented by all Respondents | Total Energy Savings Reported Implemented | |
|---|---|---|---|---|---|---|---|---|---|
| | | kWh | Therms | $ | $ / kWh | $ / Therm | % | kWh | Therms |
| **Low/No Cost Recommendations** | | | | | | | | | |
| EDU | 16 | 9,835 | 450 | $31 | <$0.01 | $0.07 | 12% | 12% | 15% |
| OFF | 30 | 20,138 | 12 | $804 | $0.04 | $1,138.00 | 42% | 33% | 72% |
| **Overall** | **46** | **16,554** | **164** | **$535** | **$0.03** | **$3.26** | **32%** | **26%** | **17%** |
| **Recommendations Requiring a Capital Outlay** | | | | | | | | | |
| EMS | 13 | 65,403 | 2,635 | $32,028 | $0.50 | $12.15 | 10% | 13% | 13% |
| LIGHT | 31 | 22,684 | -- | $9,327 | $0.41 | -- | 62% | 62% | -- |
| HVAC | 12 | 31,257 | 1,915 | $26,496 | $0.85 | $13.83 | 70% | 67% | 77% |
| VENT | 50 | 29,206 | 5,200 | $28,713 | $0.98 | $5.52 | 63% | 25% | 68% |
| VFD | 20 | 29,035 | -- | $17,840 | $0.61 | -- | 13% | 8% | -- |
| HW | 3 | -- | 3,787 | $15,050 | -- | $3.97 | 0% | 0% | 0% |
| BE | 1 | 13,000 | 220 | $66,700 | $5.13 | $303.18 | 100% | 100% | 100% |
| **Overall** | **131** | **30,624** | **2,550** | **$22,568** | **$0.74** | **$8.85** | **49%** | **30%** | **55%** |

### 3.4.3 Implementations of Low/No Cost Measures

**Employee education recommendations (EDU)** - Eight National Grid respondents received recommendations to implement employee education measures at a total of 16 facilities. Three respondents reported implementing an average of 28% of the recommended education measures at a total of seven facilities—six in 2008 and one in 2006 (Table 3-17 and Table 3-18). These implementations represent 12% of the total recommended electricity savings and 15% of total recommended natural gas savings for this measure type (Table 3-16).

**Recommendations to turn off equipment when not in use (OFF)** - Seven National Grid respondents received recommendations to turn off equipment when not in use at a total of 17 facilities and five respondents reported implementing an average of 56% of the recommendations at a total of 13 facilities—ten in 2008 and three at an unspecified time. Two respondents were unable to provide estimates for the number of implemented recommendations regarding turning off equipment (Table 3-17 and Table 3-18). These implementations represent 33% of the total recommended electricity savings and 72% of total recommended natural gas savings for this measure type (Table 3-16).

### Table 3-17: Implementation of Recommended Low/No Cost Measures

(all respondents that received recommendations for low/no cost measures)

| Measure Recommended | # of Respondents Receiving Recommendation | # of Facilities where Recommended | Respondents Implemented | # of Facilities where Implemented | Percentage of Recommended Savings Implemented |
|---|---|---|---|---|---|
| Employee education | 8 | 16 | 3 | 7 | 28% |
| Turning off equipment when not in use | 7 | 17 | 5 | 13 | 56% |

### Table 3-18: Year of Implementation of Low Cost Measures by Facility

(facilities where low/no cost measures were implemented)

| Measure Recommended | n | # of Facilities | 2006 | 2007 | 2008 | 2009 | Don't know |
|---|---|---|---|---|---|---|---|
| Employee education | 3 | 7 | 1 | -- | 6 | -- | -- |
| Turning off equipment when not in use | 5 | 13 | -- | -- | 10 | -- | 3 |

Table 3-19 summarizes respondents' intentions to implement additional low/no cost energy efficiency recommendations within the next year—note however, that the intent of those respondents that participated in the program two or more years ago (in 2006 or 2007) to implement additional measures is questionable.

### Table 3-19: Plans to Implement Measures within next Year

(all respondents that did not implement all recommended measures)

| Measure Recommended | n | # of Facilities | Respondents with Plans to Implement | # of Facilities Planning to Implement |
|---|---|---|---|---|
| Employee education | 5 | 9 | 2 | 5 |
| Turning off equipment when not in use | 4 | 4 | 3 | 3 |

Four of the twelve National Grid respondents reported not implementing some of the recommended low/no cost measures. Two of these respondents said that time was the most important factor in their decisions to not implement these measures; respondents also mentioned budget (1) and "driving force no longer present" (1) as factors in their decisions not to implement the measures (Table 3-20). In the in-depth interviews, some of the respondents said that they do not recall receiving recommendations for some of the low/no cost measures listed in the technical scoping study.

**Table 3-20: Most Important Factor in Decision not to implement Low Cost Measure**

(all respondents who did not implement all recommended low cost measures)

| | **Respondents** |
|---|---|
| n | 4 |
| Time | 2 |
| Budget | 1 |
| Driving force no longer present | 1 |

## 3.4.4 Implementations of Measures Requiring Capital Outlay

Energy management system recommendations (EMS) - **Eight respondents received recommendations to implement energy management system measures at a combined total of 13 facilities. Three of these respondents reported implementing an average of 43% of the recommended energy management system measures at a combined total of three facilities in 2008 (Table 3-21 and**

Table 3-22). These implementations represent 13% of the total recommended electricity savings and 13% of total recommended natural gas savings for this measure type (Table 3-16).

Lighting recommendations (LIGHT) - **Lighting measures were the most common recommendation with nine respondents receiving recommendations at a combined total of 22 facilities. Four of these respondents reported implementing an average of 93% of the recommended lighting measures at a combined total of 12 facilities in 2008 (Table 3-21 and**

Table 3-22). These implementations represent 62% of the total recommended electricity savings for this measure type (Table 3-16).

Heating and cooling recommendations (HVAC) - **Seven respondents received recommendations regarding their heating or cooling systems at a combined total of 16 facilities; and only three of these respondents reported implementing any of the recommended heating or cooling measures. These three respondents reported implementing an average of 93% of the recommended heating or cooling measures at a combined total of 9 facilities in 2008 (Table 3-21 and**

Table 3-22). These implementations represent 67% of the total recommended electricity savings and 76% of total recommended natural gas savings for this measure type (Table 3-16).

Ventilation recommendations (VENT) - **Nine respondents received recommendations concerning ventilation at a combined total of 19 facilities; and only three of these respondents reported implementing any of the recommended ventilation measures. These three respondents reported implementing an average of 91% of the recommended ventilation measures at a combined total of nine facilities in 2008 (Table 3-21 and**

Table 3-22). These implementations represent 25% of the total recommended electricity savings and 68% of total recommended natural gas savings for this measure type (Table 3-16).

Variable frequency drives and high-efficiency motor recommendations (VFD) **- Ten respondents received recommendations concerning variable frequency drives or high-efficiency motors at a combined total of 14 facilities; and only three of these respondents reported implementing any of the recommended measures. These three respondents reported implementing an average of 72% of the recommendations at a combined total of five facilities—four in 2008 and one in 2007 (Table 3-21 and**

Table 3-22). These implementations only represent 8% of the total recommended electricity savings for this measure type (Table 3-16).

Hot water and steam recommendations (HW) **- One respondent received recommendations concerning hot water or steam measures at a total of two facilities but did not report implementing any of the recommended measures (Table 3-21 and**

Table 3-22).

Building envelope recommendations (BE) **- One respondent received recommendations concerning his or her building envelope at one facility. This respondent reported implementing 100% of the recommended measures in 2008 (Table 3-21 and**

Table 3-22). This implementation represents 100% of the total recommended electricity savings and 100% of total recommended natural gas savings for this measure type (Table 3-16).

### Table 3-21: Implementation of Recommended Capital Measures by Facility

(facilities where capital outlay measures were recommended)

| Measure Recommended | # of Respondents Receiving Recommendation | # of Facilities | Respondents Implemented | # of Facilities Implemented | Percentage of Recommended Savings Implemented |
|---|---|---|---|---|---|
| Energy management system | 8 | 13 | 3 | 3 | 43% |
| Lighting | 9 | 22 | 4 | 12 | 93% |
| HVAC | 7 | 16 | 3 | 9 | 93% |
| Ventilation | 9 | 19 | 3 | 9 | 91% |
| Variable frequency drives | 10 | 14 | 3 | 5 | 72% |
| Hot water | 1 | 2 | -- | -- | --% |
| Building envelope | 1 | 1 | 1 | 1 | 100% |

### Table 3-22: Year of Implementation of Capital Measures by Facility

**(facilities where capital outlay measures were implemented)**

| Measure Recommended | n | # of Facilities | 2006 | 2007 | 2008 | 2009 | Don't know |
|---|---|---|---|---|---|---|---|
| Energy management system | 3 | 3 | -- | -- | 3 | -- | -- |
| Lighting | 4 | 12 | -- | -- | 12 | -- | -- |
| HVAC | 3 | 9 | -- | -- | 9 | -- | -- |
| Ventilation | 3 | 9 | -- | -- | 9 | -- | -- |
| Variable frequency drives | 3 | 5 | -- | 1 | 4 | -- | -- |
| HW | -- | -- | -- | -- | -- | -- | -- |
| Building envelope | 1 | 1 | -- | -- | 1 | -- | -- |

Table 3-23 summarizes respondents' intentions to implement additional recommendations requiring a capital outlay within the next year. Five respondents plan to implement additional lighting recommendations at six facilities and four respondents plan to implement additional energy management system recommendations at four facilities—note however, that the intent of those respondents that participated in the program two or more years ago (in 2006 or 2007) to implement additional measures is questionable.

**Table 3-23: Plans to Implement Measures within Next Year**
(all respondents that did not implement all recommended measures)

| Measure Recommended | n | # of Facilities | Respondents with Plans to Implement | # of Facilities Planning to Implement |
|---|---|---|---|---|
| Energy management system | 8 | 10 | 4 | 4 |
| Lighting | 8 | 10 | 5 | 6 |
| Heating and cooling | 5 | 7 | 2 | 2 |
| Ventilation | 7 | 10 | 3 | 3 |
| Variable frequency drives | 7 | 9 | 2 | 2 |
| Hot water | 2 | 2 | -- | -- |
| Building envelope | -- | -- | -- | -- |

Table 3-24 summarizes respondents' primary motivations for implementing the first capital outlay measure at their first facilities and Table 3-25 summarizes motivations for implementing all other capital measures. In general, respondents reported financial considerations as their primary motivation—saving on energy costs/bills (2), return on investment (1), cost effectiveness (2), taking advantage of program incentives (1). Respondents also primarily reported financial considerations as other, or secondary, motivations—cost effectiveness (2), quick payback (1).

**Table 3-24: Most Important Factor Motivating First Capital Outlay Measure Implementation**

| Factor | Respondents |
|---|---|
| n | 5 |
| To save on energy costs/bills | 2 |
| Recommended by someone inside the company | 1 |
| Return on investment | 1 |
| Gain better control of heating and cooling | 1 |

**Table 3-25: Other Factors Motivating Capital Outlay Measure Implementation**

| Factor | Most Important Factor | Other Factors |
|---|---|---|
| n | 6 | 5 |
| Cost effectiveness | 2 | 2 |
| To take advantage of program incentives | 1 | -- |
| Recommended by utility account rep | 1 | -- |
| Recommended by someone inside the company | 1 | -- |
| Upgrade equipment | 1 | -- |
| Quick payback | -- | 1 |
| Functional improvement | -- | 1 |
| Don't know | -- | 1 |

Three of the five respondents who reported plans to implement recommendations requiring a capital outlay in the next year reported that budget was the primary factor that influenced their decisions to not implement the measures previously. One respondent reported that time was the most important factor that influenced his or her decision to not implement the measures previously (Table 3-26).

**Table 3-26: Most Important Factor Influencing Decision Not to Implement Planned Capital Outlay Measures Previously**

| Factor | Respondents |
|---|---|
| n | 5 |
| Budget | 3 |
| Time | 1 |
| Don't know/refused | 1 |

Ten respondents reported that there are recommendations requiring a capital outlay that they have not implemented and have no plans to implement within the next year. Among them, seven reported that budget is the primary factor influencing their decisions not to implement the recommendations. Two of the ten respondents reported that the long payback for the measures is the primary factor influencing their decisions not to implement them (Table 3-27). In the in-depth interviews, some respondents reported long-term plans to pursue some of the capital outlay measures. One respondent said,

> *"We haven't implemented measures requiring a capital outlay because they will be implemented as part of the long-term energy management contract that we will be signing."*

**Table 3-27: Most Important Factor Influencing Decision Not to Implement Capital Outlay Measures**

| Factor | Respondents |
|---|---|
| n | 10 |
| Lack of budget | 7 |
| Payback period too long | 2 |
| Don't know | 1 |

### 3.4.5 Influence of the WBA Program

Three out of twelve respondents reported that they have already benchmarked additional facilities using Portfolio Manager without additional assistance from the WBA program (Table 3-28). Another five respondents reported that they have plans to benchmark additional facilities—note, however, that the intent of those respondents that participated in the program two or more years ago (in 2006 or 2007) to benchmark additional facilities is questionable. The two respondents with no plans to benchmark other facilities reported "need to get approval" (1) and uncertainty (1) as the reasons they are not planning to use Portfolio Manger to benchmark other facilities. In contrast, in the in-depth interviews, the majority of respondents reported no plans to benchmark additional facilities using Portfolio Manager. In addition, only five of the respondents surveyed reported plans to continue benchmarking the facilities that were benchmarked through the WBA program.

**Table 3-28: Benchmarking Plans Subsequent to WBA Participation**

(all respondents)

| | Respondents |
|---|---|
| n | 12 |
| Have benchmarked other facilities using Portfolio Manager | 3 |
| Plan to benchmark other facilities using Portfolio Manager | 5 |
| Have no plans to benchmark any other facilities | 2 |
| Don't know/refused | 2 |

Four of the 12 respondents reported that they have hired or plan to hire a contractor to perform energy audits at additional facilities outside of the WBA program (Table 3-29).

### Table 3-29: Performance of Energy Audits at Additional Facilities

(all respondents)

| | Respondents |
|---|---|
| n | 12 |
| Have performed/will perform additional audits | 4 |
| Have not performed/will not perform additional audits | 6 |
| Don't know/refused | 2 |

Respondents who said that they have no plans to audit additional facilities reported a lack of funds (3), performing in-house audits (1), waiting for state assistance (1) or the lack of need (1) as their primary reasons for not conducting additional audits (Table 3-30).

### Table 3-30: Reasons for Not Planning to Perform Energy Audits at Additional Facilities

(all respondents who say they have not or do not plan to do additional audits)

| Reason | Respondents |
|---|---|
| n | 6 |
| Do not have the funds needed | 3 |
| Performing audits in-house | 1 |
| State will assist with costs | 1 |
| Audits not needed at other facilities | 1 |

Six of the twelve respondents reported implementing at least one measure requiring a capital outlay. Of these six respondents, three reported no prior plans to pursue any of the recommended measures requiring a capital outlay before talking with someone about the WBA program; and three respondents reported having prior plans to pursue some or all of the energy efficiency measures that were recommended as part of the WBA program before talking with someone about the program (Table 3-31).

**Table 3-31: Percentage of Capital Outlay Measures Planned on Implementing Before Program**

(all respondents)

| Percentage: 0% = None of Them, 100% = All of Them | Respondents |
|---|---|
| n | 6 |
| 0% | 3 |
| 1% to 20% | 1 |
| 21% to 40% | 0 |
| 41% to 60% | 0 |
| 61% to 80% | 1 |
| 81% to100% | 1 |
| Don't know/refused | 0 |

Respondents who had planned to install less than 100% of the measures before participating in the WBA program were asked to rate the influence of the WBA program on their decisions to implement measures requiring a capital outlay on a scale of one to five, where one was "no influence at all" and five was "extremely strong influence." Four of the five respondents said that the program had a strong influence on their decisions to implement capital outlay measures and one respondent reported that the program had no influence at all on their decisions to implement the measures.

**Table 3-32: Program Influence on Decisions to Install Capital Outlay Measures not Planned on Implementing Before Program**

(all respondents who reported implementing a capital outlay measure and had planned to install less than 100% of measures before participating)

| | 1 to 5 Scale, 1 = "no influence at all" and 5 = "extremely strong influence" | | | | | | |
|---|---|---|---|---|---|---|---|
| | n | 1 | 2 | 3 | 4 | 5 | Mean |
| Respondents | 5 | 1 | -- | -- | 1 | 3 | 4 |

## 3.4.6 Conduit to Energy Efficiency Rebate Programs

As already noted, the program manager remarked that 38% of WBA customers moved on with some projects, though she does not know proportions of WBA participants that went on to participate in each of the other National Grid programs. Three of the four field staff members commenting on the subject believed that WBA has successfully steered customers to participate in other National Grid programs.

However, two contractors said that they do not have a good understanding of what happens once they leave the action plan meeting and how they can help the customer move forward. One

noted:

> *"We would like more visibility into that (continued involvement when participants enlist in other programs), to know how customers are responding to different suggestions. So that if need be, we can revise our reports or recommendations that will address their concerns or target opportunities that they are more interested in. Some sort of feedback loop that will drive the implementation more."*

None of the survey respondents reported having had plans to participate in a National Grid energy efficiency program prior to participating in the WBA program(Table 3-33).

### Table 3-33: Prior Plans to Participate in National Grid Programs

(all respondents who had at least one measure implemented through a National Grid rebate programs)

| | **Respondents** |
|---|---|
| n | 6 |
| Had plans to participate in utility rebate programs | -- |
| Had no plans to participate in utility rebate programs | 6 |

Six of the 12 National Grid respondents reported implementing at least one recommendation requiring a capital outlay, and only two of these respondents reported implementing at least one recommendation through a National Grid energy efficiency rebate program. Both of these respondents reported that the WBA program had a strong influence on their decisions to participate in other National Grid programs (Table 3-34).

### Table 3-34: Program Influence on Decisions to Participate in Other National Grid Programs

(all respondents who had at least one measure implemented through another National Grid program and had no previous plans to participate)

| | **1 to 5 Scale, 1 = "no influence at all" and 5 = "extremely strong influence"** | | | | | | |
|---|---|---|---|---|---|---|---|
| | **n** | **1** | **2** | **3** | **4** | **5** | **Mean** |
| Respondents | 2 | -- | -- | -- | 1 | 1 | 4.5 |

## 3.5 Communications and Data Tracking

Staff members discussed communications and interactions within the utility and with program contractors as well as communications and tracking of the customers served by WBA.

### 3.5.1 Intra-Utility and Contractor Communications

The program manager reports weekly meetings with the assistant program manager to review the program's direction and any issues that have surfaced. The managers also meet once a month with the mechanical vendors and every four to six weeks with lighting vendors to discuss the WBA program's progress with various customers. One field staff member also noted that he calls contractors when he needs to expedite projects. Program managers meet every six weeks or so with field staff. Four out of five field staff members interviewed also noted that communications about WBA can be very sporadic unless they are working on an active project or have a possible project.

While the field staff members interviewed believe that communications with contractors and other National Grid staff are adequate, unspecified snags were also noted, particularly prior to 2008. The assistant program manager noted that WBA attempts to have ongoing open-door communications and, at the same time, standardize references to measures and actions in the scoping study reports.

The three contractors who commented on communications said the National Grid team worked well together. One interviewee also noted, however, that there can be "too many chefs in the kitchen" along with a lack of empowered decision-makers to make quick decisions. He noted that there was a lot of transition in the last half of 2008. People were switched around in doing the benchmarking and reviewing reports with new people having to come up on the learning curve.

### 3.5.2 Participant Follow-Up and Data Tracking

Staff interviewees believe communications with customers could be improved. The program manager has not been able to follow up with customers as much as she would like to due to other responsibilities. Once customers move into the implementation step, the field staff needs to take over working with them, but the field staff does not necessarily have the time. A field staff member expressed frustration about not being able to adhere to timelines or communicate changes to the customer in a large, complex project:

> *"Without any formal means of follow-up or tracking, it's just up to myself, who has 70 key accounts and up to the program manager, who has several other programs [he/she] administers along with the WBA program."*

Customers requesting incentives through National Grid's energy efficiency rebate programs for measures recommended by the WBA are scheduled to be tracked through the utility tracking system. However, if no rebate is requested, there is no system for tracking which recommendations are implemented. Retro-commissioning is supposed to capture some low/no

cost measure implementations, but the extent to which it provides such information is unclear. Three field staff members noted that they get information through their ongoing relationships with their accounts; they do not, however, appear to adhere to a well-structured process.

## 3.6 Participant Experience and Satisfaction

In general, survey respondents reported a high level of satisfaction with all stages of participation in the WBA program with only two respondents reporting dissatisfaction with any of the stages. Respondents reported the highest level of satisfaction with "convenience of scheduled times for audits" and "information provided about incentive programs." They reported the lowest level of satisfaction with "information provided about incentives from other sources", "timeliness of report", and "outcome of program in terms of realized benefits." (Table 3-35).

**Table 3-35: Satisfaction with Stages of Program Participation**

(all respondents)

| | 1 to 5 Scale, 1 = "not at all satisfied" and 5 = "very satisfied" | | | | | | |
|---|---|---|---|---|---|---|---|
| | **n** | **1** | **2** | **3** | **4** | **5** | **Mean** |
| Forms and materials | 12 | -- | -- | 3 | 4 | 5 | 4.2 |
| Initial application process | 12 | -- | -- | 3 | 4 | 5 | 4.2 |
| Memorandum of Understanding | 12 | -- | -- | 3 | 4 | 5 | 4.2 |
| Amount and complexity of paperwork involved in program | 12 | -- | -- | 4 | 4 | 4 | 4.0 |
| Communication with staff | 12 | -- | -- | 4 | 2 | 6 | 4.2 |
| Communication with contractors | 12 | -- | -- | 4 | 4 | 4 | 4.0 |
| Convenience of scheduled times for audits | 12 | -- | -- | 1 | 5 | 6 | 4.4 |
| Ability of program to address my needs | 12 | -- | -- | 3 | 4 | 5 | 4.2 |
| Timeliness of report | 12 | -- | 1 | 3 | 4 | 4 | 3.9 |
| Information provided about incentive programs | 12 | -- | -- | 2 | 4 | 6 | 4.3 |
| Information provided about incentives available from other sources | 12 | -- | 2 | 4 | 4 | 2 | 3.5 |
| Outcome of program in terms of realized benefits | 12 | -- | -- | 5 | 3 | 4 | 3.9 |

## 3.7 Participant Decision-Making Process

Nearly all of the National Grid respondents (9 of 12) reported that someone within their organization is responsible for making the final decisions regarding which capital outlay measures to install (Table 3-36).

**Table 3-36: Person Responsible for Making Final Decisions Regarding which Capital Outlay Measures to Install**

(all respondents)

| | Respondents |
|---|---|
| n | 12 |
| Someone within company/organization | 9 |
| Other | 2 |
| Don't know/refused | 1 |

Six of the twelve National Grid respondents reported that facility managers or directors are most influential in daily energy operations and five respondents reported that facility managers or directors are most influential in capital decision regarding energy operations (Table 3-37).

**Table 3-37: Persons Most Influential in Energy Operations**

(all respondents)

| | Influential in Daily Energy Operations | Influential in Capital Decisions Regarding Energy Operations |
|---|---|---|
| n | 12 | 12 |
| Facilities Manager/Director | 6 | 5 |
| Property Manager | 1 | 1 |
| Director of Buildings and Grounds | 1 | 0 |
| Operations Manager | 1 | 0 |
| Director of Maintenance | 1 | 0 |
| Working Foreman | 1 | 0 |
| Custodian | 1 | 0 |
| Finance/Fiscal Director or Business Manager or Chief Financial Officer | 0 | 2 |
| School Committee | 0 | 2 |
| Director of Environmental Programs | 0 | 1 |
| City | 0 | 1 |

## 3.8 Quasi-Impact Analysis

**It is important to note that the quasi-impact evaluation of the WBA program was limited to matching respondents' self-reported implementations with energy conservation measures recommended in their Technical Scoping Studies. As such, the evaluation provides only an estimate of the impact and would require on-site visits to compare actual implementation savings with those reported by respondents in the survey and the savings provided in the scoping reports. Furthermore, a goal of this evaluation is to obtain a general estimate of the net impact and net value of WBA. In doing this, we are crediting the WBA program with the full value of savings from associated implementations through National Grid energy efficiency rebate programs; a complete impact evaluation (with on-site measurement and verification of savings) would be needed to determine the actual savings realized from the implemented recommendations.**

### 3.8.1 Measures Installed

The 12 National Grid respondents received a total of 177 recommendations—46 low/no cost recommendations and 131 recommendations requiring a capital outlay. Based on responses to a series of questions regarding 15 recommendation categories, NMR estimates that respondents implemented less than half of all recommendations (44%)—nearly half of all recommendations requiring a capital outlay (49%) and nearly one-third of low/no cost recommendations (Table 3-38).

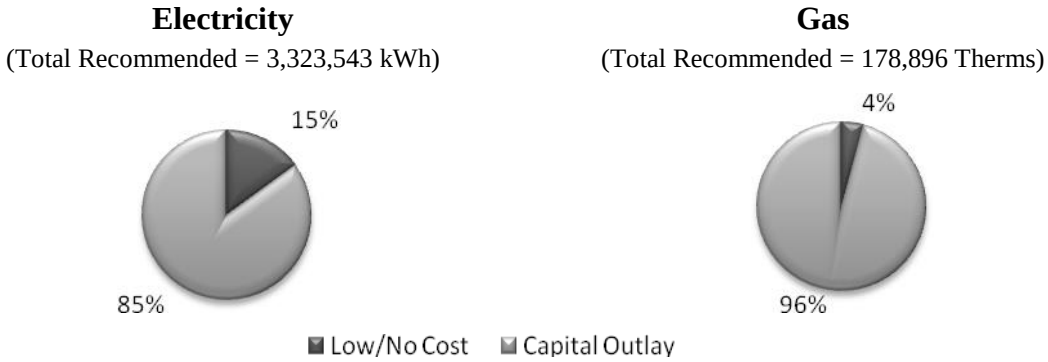
**Table 3-38: WBA - Recommended Measures Implemented by Respondents**

| Measure Type | National Grid Whole Building Assessment | | |
|---|---|---|---|
| | # of Recommendations | % Recommendations Reported Implemented | # of Recommendations Reported Implemented |
| Recommended Low/No Cost Measures | 46 | 32% | 15 |
| Recommended Capital Outlay Measures | 131 | 49% | 64 |
| All Recommended Measures | 177 | 44% | 79 |

### 3.8.2 Estimated Energy Savings for Measures Installed

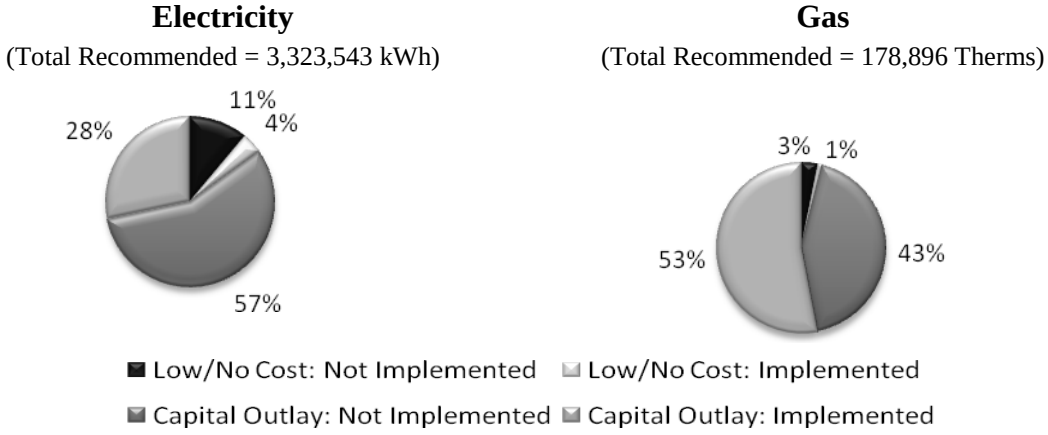
The measures recommended for each participant in the technical study report were listed as either low/no cost measures or measures that required a capital outlay. The 1212 National Grid participants surveyed received recommendations to implement energy efficiency improvements with total electrical energy savings of 3,324,543 kWh and total natural gas energy savings of 178,896 Therms. Approximately 15% of the recommended electrical energy savings and 5% of the recommended natural gas savings were associated with low/no cost recommendations and 85% of the electrical energy savings and 96% of the natural gas savings were associated with recommendations requiring a capital outlay (Figure 3-1).

**Figure 3-1: Energy Savings for All Recommended Measures**




Based on the responses to a series of questions regarding implementation of recommendations, the NMR team estimates that respondents implemented recommendations totaling 1,072,431 kWh and 95,934 Therms.[6] Respondents reported implementing about one-third (32%) of the total recommended electrical savings and more than half (54%) of the recommended natural gas savings. Within the recommended electric energy savings measures, respondents reported implementing about one-fourth (26%) of the recommended low/no cost savings and one-third (33%) of the recommended capital outlay savings. Within the recommended natural gas savings measures, the survey respondents reported implementing less than one-fifth (17%) of the low/no cost savings and more than half (55%) of the capital outlay savings (Figure 3-2).

**Figure 3-2: Energy Savings for Recommendations Implemented**




Respondents were also asked if they implemented the recommended capital measures through a National Grid energy efficiency rebate program and, based on their responses, the NMR team estimates that 704,372 kWh and 79,243 Therms were implemented through National Grid energy

[6] Some National Grid respondents participated in the WBA program at multiple locations. For these respondents, questions regarding implementation of recommendations were asked for each location separately.

efficiency rebate programs (Table 3-39).[7]

Findings regarding specific measures recommended and implemented include the following:

- Recommended low/no cost measures
    - Most of the recommended electricity savings (69%) are from measures associated with turning off equipment.
    - Nearly all (97%) of the recommended low/no cost natural gas savings are from measures associated with employee education.
- Implemented low/no cost measures
    - The majority of the electricity savings (86%) are obtained from turning off equipment.
    - The majority (88%) of the natural gas savings are obtained from implementing employee education.
- Recommended measures requiring capital outlay
    - Thirty percent of the recommended electricity savings are from Energy Management Systems and fifty-six percent are from Ventilation (20%), Lighting (18%) and HVAC (18%) measures.
    - Nearly three-fifths (58%) of the recommended natural gas savings are from Ventilation measures.
- Implemented measures requiring capital outlay
    - Over one-third of total implemented electricity savings are obtained from implementing recommended HVAC measures (36%) and another one-third are obtained from implementing recommended lighting measures (33%).
        - Overall, three-fourths (75%) of the total electricity savings from implementations requiring a capital outlay are obtained through participation in other National Grid energy efficiency programs.
        - All of the implemented HVAC-measure electricity savings (100%) and nearly all of the implemented Lighting-measure savings (92%) are from implementations through other National Grid energy efficiency programs.
    - The total implemented natural gas savings are obtained primarily from implementations of Ventilation measures (70%) and secondarily from implementations of HVAC measures (25%).
        - Overall, more than four-fifths (84%) of the total natural gas savings from implementations requiring a capital outlay are obtained through participation in other National Grid energy efficiency programs.
        - All of the implemented HVAC-measure natural gas savings (100%) and over four-fifths of the implemented Ventilation-measure savings (84%) are from implementations through other National Grid energy efficiency programs.
    - Although Energy Management Systems offer the largest proportion (30%) of recommended electricity savings, they account for only 12% of savings from the reported implementations. None of the EMS measures were reported by these

[7] If respondents reported implementing a recommendation within a capital outlay category, they were asked if they implemented the recommendation through a National Grid energy efficiency rebate program. Respondents were not asked about assistance from any other entities.

respondents to have been implemented through National Grid energy efficiency rebate programs.

**Table 3-39: Estimated 2006-2007 Energy Savings for All Measures**[8]

| Measure Type | n | # of Facilities | Energy Savings Recommended | | Total Energy Savings Reported Implemented | | Implemented through National Grid Rebate Program | |
|---|---|---|---|---|---|---|---|---|
| | | | kWh | Therms | kWh | Therms | kWh | Therms |
| **Low/No Cost Recommendations** | | | | | | | | |
| EDU | 8 | 16 | 157,364 | 7,196 | 12% | 15% | -- | -- |
| OFF | 7 | 17 | 342,359 | 211 | 33% | 72% | -- | -- |
| **Total Low/No cost** | | | **499,723** | **7,407** | **131,859** | **1,231** | **--** | **--** |
| **Percent Low/No Cost Implemented** | | | | | **26%** | **17%** | **--** | **--** |
| **Recommendations Requiring a Capital Outlay** | | | | | | | | |
| EMS | 8 | 13 | 850,238 | 34,256 | 13% | 13% | -- | -- |
| LIGHT | 9 | 22 | 499,065 | -- | 62% | -- | 92% | -- |
| HVAC | 7 | 16 | 500,117 | 30,643 | 67% | 77% | 100% | 100% |
| VENT | 9 | 19 | 554,907 | 98,797 | 25% | 68% | 38% | 84% |
| VFD | 10 | 14 | 406,493 | -- | 8% | -- | 94% | -- |
| HW | 1 | 2 | -- | 7,573 | -- | -- | -- | -- |
| BE | 1 | 1 | 13,000 | 220 | 100% | 100% | -- | -- |
| **Total Capital Outlay** | | | **2,823,820** | **171,489** | **940,572** | **94,703** | **704,372** | **79,243** |
| **Percent of Capital Outlay Recommended Savings Implemented** | | | | | **30%** | **55%** | **75%** | **84%** |
| **Grand Total*** | | | **3,324,000** | **179,000** | **1,072,000** | **96,000** | **704,000** | **79,000** |
| % of Recommended savings | | | | | 32% | 54% | 66% | 83% |

*Given the relative imprecision of calculations the grand totals have been rounded to the nearest thousand

## 3.8.3 Potential Future Implementations

The survey also asked respondents if they had any plans within the next year to implement any of the measures that they reported as not having been implemented. Respondents reported plans to implement additional low/no cost measures totaling 4% of the total recommended electrical energy savings and less than 1% of the total recommended natural gas savings. Respondents also reported plans to implement additional measures requiring a capital outlay totaling 15% of the

[8] As noted previously, some customers have participated in multiple locations. Throughout this report, "n" represents the number of surveys completed with unique contacts that received a recommendation for at least one facility and "# of Facilities" represents the number of separate facilities that received a given recommendation.

recommended electrical energy savings and 17% of the total recommended natural gas savings. If these measures are implemented respondents will have implemented 52% of the recommended electrical energy savings and 70% of recommended natural gas savings (Table 3-40**Error! Reference source not found.**).

**Table 3-40: Estimated Annual Energy Savings for Measures Planned for Implementation within the Next Year**

| Measure Type | Energy Savings Planned for Implementation | |
|---|---|---|
| | kWh | Therms |
| Low/No cost | 126,602 | 1,173 |
| Capital outlay | 518,544 | 30,666 |
| Total | 645,146 | 31,839 |

## 3.8.4 Impact of Other Programs and Free-ridership

The total energy savings resulting from WBA are a function of the measures installed by the respondents after adjusting for free-ridership. We identified free-riders as participants who would have participated in other utility sponsored rebate programs in the absence of the benchmarking program or would have implemented energy saving measures in the absence of the benchmarking program.

### *3.8.4.1 Low/No Cost Recommendations*

National Grid survey respondents reported implementing low/no cost recommendations totaling 131,859 kWh and 1,231 Therms. Since low/no cost recommendations consist of measures that do not require participants to incur capital expenditures and have very short paybacks, the NMR team assumes that respondents were either unaware of the recommendations prior to participating in the WBA program or would not have implemented the measures in the absence of the WBA program. As such, they are not subject to free-ridership and the full value of recommendations implemented can be counted toward the value of the WBA program.

### *3.8.4.2 Recommendations Requiring a Capital Outlay*

To determine the level of free-ridership for recommendations requiring a capital outlay, the NMR team evaluated each respondent's answers to questions regarding prior plans to implement measures, prior plans to participate in National Grid energy efficiency rebate programs and the influence of the WBA program on their decision to participate in National Grid energy efficiency rebate programs.

*Recommendations Implemented Through Other Programs*

The survey asked respondents if they had any prior plans to participate in the National Grid programs through which they implemented recommendations before talking with someone about the WBA program and what influence, if any, the WBA program had on their decisions to

participate in the other National Grid programs.

Six of the 12 National Grid respondents reported implementing at least one recommendation requiring a capital outlay and only two of these respondents reported implementing at least one recommendation through a National Grid energy efficiency rebate program.[9] Both of these respondents reported having no prior plans to participate in National Grid programs before talking with anyone about the WBA program and both respondents reported that the WBA program had a strong influence on their decisions to participate in other National Grid programs.

Based on these responses, the NMR team estimates that recommendations totaling 704,372 kWh and 79,243 Therms implemented through other programs would not have been implemented in the absence of the WBA program (Table 3-41**Error! Reference source not found.**).

**Table 3-41: Savings Implemented through National Grid Energy Efficiency Programs**

| Respondent | Total Savings Implemented through National Grid Rebate Programs | | Prior Plans to Participate in another Program | Influence of WBA on National Grid Rebate Program Participation [5 = Extremely Strong Influence, 1 = No Influence at All] | Savings Counted toward WBA | | |
|---|---|---|---|---|---|---|---|
| | kWh | Therms | | | Percent | kWh | Therms |
| Respondent 1 | -- | -- | na | na | na | na | na |
| Respondent 2 | 12,450 | 983 | NO | 4 | 100% | 12,450 | 983 |
| Respondent 3 | -- | -- | na | na | na | na | na |
| Respondent 4 | -- | -- | na | na | na | na | na |
| Respondent 5 | 691,922 | 78,260 | NO | 5 | 100% | 691,922 | 78,260 |
| Respondent 6 | -- | -- | na | na | na | na | na |
| Respondent 7 | -- | -- | na | na | na | na | na |
| Respondent 8 | -- | -- | na | na | na | na | na |
| Respondent 9 | -- | -- | na | na | na | na | na |
| Respondent 10 | -- | -- | na | na | na | na | na |
| Respondent 11 | -- | -- | na | na | na | na | na |
| Respondent 12 | -- | -- | na | na | na | na | na |
| **Total** | **704,372** | **79,243** | **na** | **na** | **na** | **704,372** | **79,243** |

[9] The other four respondents reported that they did not implement any measures requiring a capital outlay through a National Grid energy efficiency rebate program. Respondents were only asked about participation in National Grid energy efficiency rebate programs and not about other forms of outside assistance.

*Prior Plans to Pursue Recommendations and Influence of WBA Program*

Respondents were also asked if they had any prior plans to pursue or implement any of the recommendations requiring a capital outlay that they implemented at their facilities and what influence, if any, the WBA had on their decisions to implement these measures. Table 3-42 provides a summary of the proportion of the recommendations respondents reported plans to pursue before talking with anyone about the WBA program, the influence of the WBA program on their decisions to implement recommendations they had no prior plans to pursue, and an estimate of free-ridership. One respondent reported plans to pursue all of the recommendations prior to talking to anyone about the WBA program and two respondents reported prior plans to pursue some but not all of the recommendations requiring a capital outlay. All of the respondents who reported plans to install some but not all of the implemented recommendations reported that the WBA program had a strong influence on their decisions to implement the recommendations that they had not previously planned to pursue.

**Table 3-42: Participant Free-ridership**

| Respondent | Proportion of Implemented Capital Outlay Measures that Respondent Planned to Implement before Participating in WBA Program | Influence of WBA on Implementation of Measures not Previously Planned to Implement | Free-ridership |
|---|---|---|---|
| Respondent 1 | 0% | 1 | 0% |
| Respondent 2 | 75% | 5 | 75% |
| Respondent 3 | 0% | 4 | 0% |
| Respondent 4 | 20% | 5 | 20% |
| Respondent 5 | 0% | 5 | 0% |
| Respondent 6 | 100% | NA | 100% |
| Respondent 7 | na | na | na |
| Respondent 8 | na | na | na |
| Respondent 9 | na | na | na |
| Respondent 10 | na | na | na |
| Respondent 11 | na | na | na |
| Respondent 12 | na | na | na |

Table 3-43 summarizes the total savings credited towards the WBA program for each respondent that implemented a recommended measure requiring capital outlay. The NMR team estimates that a total of 863,469 kWh and 91,161 Therms can be counted towards the value of the WBA program. This estimate includes the impact of estimated free-ridership.

**Table 3-43: Net Program Impacts**

| | Savings from Capital Outlay Measures Implemented without Assistance from National Grid Energy Efficiency Rebate Programs | | Total Implemented through National Grid Energy Efficiency Rebate Programs Credited to WBA Program Influence | | Free-ridership | Savings Credited to WBA Program | |
|---|---|---|---|---|---|---|---|
| **Respondent** | **kWh** | **Therms** | **kWh** | **Therms** | | **KWh** | **Therms** |
| Respondent 1 | 45,558 | 220 | -- | -- | -- | 45,558 | 220 |
| Respondent 2 | 19,540 | 316 | 12,450 | 983 | 75% | 7,997 | 325 |
| Respondent 3 | 1,954 | -- | -- | -- | -- | 1,954 | -- |
| Respondent 4 | 145,048 | 12,844 | -- | -- | 20% | 116,038 | 10,276 |
| Respondent 5 | -- | 2,080 | 691,922 | 78,260 | -- | 691,922 | 80,340 |
| Respondent 6 | 24,100 | -- | -- | -- | 100% | -- | -- |
| Respondent 7 | -- | -- | -- | -- | na | -- | -- |
| Respondent 8 | -- | -- | -- | -- | na | -- | -- |
| Respondent 9 | -- | -- | -- | -- | na | -- | -- |
| Respondent 10 | -- | -- | -- | -- | na | -- | -- |
| Respondent 11 | -- | -- | -- | -- | na | -- | -- |
| Respondent 12 | -- | -- | -- | -- | na | -- | -- |
| Total | 236,200 | 15,460 | 704,372 | 79,243 | | 863,469 | 91,161 |

### *3.8.4.3 Net Impact of WBA*

The 12 WBA participants surveyed received energy efficiency recommendations with total electrical energy savings of 3,324,000 kWh and natural gas energy savings of 179,000 Therms. The NMR team estimates that respondents implemented recommendations with total savings of 995,000 kWh and 92,000 Therms as a result of participation in the WBA program. would not have been implemented in the absence of the WBA program. Based on this, the NMR team calculates a net implementation ratio for the WBA program of 0.30 for electrical savings and 0.51 for natural gas savings. The NMR team reviewed 58 audit reports containing recommendations for energy savings of 8,994,000 kWh and 317,000 Therms for 24 WBA participants. Applying the net implementation ratios to the total savings recommended to all

participants, the NMR team projects the net impact of the 2006 and 2007 WBA program years to be 2,692,000 kWh and 163,000 Therms (Table 3-44). It is important to note that the impact evaluation of the WBA program was limited to matching respondents' self-reported implementations with energy conservation measures recommended in their Technical Scoping Studies. As such, the evaluation provides only an estimate of the impact and would require on-site visits to compare actual implementation savings with those reported by respondents in the survey and the savings recommended in the scoping reports. Furthermore, a goal of this evaluation is to obtain a general estimate of the net impact and net value of WBA. In doing this, we are crediting the WBA with the full value of savings from associated implementations through National Grid Energy Efficiency rebate programs; a complete impact evaluation (with on-site measurement and verification of savings) would be needed to determine the actual savings realized from the implemented recommendations.

**Table 3-44: Net Impact of 2006 and 2007 WBA Program Years**

| | kWh* | Therms* |
|---|---|---|
| Recommended savings for 12 participants surveyed | 3,324,000 | 179,000 |
| Savings implemented by participants surveyed | 1,072,000 | 96,000 |
| Low/No cost savings | 132,000 | 1,000 |
| Capital outlay savings after free-ridership | 864,000 | 91,000 |
| Net impact (surveyed participants) | 995,000 | 92,000 |
| Net implementation ratio | 0.30 | 0.51 |
| Total recommended savings all 24 participants | 8,994,000 | 3167,000 |
| Projected net impact of WBA | 2,692,000 | 163,000 |

*Given the relative imprecision of the impact analysis figures have been rounded to the nearest thousand

## 3.9 Participant Firmographics

The population of National Grid participants for the 2006 and 2007 program years includes 24 unique customers representing 58 separate facilities—38 schools, 12 offices, four colleges, one library, one airport, one retailer and one hotel. The twelve National Grid participants surveyed represent 30 separate facilities—23 schools, five offices, one library and one airport (Table 3-45).

**Table 3-45: Building Type**

(all respondents)

| | All Participants | Survey Respondents |
|---|---|---|
| n | 24 | 12 |
| # of Facilities | 58 | 30 |
| School | 38 | 23 |
| Office | 12 | 5 |
| College | 4 | -- |
| Library | 1 | 1 |
| Airport | 1 | 1 |
| Retail | 1 | -- |
| Hotel | 1 | -- |

Eleven out of the twelve National Grid survey respondents reported an average of 250 or more occupants in the facilities that participated in the WBA program (Table 3-46).

**Table 3-46: Number of Building Occupants during Normal Business Hours**

(all respondents)

| | Respondents |
|---|---|
| n | 12 |
| Fewer than 5 | -- |
| 10 to 19 | -- |
| 20 to 49 | -- |
| 50 to 99 | 1 |
| 100 to 249 | -- |
| 250 or more | 11 |

Nine of the twelve National Grid respondents reported average weekly operating schedules of 60 or more hours at the facilities that participated in the WBA program. Respondents reported that their facilities are in use an average of 78 hours a week (Table 3-47).

**Table 3-47: Average Weekly Hours of Building Use**

(all respondents)

| | Respondents |
|---|---|
| n | 12 |
| 40 to 59 hours | 3 |
| 60 to 79 hours | 2 |
| 80 to 99 hours | 5 |
| 100 or more hours | 2 |
| Average (hrs) | 78 |

## 3.10 Recommendations

**Program Goals**

**Finding.** National Grid staff believes that the ultimate goal of the WBA program is to increase energy savings by having customers implement energy efficiency recommendations. However, program goals and data tracking efforts do not include information regarding recommendations implemented.

- **Recommendation.** Without specific and measureable goals it is not possible to evaluate program performance. Therefore, National Grid should develop measureable goals for the WBA program. Based on interviews with program staff, goals should include the number of low/no cost recommendations implemented by participants, the number of capital outlay recommendations implemented by participants, and the number of recommendations implemented through National Grid rebate programs.
- **Recommendation.** In order to evaluate program performance, National Grid must track program goals. National Grid should develop a method for tracking the goals adopted by the program.
- **Recommendation.** In addition to program goals, National Grid should track program WBA program costs, including labor, marketing, and administration. Having accurate cost information is crucial to evaluating the cost-effectiveness of the WBA program.

**Program Marketing and Promotion**

**Finding.** The majority of WBA program participants have been schools.

- **Recommendation.** National Grid should consider diversifying program participants by making efforts to recruit customers from other Portfolio Manager categories such as hospitals, warehouses, office buildings, hotels, retail stores, medical offices, and supermarkets.

**Finding.** Most of the National Grid survey respondents said they first heard about the WBA program from a utility staff person. The role of utility staff as a primary source of information about WBA also was corroborated by respondents to the in-depth interviews.

- **Recommendation.** National Grid should consider utilizing program contractors more for marketing and promotion. By utilizing contractors to market and promote the WBA program National Grid can effectively increase the marketing without incurring additional expenses.

**Finding.** The large majority of respondents to both the in-depth interviews and the survey reported financial benefits as their primary motivation for participating in the WBA program.

- **Recommendation.** Continue to include messages such as "reduce energy costs" and add details in the program literature about the financial savings that can be derived from program participation. The examples provided on the WBA website include information on energy savings. National Grid should consider also providing case studies on its website showing the financial savings of past WBA participants.

**Finding.** National Grid staff also believes that customers may be concerned about expenses associated with implementing any recommended measures.

- **Recommendation.** Program marketing should emphasize measures that do not require a capital outlay as well as the identification of National Grid energy efficiency rebate programs that offer incentives for implementation of recommended measures.

**Portfolio Manager**

**Finding.** Among the various benefits and services of Portfolio Manager, survey respondents gave the highest ratings to "whole building approach of Portfolio Manager."

**Finding.** While the majority of respondents cited no barriers to participating in the program they did express a lack of time to continue benchmarking activities. Respondents said that National Grid entering the data into Portfolio Manager for them was very beneficial.

**Finding.** Program contractors also believe that data gathering requirements for the benchmarking study can be overwhelming for facility managers and that the data gathering form can appear intimidating to someone who is seeing it for the first time.

**Finding.** Program staff indicated that the longest delays occur in customers getting together all their energy usage data required by the Memorandum of Understanding.

- **Recommendation.** In an effort to help customers who may be overwhelmed or intimidated by data entry requirements, National Grid should work to make the data collection form more user-friendly. In addition, National Grid should provide support to customers trying to gather benchmarking data to enter into Portfolio Manager and

develop "tips" that may be offered to customers having trouble with data collection for Portfolio Manager.

- **Recommendation.** Consider using EPA's automated system for transferring utility data to Portfolio Manager so that participants can spend more time evaluating and benchmarking their facilities and less time performing data entry. This would also enable participants to routinely and regularly complete benchmarking activities.

**Finding.** Respondents who recalled receiving Portfolio Manager training reported that the training was sufficient for them to continue benchmarking their facilities. However, nearly half of the respondents surveyed reported that they did not receive training on Portfolio Manager. In the in-depth interviews, some respondents reported that a program contractor performed all of the work using Portfolio Manager for them.

- **Recommendation.** Take steps to ensure that participant staff have a hands-on knowledge of using Portfolio Manager and are capable of running it themselves. Note that implementation of this recommendation may not be necessary if WBA decides to move ahead with automated data entry.

**Finding.** When calling for the in-depth interviews, the NMR team encountered several participants whose primary program contact had left the company. In these cases, the contact generally took with them all knowledge of the WBA program and Portfolio Manager.

- **Recommendation.** Consider including routine phone calls to participants to help identify when contacts that have been trained to use Portfolio Manager leave the organization. When replacements are hired, meet with them to help ensure continuity on benchmarking activities.

**Benchmarking Scores and Audit Reports**

**Finding.** In the in-depth interviews respondents expressed concern about the accuracy of the benchmarking scores. However, a few respondents also reported that the scores motivated them to investigate their facilities further and make improvements. In the reports provided to participants, the benchmarking score is not always apparent and the explanation of the score is not thorough.

**Finding.** NMR reviewed several technical scoping studies. The reports had no summary section and did not highlight the benchmarking score. Separate lighting reports provided to participants also have been highly technical and not user-friendly.

- **Recommendation** Respondents report that they are satisfied with the technical audit reports. However NMR staff believe that a few minor changes to the order in which information is presented will increase the clarity and accessibility of the reports. Consider changing the format of reports to include the benchmarking score on the first page, set apart from text. Provide a summary section on the first page that includes: a description of what the benchmarking score indicates and how it was determined, the table of

recommended measures and an estimate of the energy savings needed to achieve ENERGY STAR® designation.

- **Recommendation.** For capital outlay measures, also include a description of rebates available from National Grid energy efficiency rebate programs and the resulting project payback. Also seek to identify incentives available from other sources. Including this information in the technical audit report, will help ensure that all participants are made aware of the incentive and rebates available for the recommended measures.
- **Recommendation.** Develop a similar user-friendly format for the lighting reports. Provide any technical information or specifications in an appendix.

## Action Plan Meeting

**Finding.** The presence of National Grid staff at the Action Plan Meeting has been an important factor in facilitating customer follow-through and implementation of recommended measures.

- **Recommendation.** National Grid should continue to ensure that it engages customers after the Action Plan Meeting. This is a key step for deriving the full benefit and potential of the program for both participants and the utility.

**Finding.** The survey respondents reported financial considerations as the primary driver of their decision to implement recommended measures. Conversely, they reported lack of budget as the primary reason for not implementing measures.

- **Recommendation.** Paybacks and incentives available from National Grid energy efficiency rebate programs should be emphasized in the action plan meeting. Program staff attending the meeting should go prepared to recruit participants into the relevant National Grid incentive programs for recommended measures.

## Low/No Cost Measures

**Finding.** Respondents reported implementing 44% of all recommended measures but only 32% of low/no cost recommendations. Respondents cited a lack of resources as the primary reason for not implementing low cost/ no cost measures—two cited lack of time and one cited lack of budget.

**Finding.** Respondents reported plans to implement additional low/no cost measures totaling 25% of the recommended low/no cost electrical savings and 16% of natural gas savings within the next year.

- **Recommendation.** In an effort to increase the number of low/no cost measures that are implemented, National Grid should consider including a roadmap or a plan of action for low/no cost measures with the technical audit report. The plan should be customized for each participant and reviewed with them during the presentation of the final report. Seek a commitment from participants to follow the plan of action and implement all of the

low/no cost measures. National Grid staff should follow up with participants periodically and discuss any low/no cost measures that have not been implemented.

## Capital Outlay Measures

**Finding.** Respondents reported implementing about half (49%) of the recommendations requiring a capital outlay.

**Finding.** Respondents reported that 75% of the implemented electrical energy savings and 84% of the implemented natural gas savings were implemented through National Grid's energy efficiency rebate programs.

**Finding.** Only one respondent reported prior plans to participate in National Grid's rebate programs before talking with someone about the WBA program; and all of respondents who reported implementing at least one capital outlay measure through a National Grid rebate program reported that the WBA program had a strong influence on their decision to implement recommendations through the rebate programs.

- **Recommendation.** Although, in the absence of cost information, it is not possible to make a definitive assessment of the WBA program's effectiveness, the program appears to have some value as conduit for funneling customers into National Grid energy efficiency rebate programs. Accordingly, NMR recommends that the WBA program should continue to be used as a mechanism to drive participation in the National Grid rebate programs but that its costs be tracked and the program's effectiveness be evaluated after an appropriate interval.

# 4 NSTAR ENERGY STAR Benchmarking Initiative

NSTAR's ENERGY STAR Benchmarking (ESB) Initiative helps eligible NSTAR customers use the ENERGY STAR® Portfolio Manager benchmarking tool to gauge how the energy performance of their building(s) compares with similar buildings across the country. These customers receive individual training on the use of Portfolio Manager as well as assistance in benchmarking their facilities. Customers also receive, free of charge, technical assessment of their buildings with the findings summarized in Energy Efficiency Opportunity Assessment Reports that provide recommendations for specific energy efficiency improvements. To participate, NSTAR's customers must sign memoranda of understanding (MOU) committing to continue to benchmark their facilities for a period of one year - at least quarterly and preferably monthly. In addition, they must commit to performing all no cost/low cost measures (projects with a payback of less than one year) identified.

Continuing support is provided to participants in identifying and applying for assistance under other NSTAR programs that provide financial incentives for the implementation of energy efficiency improvements.

## 4.1 Program Goals

The NSTAR staff interviewed most often discussed the program's initial or short-term goals in terms of educating customers about their buildings' energy usage and how they compare with similar buildings. One staff interviewee said the short-term goal is to identify low/no cost energy savings opportunities. The program manager and a contractor said the program's short-term goal is to drive participation in NSTAR energy efficiency rebate programs.

In the longer term, staff and contractor interviewees agreed that the program's goal is to get customers to implement recommended measures. A contractor articulated the long-term goal as getting customers to think strategically about energy management. Customers should not only know what measures to implement, but understand the interactive impacts on order of implementation: for example, implementing lighting and operations/maintenance measures may reduce the need for HVAC upgrades.

The program manager and one contractor talked about looking at what measures customers have implemented and whether they have continued to benchmark their facilities as ways of tracking progress toward goals.

## 4.2 Program Awareness and Participation

The participants surveyed were asked how they first learned of ESB and their reasons for participation as well as challenges or barriers that needed to be overcome to be able to participate. The program staff and contractors interviewed also provided their perceptions of participant motivations and barriers.

### 4.2.1 Participant Awareness

Seven of the 17 NSTAR survey respondents said that they first heard about the ESB program from a contractor or vendor and six reported first hearing about the program from an NSTAR staff person or through NSTAR literature (Table 4-1). In the in-depth interviews, four of the NSTAR respondents reported first learning about the program through an NSTAR employee or an ESB contractor and one respondent reported first hearing about the program through Boston Green Tourism.

**Table 4-1: Ways Participants First Heard about ESB Program**

(all respondents; multiple response)

| | **Respondents** |
|---|---|
| n | 17 |
| Contractor or vendor | 7 |
| Utility staff person | 5 |
| Through a course or seminar | 1 |
| Utility literature | 1 |
| Employee within participant company | 1 |
| ENERGY STAR® challenge | 1 |
| Don't know/refused | 1 |

#### *4.2.1.1 Prior NSTAR Program Participation*

More than half of the NSTAR respondents (9 of 17) said that they had participated in another NSTAR energy efficiency program prior to participating in the ESB program. Three respondents report first participating in an NSTAR program before 2002 and four say they first participated in an NSTAR program after 2004. Six of the nine respondents were unable to identify the energy efficiency program they had participated in; one respondent reported participating in a lighting program, one in a classroom retrofit program and one in the ENERGY STAR® Challenge program (Table 4-2).

**Table 4-2: Past Participation in NSTAR Energy Efficiency Rebate Programs Prior to ESB Program**

(all respondents)

| **Prior Participation** | **Respondents** |
|---|---|
| n | 17 |
| Participated in other programs | 9 |
| Did not participate in other programs | 7 |
| Don't know/refused | 1 |
| **First Year of Participation** | **Respondents** |
| n | 9 |
| Before 2000 | 2 |
| 2002 | 1 |
| 2005 | 1 |
| 2006 | 1 |
| 2007 | 2 |
| Don't know | 2 |
| **Programs Participated in** | **Respondents** |
| n | 9 |
| Unspecified rebate program | 5 |
| Lighting | 1 |
| Classroom retrofit program | 1 |
| ENERGY STAR® Challenge | 1 |
| Don't know/refused | 1 |

## 4.2.2 Motivations for Participation

### *4.2.2.1 Staff and Contractor Perspectives*

The program manager believes that cost savings are the primary participation motivator but customers also participate because they want to get ENERGY STAR® ratings and plaques for their buildings, they want to be perceived as green and to maintain their good relationships with their NSTAR customer account executives. Other staff members also noted that customers want to be perceived as green , especially if they can get an ENERGY STAR® plaque, customers want to save money (two responses) and the audits are free of charge. NSTAR staff also said that customers participate in ESB primarily to gain a better understanding of energy use and energy efficiency opportunities in their buildings. One interviewee noted that customers may want more knowledge because they have moved into a building with higher operating costs than other buildings they have occupied. Another staff member noted that municipal customers are particularly eager to document that they are indeed operating their buildings in an efficient manner; municipal customers also see getting an audit as the first step in implementing a variety of projects, even those not covered by the utility programs.

A contractor also emphasized that customers want to find out how their buildings are doing compared with their peers' buildings and what to do about it. She also noted that customers want to save money and since the audit is free,the decision to get one is fairly easy to make.

### *4.2.2.2 Participant Perspectives*

The program manager's assessment of primary customer motivations is supported by respondents' answers to the survey. More than half of the NSTAR respondents (9 of 17) reported saving on energy costs or bills as the most important reason for participating in the ESB program, two respondents reported ENERGY STAR® certification and two respondents reported "use of the benchmarking software" (Table 4-3). In the in-depth interviews, respondent motivations were split between financial, ENERGY STAR® certification and benchmarking. One respondent said,

> *"Monetary savings from reducing energy use was the top reason [for participating in ESB]."*

**Table 4-3: Most Important Reason for Participation in Program**

(all respondents)

| Reason | Respondents |
|---|---|
| n | 17 |
| To save on energy costs/bills | 9 |
| ENERGY STAR® certification | 2 |
| Use of benchmarking software | 2 |
| To see how compare with other similar facilities | 1 |
| Provides good information | 1 |
| To find ways to reduce carbon footprint | 1 |
| To check LEED features | 1 |

## 4.2.3 Barriers to Participation

### *4.2.3.1 Staff and Contractor Perspectives*

Given that there are no customer fees for ESB, both staff members and contractors cited time and access to data as the primary barriers to participation. The program manager also noted that some customers do not want to sign the MOU and commit to continued benchmarking—the customers are daunted by the prospect of a lot of data gathering for their facilities. Large buildings with multiple tenants are particularly difficult to recruit to the program because NSTAR cannot provide data for the whole building to one tenant who may be interested in participating. A contractor agreed, noting that customers are deterred by having to sign the MOU committing to continue periodic benchmarking with the Portfolio Manager for at least a year; those who are not familiar with this tool are being asked to commit to using it every quarter. He adds that many people will not see much difference in their scores, at least in the first year.

Another contractor cited lack of interest by senior management as a barrier, though that has eased in recent years. Most staff and contractor interviewees, however, did not see many significant barriers to participation; one field staff member noted that he has never offered ESB and had a customer refuse.

### *4.2.3.2 Participant Perspectives*

A majority of the NSTAR respondents (14 of 17) reported no barriers to participation in ESB. Only three of the NSTAR respondents said they needed to overcome any barriers to participate in ESB; two cited a lack of time and one said that the program software was confusing and difficult to use. Similarly, none of the respondents reported barriers in the in-depth interviews. The barriers reported by respondents are consistent with the perceptions of staff and contractors.

**Table 4-4: Barriers to Participation in Program**

(all respondents)

| **Existence of Barriers** | **Respondents** |
|---|---|
| n | 17 |
| Barriers existed | 3 |
| No barriers existed | 14 |
| **Barrier Reported** | **Respondents** |
| n | 3 |
| Lack of time | 2 |
| Software confusing and difficult to use | 1 |

## 4.3 Program Administration

The first step in the program process is identifying potential participants and marketing ESB to them. Once customers sign MOUs, they are trained in benchmarking and provided with an energy efficiency opportunity assessment report following a walk-through audit by one of the program contractors. After the presentation of the report, the field staff is expected to talk with the customers about how to take advantage of specific NSTAR programs to implement measures.

### 4.3.1 Marketing

A key element of program marketing is identifying the customers for whom it makes sense to do benchmarking and provide the audit. The program manager noted that her responsibilities include educating field staff and some of the larger customers on benchmarking.

#### *4.3.1.1 Identifying Participants*

Providing ESB to the customers who will most benefit from benchmarking can be challenging. As the program manager noted,

> *"Benchmarking is a fairly expensive program. We want to use it with customers that are committed to continuing to benchmark their facilities and to implementing measures, and hopefully utilize knowledge to benchmark other facilities. Through conversation, we determine good candidates."*

The program manager would also like to develop a policy addressing the issue of serving a company's multiple buildings. Staff members noted that there a few types of customers that are not good prospects for the program. Some customers think they know the measures that are needed in their facilities and do not need to go through the process. Another group that offers poor prospects for the program are those customers who are offered the program because they are unhappy with their bills but are not likely to follow through on any recommendations. Customers with highly-efficient buildings—achieving performance ratings of 75 to 95—also do not need ESB. One staff member noted

> *"Customers go through to see if they are really efficient. Towns like to have it in writing. (I don't) know if this should be what NSTAR or the program should be doing. Abuse is probably at the muni level and less so for private sector."*

Thus, these customers may be using ESB resources that could be targeted to help companies with greater needs.

#### *4.3.1.2 Outreach to Customers*

A good part of marketing ESB occurs during the field staff's regular contact with large customers. Some customers also come in through workshops or presentations that have included information on benchmarking. Before 2008, contractors had a more active role in bringing in customers; they are still free to do that, according to the program manager, as long as they identify good candidates.

The program manager noted that once customers express an interest in ESB, she tries to educate them on what they should expect and what NSTAR expects in return. ESB will not provide an investment-grade audit; some measures will need further study before implementation. NSTAR expects customers to implement all low/no cost measures with paybacks of less than a year and to continue to benchmark their facilities.

### 4.3.2 Benchmarking

#### *4.3.2.1 Staff and Contractor Perspectives*

One contractor reported delays in getting the data needed for benchmarking facilities; he also noted that he sometimes needs to go back and forth between the customer and NSTAR to get the usage data before he can start benchmarking. The process can take two weeks if a customer has all of his or her energy bills in order, but it is more likely to take two months.

NSTAR provides training to customers so that they will continue to benchmark the buildings receiving ESB services and also benchmark other buildings they use. The program manager tries to train two people per customer to deal with staff turnover. Contractors can provide technical assistance in running Portfolio Manager, if needed. NSTAR has received little feedback on how customers have used benchmarking with the exception of one customer, who went on to benchmark other facilities and ordered all facility managers to obtain walk-through audits searching for energy-saving opportunities.

#### *4.3.2.2 Participant Perspectives*

Nearly all of the NSTAR respondents (16 of 17) reported that they received an ENERGY STAR® benchmarking score as part of the ESB program (Table 4-5).

**Table 4-5: Provision of Benchmarking Score as Part of Program**

(all respondents)

| | **Respondents** |
|---|---|
| n | 17 |
| Provided with score | 16 |
| Not provided with score | 1 |

Five of the 16 respondents who received a score reported using it to help them set goals for future performance; and nine respondents reported using it to compare, identify or otherwise rank the less energy-efficient buildings in their building stock: to determine which facilities to address first, to identify poorly-performing facilities, and to compare facilities against others. Two respondents mentioned using the score for LEED certification, one respondent said that he or she uses the score as a baseline for future comparisons, one respondent reported using the score to obtain an ENERGY STAR® rating and one respondent said that he or she received a good score and has not used it since (Table 4-6). In the in-depth interviews, respondents said that the benchmarking scores they received were beneficial in helping them understand how they ranked against similar facilities. However, one respondent said,

> *"I was disappointed with how poorly we did, considering how much money was spent on trying to make our property more energy efficient… we've only gone up three points in the past year, which is also disappointing. We had several people look at our data [and] no one can figure out why our score is so low."*

In this case, the respondent would have benefited from a more in-depth explanation of the reasons why his or her facility received the score it did. Without a clear understanding of the issues or problems, participants have no clear direction and cannot develop a plan to improve their energy efficiency.

### Table 4-6: Primary Use of Benchmarking Score

(all respondents who said they received a benchmarking score; multiple responses)

| Use | Respondents |
|---|---|
| n | 16 |
| To set goals for facility performance | 4 |
| To help determine which facilities to address first | 3 |
| To identify poor performing facilities | 3 |
| To compare facility against others | 3 |
| LEED certification | 2 |
| To set a baseline for future comparisons | 1 |
| To obtain an ENERGY STAR® rating | 1 |
| Receive a good score but have not used it since | 1 |

More than two-thirds of the NSTAR respondents (11 of 17) reported plans to use Portfolio Manger to re-benchmark their facilities at least once a year and eight respondents reported that they will re-benchmark twice a year or more. Only three respondents reported no plans to re-benchmark their facilities using Portfolio Manager (Table 4-7).

### Table 4-7: Frequency of Planned Use of Portfolio Manager to Re-benchmark Facilities

(all respondents)

| Frequency | Respondents |
|---|---|
| n | 17 |
| Monthly or more | 3 |
| Quarterly | 2 |
| Biannually | 3 |
| Annually | 4 |
| Never | 3 |
| Don’t know/refused | 2 |

#### *4.3.2.3 Training on Portfolio Manager*

Only one of the 17 NSTAR respondents reported that he or she had used Portfolio Manger before participating in the ESB program (Table 4-8).

**Table 4-8: Use of Portfolio Manager before Program Participation**

(all respondents)

| | Respondents |
|---|---|
| n | 17 |
| Had used before | 1 |
| Had not used before | 16 |

The majority of NSTAR respondents (13 of 17) reported that at least one staff member was trained to use Portfolio Manger to benchmark facilities. Twelve of the 13 NSTAR respondents who said that they received Portfolio Manager training reported that the training was sufficient to continue benchmarking their facilities and one respondent reported that he or she received numerous error messages and is unsure how to use Portfolio Manager (Table 4-9 and Table 4-10). In contrast, in in-depth interviews, three of the respondents said that they did not receive any training on the use of Portfolio Manager and one respondent was not familiar with the name of Portfolio Manager. When asked about training provided for Portfolio Manager one respondent said,

> *"Is that the website? They sent me the link to it but I did not receive any training."*

And a second respondent said,

> *"The name of that program is not familiar. I do input data into a benchmarking grid maybe that is what you are talking about. They went over the grid with me when they first sent it. It is pretty simple, just putting numbers into a grid. The grid gives me energy usage."*

### Table 4-9: Number of Persons Trained on Using Portfolio Manager to Benchmark Facilities

(all respondents)

| | Respondents |
|---|---|
| n | 17 |
| One | 6 |
| Two | 3 |
| Three | 3 |
| More than four | 1 |
| Did not receive training | 3 |
| Don't know/refused | 1 |

### Table 4-10: Adequacy of Training to Allow Continued Benchmarking

(all respondents who said they received training on Portfolio Manager)

| | Respondents |
|---|---|
| n | 14 |
| Training was sufficient | 12 |
| Have received numerous error messages | 1 |
| Unsure how to use Portfolio Manager | 1 |

Respondents reported that facility managers/directors (7) and finance/fiscal managers (7) are the staff persons most frequently trained through the ESB program (Table 4-11).

### Table 4-11: Job Titles of Those Trained on Portfolio Manager

(all respondents who said they received training on Portfolio Manager; multiple response)

| Titles | Respondents |
|---|---|
| n | 14 |
| Facilities Manager/Director | 7 |
| Finance/Fiscal Manager | 7 |
| Engineer/Engineering Coordinator | 3 |
| Director of Environmental Programs | 1 |
| Director of Buildings | 1 |
| Energy Manager | 1 |
| Tenant Coordinator | 1 |
| Administrative Assistant | 1 |

The survey asked respondents to rate the value of four aspects of Portfolio Manager on a scale of one to five, with one being "not at all valuable" and 5 being "very valuable." As Table 4-12 shows, respondents gave the highest ratings to "help provided by program contractors or utility staff in using Portfolio Manager," "whole-building approach of Portfolio Manager," and "identification of energy efficiency opportunities." Respondents gave relatively lower ratings to "comparisons to other similar facilities." Three of the NSTAR respondents did not rate any of the aspects of Portfolio Manager—these same three respondents also reported that they did not receive training on Portfolio Manager through the ESB program.

**Table 4-12: Value of Portfolio Manager Aspects**

(all respondents)

| Aspect | 1 to 5 Scale, 1 = "not at all valuable" and 5 = "very valuable" | | | | | | | Don't Know/ Refused |
|---|---|---|---|---|---|---|---|---|
| | n | 1 | 2 | 3 | 4 | 5 | Mean | |
| Identification of energy efficiency improvement opportunities | 13 | -- | 2 | 3 | 5 | 3 | 3.7 | 4 |
| Help provided by program contractors or utility staff in using Portfolio Manager | 13 | 1 | -- | 3 | 4 | 5 | 3.9 | 4 |
| Whole-building approach of Portfolio Manager, as opposed to looking at individual equipment | 14 | 1 | 2 | -- | 7 | 4 | 3.8 | 3 |
| Comparisons to other similar facilities provided by the benchmark score | 12 | -- | 4 | 1 | 5 | 2 | 3.4 | 5 |

### 4.3.3 Energy Efficiency Opportunity Assessment Report

The contractor presents the findings from the walk-through audit to the customer. NSTAR staff has not generally attended these presentations; one staff member noted that he has not been asked to attend and did not know when these presentations took place, but would probably go if he were invited. In fact, he thinks it would be good if the contractor presented the audit findings to NSTAR before presenting them to the customer. NSTAR and the contractor could strategize on an approach before going out to the customer together. He believes that NSTAR's presence would demonstrate to the customer that the utility has a vested interest in ensuring there was follow-through on the audit it had paid for and that the audit was administered professionally.

A contractor provided a slightly different version of the process. He noted that he always sends the audit report to NSTAR for review and approval; NSTAR then decides whether or not to attend the presentation to the customer. The NSTAR program manager has attended a few customer presentations, but the contractor wishes that NSTAR staff could find the time to make an appearance at more customer presentations. They provide excellent opportunities to foster customer awareness and education on energy efficiency and low/no cost measure recommendations.

The NSTAR Energy Efficiency Opportunity Assessment Reports reviewed for this evaluation prominently display the ENERGY STAR® performance rating on the first page; some summarize the findings and recommended measures at the beginning of the report as well. All the reports reviewed contain a summary table with estimated savings, simple paybacks and applicable NSTAR programs followed by a short summary of each recommended measure, including action steps. In some cases, the summary table also present payback periods after program rebates. NSTAR staff believes the reports generally meet customer needs and expectations and support decision-making. They are particularly suited to inducing senior management to take action and perhaps do a more detailed study that leads to implementation. One interviewee noted, though, that, for engineers, the reports are too broad and not technical enough.

#### *4.3.3.1 Participant Perspectives*

The majority of the NSTAR respondents (15 of 17) reported receiving technical audit reports that identified energy efficiency opportunities from the ESB program (Table 4-13).

**Table 4-13: Program Provision of Technical Audit Report Identifying Energy Efficiency Opportunities**

(all respondents)

| | **Respondents** |
|---|---|
| n | 17 |
| Report provided | 15 |
| Report not provided | 2 |

The survey asked respondents to rate their satisfaction with a number of aspects of the technical audit report provided by the ESB program using a scale of one to five, with one being "not at all satisfied" and five being "very satisfied." As Table 4-14 shows, respondents gave high overall satisfaction ratings to the report. They specifically gave high ratings to "usefulness of the information" and "format of the report." Respondents gave the lowest satisfaction ratings to the "amount of new information provided."

**Table 4-14: Satisfaction with Aspects of Technical Audit Report Provided through Program**

(all respondents who received technical audit report)

| Aspect | 1 to 5 Scale, 1 = "not at all satisfied" and 5 = "very satisfied" | | | | | | |
|---|---|---|---|---|---|---|---|
| | n | 1 | 2 | 3 | 4 | 5 | Mean |
| Overall quality of report | 15 | -- | -- | 4 | 6 | 5 | 4.1 |
| Level of report detail | 15 | -- | 1 | 3 | 8 | 3 | 3.9 |
| Range of energy efficiency recommendations | 15 | -- | -- | 7 | 3 | 5 | 3.9 |
| Amount of new information provided | 15 | 1 | 3 | 2 | 5 | 4 | 3.5 |
| Usefulness of the information in making decisions about whether to implement the recommendations | 15 | -- | -- | 2 | 6 | 7 | 4.3 |
| Format of the report | 15 | -- | -- | 3 | 7 | 5 | 4.1 |

## 4.4 Efficiency-Measure Implementation

The participant survey gathered information on the recommended measures installed, the measures planned for installation, the reasons for installation and the reasons that any recommended measures have not yet been installed. Similarly, the staff and contractor interviewees commented on the factors surrounding measure installation.

### 4.4.1 Staff and Contractor Perspectives on Measure Implementation

NSTAR field staff informs ESB participants about the incentives available for measure implementation, explains the procedures for applying for these incentives and sometimes recommends contractors for various projects. The main reasons for implementing measures, according to staff, are energy and cost savings.

One contractor said that he calls ESB participants every three months to see how they are doing with implementation. If they have not done anything, he reminds them that the MOUs called for implementation of low/no cost measures. He tries to provide at least three such measures in the report, so customers have some options. Then he asks customers why measures with favorable payback times have not yet been implemented. Most often, implementation is held up due to lack of time or money. This contractor further noted that he can estimate rebate levels only for prescriptive measures; he urges customers to contact NSTAR for more information on custom-measure rebates.

### 4.4.2 Participant Perspectives on Measure Implementation

Owing to the large number of recommendations included in the Energy Efficiency Assessment Reports, it was not feasible to ask survey respondents about implementations of each individual measure. Accordingly, the survey respondents were asked to report the overall percentage of recommended measures installed in each measure category, rather than about installations of each individual measure. Thirteen of the 17 NSTAR (76%) respondents reported implementing at least one recommendation—12 (71%) reported implementing at least one low/no cost measure and 13 (76%) reported implementing at least one recommendation requiring a capital outlay. Lighting was the most frequently recommended measure and it was the most frequently implemented measure requiring a capital outlay with ten respondents reporting implementing lighting recommendations at ten facilities. Recommendations regarding employee education were the most frequently recommended low/no cost measure and also the most frequently implemented measure with ten respondents reporting implementing recommendations at 12 different facilities.

While the low/no cost recommendations are by far the least expensive measures they are not the most frequently implemented measures. Although they do not require significant investment of capital, they deal primarily with behavior changes which can be difficult to instill. It may be easier for respondents to change out equipment than to systematically change human behavior and habits. It is also possible that due to the low total savings from low/no cost measures that the measures are forgotten or overlooked as participants concentrate on larger energy savings. In addition while some measures may appear low/no cost there might be additional expenses or difficulties required to implement them (Table 4-15). In tenant occupied spaces, there is also the barrier of split incentives—in the in-depth interviews one respondent commented,

> *"A lot of those things [low/no cost measures] are more applicable to a situation where the person making those decisions is the person paying the bills. [For example] as a landlord, we can't really tell people when they can and cannot use their computers."*

**Table 4-15: Estimated Measure Costs and Percent of Measures Implemented**

| Measure Category | # of Measures | Average Estimated Savings | | Average Estimated Cost | Average Cost of Recommendations | | % of Recommendations Reported Implemented by all Respondents | Total Energy Savings Reported Implemented | |
|---|---|---|---|---|---|---|---|---|---|
| | | kWh | Therms | $ | $ / kWh | kWh | kWh | kWh | Therms |
| **Low/No Cost Measures** | | | | | | | | | |
| EDU | 14 | 22,706 | 526 | $1,196 | $0.05 | $2.27 | 36% | 80% | 57% |
| OFF | 26 | 32,475 | -- | $939 | $0.03 | -- | 47% | 57% | -- |
| PURCH | 15 | -- | -- | -- | -- | -- | 33% | -- | -- |
| DR | 2 | -- | -- | -- | -- | -- | 30% | -- | -- |
| ENLINK | 3 | 72,632 | | $11,900 | $0.16 | -- | 0% | -- | -- |
| **Subtotal** | **60** | **23,002** | **123** | **$1,281** | **$0.06** | **$10.44** | **38%** | **51%** | **57%** |
| **Measures Requiring a Capital Outlay** | | | | | | | | | |
| EMS | 5 | 64,175 | 768 | $46,340 | $0.72 | $60.34 | 13% | -- | -- |
| LIGHT | 47 | 90,170 | -- | $36,194 | $0.40 | -- | 31% | 41% | -- |
| HVAC | 16 | 140,671 | 802 | $49,575 | $0.35 | $61.81 | 31% | 67% | 86% |
| VENT | 14 | 129,673 | 553 | $22,506 | $0.17 | $40.70 | 44% | 82% | 100% |
| VFD | 13 | 94,708 | -- | $32,359 | $0.34 | -- | 23% | 55% | -- |
| REF | 4 | -- | -- | -- | -- | -- | 25% | -- | -- |
| LAUND | 1 | -- | -- | -- | -- | -- | DK | -- | -- |
| EA | 6 | 143,542 | 4,302 | $42,500 | $0.30 | $9.88 | 22% | 44% | 1% |
| **Subtotal** | **106** | **101,108** | **474** | **$35,064** | **$0.35** | **$74.00** | **29%** | **57%** | **33%** |

### 4.4.3 Implementation of Low/No Cost Measures

**Employee education recommendations (EDU)** – Eleven NSTAR respondents received recommendations to implement employee education measures at a total of 13 facilities. Ten of these respondents reported implementing an average of 83% of the recommended education measures at a total of 12 facilities—seven in 2008, three in 2007 and two in 2006 (Table 4-16 and Table 4-17). These implementations represent 80% of the total recommended electricity savings and 57% of the total recommended natural gas savings for this measure type (Table 4-15). Six respondents were unable to provide estimates for the number of implemented recommendations regarding employee education.

**Recommendations to turn off equipment when not in use (OFF)** – Thirteen NSTAR respondents received recommendations to turn off equipment when not in use at a total of 15 facilities and nine of these respondents reported implementing an average of 70% of the

recommendations at a total of 11 facilities—seven in 2008, two in 2006, one in 2009 and one at an unspecified time. These implementations represent 57% of the total recommended electricity savings for this measure type (Table 4-16 and Table 4-17). One respondent was unable to provide an estimate for the number of implemented recommendations regarding turning off equipment (Table 4-15).

**Purchasing-process changes** – Twelve NSTAR respondents received recommendations to include energy efficiency requirements in their purchasing processes at a total of 12 facilities; and six of these respondents reported implementing an average of 83% of the recommendations at a total of six facilities--three in 2006, two in 2008 and one in 2007 (Table 4-16 and Table 4-17). The audit reports for these respondents did not include estimated energy savings values for purchasing-process recommendations (Table 4-15).

**Demand response program enrollment** – Two NSTAR respondents received recommendations to enroll in demand-response programs at a total of two facilities and one respondent reported implementing 60% of the recommendations at one facility in 2008 (Table 4-16 and Table 4-17). The audit report for this respondent did not include estimated energy savings values for demand-response program enrollment recommendations (Table 4-15).

**ENLINK program enrollment** – Three NSTAR respondents received recommendations to enroll in the NSTAR ENLINK program at a total of three facilities and none of the respondents reported implementing any of the recommendations (Table 4-16 and Table 4-17).

**Table 4-16: Implementation of Recommended Low Cost Measures by Facility**

| Measure Recommended | # of Respondents Receiving Recommendation | # of Facilities where Recommended | Respondents Implementing | # of Facilities Implementing | Percentage of Recommended Savings Implemented |
|---|---|---|---|---|---|
| Employee education | 11 | 13 | 10 | 12 | 83% |
| Turning off equipment when not in use | 13 | 15 | 9 | 11 | 70% |
| Purchasing process changes | 12 | 12 | 6 | 6 | 83% |
| Demand response program enrollment | 2 | 2 | 1 | 1 | 60% |
| ENLINK program enrollment | 3 | 3 | -- | -- | -- |

**Table 4-17: Year of Implementation of Low Cost Measures by Facility**

| Measure Recommended | n | # of Facilities where Implemented | 2006 | 2007 | 2008 | 2009 | Don't know |
|---|---|---|---|---|---|---|---|
| Employee education | 10 | 12 | 2 | 3 | 7 | -- | -- |
| Turning off equipment when not in use | 9 | 11 | 2 | -- | 7 | 1 | 1 |
| Purchasing-process changes | 6 | 6 | 3 | 1 | 2 | -- | -- |
| Demand response program enrollment | 1 | 1 | -- | -- | 1 | -- | -- |

Table 4-18 summarizes respondents' intentions to implement additional energy efficiency recommendations within the next year—note however, that the intent of those respondents that participated in the program two or more years ago (in 2006 or 2007) to implement additional measures is questionable.

Table 4-18: Plans to Implement Measures within next Year
(all respondents that did not implement all recommended measures)

| Measure Recommended | n | # of Facilities | Respondents with Plans to Implement | # of Facilities Planning to Implement |
|---|---|---|---|---|
| Employee education | 1 | 1 | 1 | 1 |
| Turning off equipment when not in use | 4 | 4 | 2 | 2 |
| Purchasing process changes | 6 | 6 | 5 | 5 |
| Demand response program enrollment | 1 | 1 | -- | -- |
| ENLINK program enrollment | 3 | 3 | -- | -- |

### 4.4.4 Implementation of Measures Requiring Capital Outlay

Energy management system recommendations (EMS) **– Five NSTAR respondents received recommendations concerning energy management systems at a total of five facilities and one respondent reported implementing 50% of the recommendations in 2008 (Table 4-19 and**

Table 4-20). The audit report for this respondent did not include estimated energy savings values for Energy Management System recommendations (Table 4-15).

Lighting recommendations (LIGHT) **– Sixteen NSTAR respondents received recommendations regarding lighting at a total of 18 facilities; and ten of these respondents reported implementing an average of 84% of the lighting recommendations at a total of ten facilities—five in 2008, four in 2007, and 1 in 2006 (Table 4-19 and**

Table 4-20). These implementations represent 41% of the total recommended electricity savings for this measure type (Table 4-15).

**Heating and cooling recommendations (HVAC)** – Ten NSTAR respondents received

recommendations regarding heating and cooling systems at a total of 11 facilities; and four of these respondents reported implementing an average of 77% of the recommendations at four facilities—three in 2008 and 1 in 2006. These implementations represent 67% of the total recommended electricity savings and 86% of the total recommended natural gas savings for this measure type. One respondent was unable to provide an estimate for the amount of recommendations implemented (Table 4-15).

Ventilation recommendations (VENT) **– Thirteen NSTAR respondents received recommendations concerning their ventilation systems; and six of these respondents reported implementing an average of 88% of the recommendations at six facilities—four in 2008 and two in 2009 (Table 4-19 and**

Table 4-20). These implementations represent 82% of the total recommended electricity savings and 100% of the total recommended natural gas savings for this measure type (Table 4-15).

Variable frequency drive recommendations (VFD) **– Seven NSTAR respondents received recommendations concerning variable frequency drives or high-efficiency motors at a total of seven facilities; and three of these respondents reported implementing the recommendations—one in 2008 and two were unable to specify a date. One respondent said that he or she implemented 100% of the recommendations and the other two respondents were unable to estimate the amount of recommendations implemented (Table 4-19 and**

Table 4-20). These implementations represent 55% of the total recommended electricity savings for this measure type (Table 4-15).

Refrigeration recommendations (REF) **– Four NSTAR respondents received recommendations concerning refrigeration at a total of four facilities; and two of these respondents reported implementing an average of 48% of the recommendations at two facilities—one in 2007 and one in 2009 (Table 4-19 and**

Table 4-20). The audit reports for these respondents did not include estimated energy savings values for recommendations regarding refrigeration (Table 4-15).

Laundry recommendations (LAUND) **– One respondent received recommendations concerning laundry systems at one facility and reported implementing the recommendations in 2007 (Table 4-19 and**

Table 4-20). The audit report for this respondent did not include estimated energy savings values for recommendations regarding laundry measures (Table 4-15).

Energy audits (EA) **– Six respondents received recommendations for additional energy audits or retro-commissioning services; and two of these respondents reported implementing an average of 65% of the recommendations at two facilities—one in 2008 and one in 2009 (Table 4-19 and**

Table 4-20). These implementations represent 44% of the total recommended electricity savings and 1% of the natural gas savings for this measure type (Table 4-15).

### Table 4-19: Implementation of Recommended Capital Measures

| Measure Recommended | # of Respondents Receiving Recommendation | # of Facilities where Recommended | Respondents Implemented | # of Facilities Implemented | Percentage of Recommended Savings Implemented |
|---|---|---|---|---|---|
| Energy management system | 5 | 5 | 1 | 1 | 50% |
| Lighting | 16 | 18 | 10 | 10 | 84% |
| HVAC | 10 | 11 | 4 | 4 | 77% |
| Ventilation | 13 | 13 | 6 | 6 | 88% |
| Variable frequency drives | 7 | 7 | 3 | 3 | 100% |
| Refrigeration | 4 | 4 | 2 | 2 | 48% |
| Laundry | 1 | 1 | 1 | 1 | DK |
| Energy audits | 6 | 6 | 2 | 2 | 65% |

### Table 4-20: Year of Implementation of Capital Measures by Facility

(facilities where capital outlay measures were implemented)

| Measure Recommended | n | # of Facilities where Implemented | 2006 | 2007 | 2008 | 2009 | Don't know |
|---|---|---|---|---|---|---|---|
| Energy management system | 1 | 1 | -- | -- | 1 | -- | -- |
| Lighting | 9 | 10 | 1 | 4 | 5 | -- | -- |
| HVAC | 4 | 4 | 1 | -- | 3 | -- | -- |
| Ventilation | 6 | 6 | -- | -- | 4 | 2 | -- |
| Variable frequency drives | 3 | 3 | -- | -- | 1 | -- | 2 |
| Refrigeration | 2 | 2 | -- | 1 | -- | 1 | -- |
| Laundry | 1 | 1 | -- | 1 | -- | -- | -- |
| Energy audits | 2 | 2 | -- | -- | 1 | 1 | -- |

**Table 4-21** summarizes respondents' intentions to implement additional recommendations requiring a capital outlay within the next year. Three respondents plan to implement additional lighting recommendations at three facilities. —note however, that the intent of those respondents that participated in the program two or more years ago (in 2006 or 2007) to implement additional measures is questionable.

**Table 4-21: Plans to Implement Measures within next Year**
(all respondents that did not implement all recommended measures)

| Measure Recommended | n | # of Facilities | Respondents with Plans to Implement | # of Facilities Planning to Implement |
|---|---|---|---|---|
| Energy management system | 4 | 4 | -- | -- |
| Lighting | 8 | 8 | 3 | 3 |
| Heating and cooling | 6 | 7 | 1 | 1 |
| Ventilation | 7 | 7 | 2 | 2 |
| Variable frequency drives | 4 | 4 | -- | -- |
| Refrigeration | 2 | 2 | -- | -- |
| Laundry | -- | -- | -- | -- |
| Energy audits | 4 | 4 | -- | -- |

Table 4-22 summarizes respondents' primary motivations for implementing the first capital outlay measure at their first facilities and Table 4-23 summarizes motivations for implementing all other capital measures. Respondents exclusively mentioned financial considerations as their primary motivation for implementing the first capital outlay measure at their facilities—saving on energy costs/bills (9), cost effectiveness (2), and quick payback (1). Respondents also primarily mentioned financial considerations as their primary motivation for implementing other capital outlay measures—cost effectiveness (3), and quick payback (1). Respondents also reported ease of installation (1) and identifying ways to reduce their carbon footprint (1) as primary motivations.

**Table 4-22: Most Important Factor Motivating First Capital Outlay Measure Implementation**

| Factor | Respondents |
|---|---|
| n | 13 |
| To save on energy costs/bills | 9 |
| Cost effectiveness | 2 |
| Quick payback | 1 |
| Don't know/refused | 1 |

**Table 4-23: Most Important Factor Motivating Other Capital Outlay Measure Implementation**

| Factor | Most Important Factor | Other Factors |
|---|---|---|
| n | 6 | 6 |
| Cost effectiveness | 3 | 1 |
| Quick payback | 1 | 1 |
| Easy to install | 1 | -- |
| To find ways to reduce carbon footprint | 1 | 1 |
| To replace non-working equipment | -- | 2 |
| LEED certification | -- | 1 |

All three respondents who reported plans to implement recommendations requiring a capital outlay in the next year reported that budget was the primary factor that influenced their decisions to not implement the measures previously (Table 4-24).

**Table 4-24: Most Important Factor Influencing Decision Not to Implement Planned-on Capital Outlay Measures Previously**

| Factor | Respondents |
|---|---|
| n | 3 |
| Budget | 3 |

Fourteen respondents reported that there are recommendations requiring a capital outlay that they have not implemented and have no plans to implement within the next year. Among them, seven reported budget as the primary factor influencing their decisions not to implement the recommendations. Three other respondents also reported financial factors—two reported "return on investment" and one reported "capital outlay." Respondents also cited nothing left (1), economy/market in general (1) and implemented a manual solution (1) (Table 4-25). In the in-depth interviews, respondents reported a variety of reasons for not implementing recommendations, including implementing a different option, lack of budget and not recalling the recommendations. One respondent said,

> *"To replace the pneumatics we have to replace the units in the classroom and offices that have pneumatic control valves and with the cost of replacing the heating plant this summer, we may not start to change out those units as we planned. I planned to change out 20 this year and 20 five years down the road."*

**Table 4-25: Most Important Factor Influencing Decision Not to Implement Capital Outlay Measures**

| Factor | Respondents |
|---|---|
| Budget | 14 |
| Budget | 7 |
| Return on investment | 2 |
| Nothing left | 1 |
| Economy/Market in general | 1 |
| Capital outlay | 1 |
| Implemented a manual solution | 1 |
| Don't know | 1 |

### 4.4.5 Influence of the ESB Program

Eight out of 17 respondents reported that they have already benchmarked additional facilities using Portfolio Manager on their own. Another two respondents reported that they have plans to benchmark additional facilities—note, however, that the intent of those respondents that participated in the program two or more years ago (in 2006 or 2007) to benchmark additional facilities is questionable. The three respondents who reported no plans to benchmark additional families cited a resource constraint—too busy with buildings already benchmarked (1), lack of time (1), and lack of resources (1) (Table 4-26 and Table 4-27). In the in-depth interviews, none of the respondents reported plans to benchmark additional facilities.

**Table 4-26: Benchmarking Plans Subsequent to ESB Participation**

(all respondents)

| | Respondents |
|---|---|
| n | 17 |
| Have benchmarked other facilities using Portfolio Manager | 8 |
| Plan to benchmark other facilities using Portfolio Manager | 2 |
| Have no plans to benchmark any other facilities | 7 |

### Table 4-27: Reasons for not Planning to Benchmark Other Facilities Using Portfolio Manager

(all respondents who do not plan to benchmark additional facilities; multiple response)

| Reason | Respondents |
|---|---|
| n | 7 |
| Awaiting approval | 1 |
| Too busy dealing with building(s) already benchmarked | 1 |
| Lack of time | 1 |
| Lack of resources | 1 |
| Don't trust benchmarking score | 1 |
| Replacing older buildings | 1 |
| No reason | 1 |

Only five of the 17 NSTAR respondents reported that they have hired or are planning to hire a contractor to perform energy audits at additional facilities without assistance from ESB (Table 4-28).

### Table 4-28: Performance of Energy Audits at Additional Facilities

(all respondents)

| | Respondents |
|---|---|
| n | 17 |
| Have performed/will perform additional audits | 5 |
| Have not performed/will not perform additional audits | 12 |

Five of the respondents who have not hired a contractor to perform additional energy audits reported a lack of resources as their primary reason—don't have time (2), do not have funds (1), lack of resources (1), too busy with buildings already audited (1). Three respondents reported that they will perform the audits with in-house staff (Table 4-29).

### Table 4-29: Reasons for Not Planning to Perform Energy Audits at Additional Facilities

(all respondents who say they have not or do not plan to do additional audits; multiple responses)

| Reason | Respondents |
|---|---|
| n | 12 |
| Taking care of it in-house | 3 |
| Don't have time | 2 |
| Do not have the funds needed | 1 |
| Lack of resources (unspecified) | 1 |
| Too busy dealing with building(s) already audited | 1 |
| Will use other audit contractors | 1 |
| Buildings too old | 1 |
| No approval process | 1 |
| No reason | 1 |

Twelve of the 17 respondents reported implementing at least one measure requiring a capital outlay. Of these 12 respondents four reported no prior plans to pursue the recommendations requiring a capital outlay before talking with someone about the ESB program; eight respondents reported having prior plans to pursue at least some of the recommendations before talking with someone about the program (Table 4-30). In the in-depth interviews, two respondents reported plans to pursue recommendations prior to participating in the ESB program. When asked about prior plans, one respondent said,

> *"We had plans to pursue supplemental cooling. So, when NSTAR mentioned it [through the ESB program], it made us feel like we were on the right track."*

### Table 4-30: Percentage of Capital Outlay Measures Planned on Implementing Before Program Participation

(all respondents)

| Percentage: 0% = None of Them, 100% = All of Them | Respondents |
|---|---|
| n | 12 |
| 0% | 4 |
| 1% to 20% | 2 |
| 21% to 40% | 1 |
| 41% to 60% | 4 |
| 61% to 80% | 1 |
| 81% to100% | 1 |

Respondents who had planned to install less than 100% of the measures before participating in the ESB program were asked to rate the influence of the ESB program on their decisions to implement measures requiring a capital outlay on a scale of one to five, where one was "no influence at all" and five was "extremely strong influence." Nine of the 15 respondents said that the program had a strong influence on their decisions to implement capital outlay measures and two respondents reported that the program had little or no influence on their decisions to implement the measures (Table 4-31).

**Table 4-31: Program Influence on Decisions to Install Capital Outlay Measures not Planned on Implementing Before Program Participation**

(all all respondents who reported implementing one capital outlay measure and had planned to install less than 100% of measures before participating)

| | 1 to 5 Scale, 1 = "no influence at all" and 5 = "extremely strong influence" | | | | | | |
|---|---|---|---|---|---|---|---|
| | **n** | **1** | **2** | **3** | **4** | **5** | **Mean** |
| Respondents | 11 | 1 | 0 | 1 | 1 | 8 | 4.4 |

## 4.4.6 Conduit to other Energy Efficiency Rebate Programs

The program manager believes ESB gives customers the tools and knowledge to look at their buildings in-depth and utilize other NSTAR programs to become more energy efficient. Staff interviewees had little to say about the interaction of ESB with other NSTAR programs. A contractor believes that about one-half of recommended measures are implemented, but he has not analyzed any data to this effect. As noted in the section on data tracking below, contractors do not have information on the size of the incentives provided to the customers by NSTAR programs for measure implementation.

Two of the survey respondents reported having had plans to participate in a NSTAR energy efficiency rebate program prior to participating in the ESB program. These respondents reported having had plans to participate in NSTAR's custom projects program, major equipment replacement program, and $CO_2$ control program. One respondent also mentioned the LEED program which is not an NSTAR program (Table 4-32).

**Table 4-32: Prior Plans to Participate in NSTAR Energy Efficiency Rebate Programs**

(all respondents who had at least one measure implemented through another NSTAR rebate program)

| **Plans** | **Respondent** |
|---|---|
| n | 5 |
| Had plans to participate in utility rebate programs | 2 |
| Had no plans to participate in utility rebate programs | 3 |

Twelve of the 17 NSTAR respondents reported implementing at least one recommendation requiring a capital outlay and five of these respondents reported implementing at least one

recommendation through NSTAR energy efficiency rebate programs. Three of these respondents reported having no prior plans to participate in NSTAR energy efficiency rebate programs and all three reported that the ESB program had a strong influence on their decisions to participate in NSTAR energy efficiency rebate programs (Table 4-33). Combined with the low level of respondents having prior plans to participate in other NSTAR programs, this indicates that the ESB program has been effective in steering participants towards other NSTAR programs.

**Table 4-33: Program Influence on Decisions to Participate in Other NSTAR Programs**

(all respondents who had at least one measure implemented through another NSTAR program and had no previous plans to participate)

| | 1 to 5 Scale, 1 = "no influence at all" and 5 = "extremely strong influence" | | | | | | |
|---|---|---|---|---|---|---|---|
| | **n** | **1** | **2** | **3** | **4** | **5** | **Mean** |
| Respondents | 3 | -- | -- | -- | 2 | 1 | 4.3 |

## 4.5 Communications and Data Tracking

Staff members discussed communications and interactions within the utility and with program contractors as well as communications and tracking of the customers served by ESB.

### 4.5.1 Intra-Utility and Contractor Communications

Intra-utility communications appear to proceed on an as-needed basis. The program manager said that she notifies field staff members when their customers request benchmarking and makes sure they receive draft reports and are invited to presentations. Field staff also generally praised intra-utility communications and noted that everyone works together as a team. As noted earlier, however, one staff member said he would have wanted to go to presentations but was not invited. Another staff member believes there should be more communication among NSTAR staff; he said he only sees updates a couple of times a year on the goals, number of customers served, types of customers, modifications to the program and which sectors are being targeted.

Contractors provide the program manager with regular summary reports on the progress of customers in the process. One contractor said she has tried to tweak the process to make sure field staff members are in the program loop. As a contractor to EPA's ENERGY STAR® program, she also tries to keep NSTAR up to date on changes planned at the federal level.

### 4.5.2 Participant Follow-Up and Data Tracking

One staff member noted that the program is sometimes "just handed off to the contractor." He believes NSTAR staff needs to be more engaged in presenting the report and working with customers. Another staff member said he was too busy to keep track of which of his customers participated in ESB, much less follow up with them. Both of the NSTAR contractors interviewed talked about customer follow-up. One calls customers every three months; and the other contractor said she keeps in touch with customers for a year: once or twice a week in the first

month after the presentation of the report and then less frequently, depending on the measures they decide to implement.

Both contractors provide NSTAR with reports on the measures implemented. While the contractors ask about low/no cost measures, everything that is implemented may not appear in the contractors' reports due to varying definitions of measures such as employee education and some customers simply not reporting no cost measures. The contractors also do not have information on the size of the incentives provided to the customers by NSTAR programs for measure implementation, so this information is not included in their reports. NSTAR has the capability to track ESB measure implementation through a database system but this feature has not yet been fully implemented.

## 4.6 Participant Experience and Satisfaction

In general, survey respondents reported a high level of satisfaction with the ESB program-- ten or more respondents reported being satisfied with the majority of the program stages. Respondents reported the highest satisfaction levels with the "convenience of scheduled times for audits" and "timeliness of report." They reported the lowest satisfaction levels with "information provided about incentives available from other sources" and "information provided about incentive programs."

**Table 4-34: Satisfaction with Stages of Program Participation**

(all respondents)

| | 1 to 5 Scale, 1 = "not at all satisfied" and 5 = "very satisfied" | | | | | | |
|---|---|---|---|---|---|---|---|
| | **n** | **1** | **2** | **3** | **4** | **5** | **Mean** |
| Forms and materials | 17 | 2 | -- | 3 | 7 | 5 | 3.8 |
| Initial application process | 17 | 2 | 1 | 1 | 5 | 8 | 3.9 |
| Memorandum of Understanding | 17 | -- | 1 | 5 | 5 | 6 | 3.9 |
| Amount and complexity of paperwork involved in program | 17 | 1 | -- | 5 | 4 | 7 | 3.9 |
| Communication with staff | 17 | 1 | -- | 5 | 3 | 8 | 4.0 |
| Communication with contractors | 17 | 1 | -- | 5 | 6 | 5 | 3.8 |
| Convenience of scheduled times for audits | 17 | -- | -- | 1 | 6 | 10 | 4.5 |
| Ability of program to address my needs | 17 | 1 | 1 | 5 | 4 | 6 | 3.8 |
| Timeliness of report | 17 | -- | -- | 1 | 8 | 8 | 4.4 |
| Information provided about incentive programs | 17 | 2 | 2 | 4 | 3 | 6 | 3.5 |
| Information provided about incentives available from other sources | 17 | 6 | 4 | 4 | 2 | 1 | 2.3 |
| Outcome of program in terms of realized benefits | 17 | 1 | 2 | 4 | 2 | 8 | 3.8 |

## 4.7 Participant Decision-Making Process

Nearly all of the NSTAR respondents (15 of 17) reported that someone within their organizations is responsible for making the final decisions regarding which capital outlay measures to install under one of NSTAR's rebate programs. (Table 4-35).

**Table 4-35: Person Responsible for Making Final Decisions Regarding which Capital Outlay Measures to Install**

(all respondents)

| | Respondents |
|---|---|
| n | 17 |
| Someone within company/organization | 15 |
| Manufacturer representative | 1 |
| Other | 1 |

Six NSTAR respondents reported that facility managers or directors are most influential in daily energy operations and seven respondents reported that finance directors or business managers are most influential in capital decisions regarding energy efficiency (Table 4-36).

**Table 4-36: Persons Most Influential in Energy Operations**

(all respondents)

| | Influential in Daily Energy Operations | Influential in Capital Decisions Regarding Energy Operations |
|---|---|---|
| n | 17 | 17 |
| Facilities Manager/Director | 6 | 3 |
| Finance/Fiscal Director or Business Manager or Chief Financial Officer | 2 | 7 |
| Engineer/Engineering Coordinator | 2 | 1 |
| Director of Buildings and Grounds | 1 | 1 |
| Operations Manager | 1 | 1 |
| Director of Project Management | 1 | 1 |
| President | 1 | 1 |
| Owner | 0 | 1 |
| Other | 0 | 1 |
| Custodian | 1 | 0 |
| Director of Environmental Programs | 1 | 0 |
| Electrician | 1 | 0 |

## 4.8 Quasi-Impact Analysis

**It is important to note that the quasi-impact evaluation of the ESB program was limited to matching respondents' self-reported implementations with energy conservation measures recommended in their Energy Efficiency Opportunity Assessment Reports. As such, the evaluation provides only an estimate of the impact and would require on-site visits to compare actual implementation savings with those reported by respondents in the survey and the savings provided in the scoping reports. Furthermore, a goal of this evaluation is to obtain a general estimate of the net impact and net value of ESB. In doing this, we are crediting the ESB program with the full value of savings from associated implementations through NSTAR energy efficiency rebate programs; a complete impact evaluation (with on-site measurement and verification of savings) would be needed to determine the actual savings realized from the implemented recommendations.**

### 4.8.1 Estimated Energy Savings for Measures Installed

The 17 NSTAR respondents received a total of 166 recommendations—60 low/no cost recommendations and 106 recommendations requiring a capital outlay. Based on responses to a series of questions regarding 15 recommendation categories, NMR estimates that respondents implemented one-third of all recommendations (33%)—nearly three-tenths of all recommendations requiring a capital outlay (29%) and less than four-tenths all of low/no cost recommendations (38%) (Table 4-37Table 4).

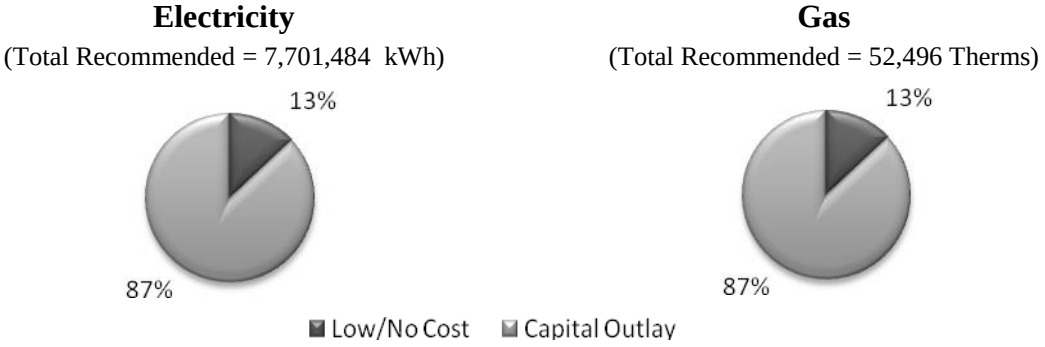
**Table 4-37: ESB - Recommended Measures Implemented by Respondents**

| Measure Type | National Grid Whole Building Assessment | | |
|---|---|---|---|
| | # of Recommendation | % Recommendations Reported Implemented | # of Recommendations Reported Implemented |
| Recommended Low/No Cost Measures | 60 | 38% | 22 |
| Recommended Capital Outlay Measures | 106 | 29% | 31 |
| All Recommended Measures | 166 | 33% | 54 |

### 4.8.2 Measures Installed

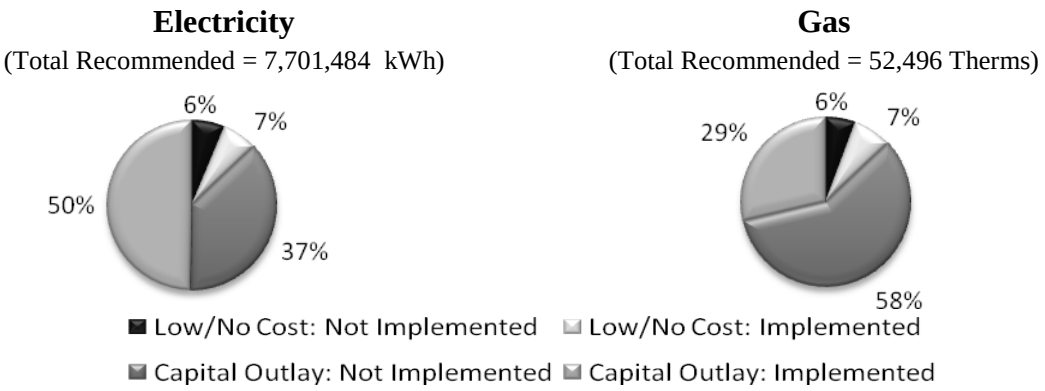
NSTAR survey participants received recommendations to implement energy efficiency improvements with total electrical energy savings of 7,701,484 kWh and total natural gas energy savings of 52,496 Therms (Figure 4-1). Approximately 13% of the recommended electrical energy savings natural gas savings were associated low/no cost recommendations; conversely, 87% of the electrical energy savings and natural gas savings were associated with recommendations requiring a capital outlay.

**Figure 4-1: Potential Savings from All Recommendations to NSTAR Respondents**




Based on the responses to a series of questions regarding implementation of recommendations, the NMR team estimates that respondents implemented recommendations totaling 4,342,879 kWh and 18,908 Therms. Respondents reported implementing more than half (57%) of the total recommended electrical energy savings and more than one-third (36%) of the total recommended natural gas savings. Within the recommended electric energy savings measures, respondents reported implementing more than half (51%) of the low/no cost savings and more than half (57%) of the recommended capital outlay savings. Within the recommended natural gas savings measures, respondents reported implementing more than half (57%) of the low/no cost savings and one-third (33%) of the capital outlay gas savings. Note, however, that the estimates regarding NSTAR natural gas savings should be viewed with caution since the sample of NSTAR respondents account for only 3% of total recommended natural gas savings (Figure 4-2).

**Figure 4-2: Energy Savings for Recommendations Implemented**



Respondents were also asked if they implemented the recommended measures requiring a capital outlay through NSTAR energy efficiency rebate programs. Based on their responses, the NMR team estimates that 1,874,768 kWh and 3,609 Therms were implemented through NSTAR energy efficiency rebate programs (Table 4-38).[10]

Findings regarding specific measures recommended and implemented include the following.

- Recommended low/no cost measures
    - Nearly half of the recommended electricity savings (49%) are from measures associated with turning off equipment; and the remainder are from measures associated with employee education (29%) and enrollment in the ENLINK program (22%).
    - All (100%) of the recommended low/no cost natural gas savings are from measures associated with employee education.
- Implemented low/no cost measures
    - Over half of the electricity savings (54%) are obtained from turning off equipment and nearly half of the savings (46%) are obtained from measures associated with employee education. There are no reported enrollments in the ENLINK program.
    - All (100%) of the low/no cost natural gas savings are obtained from implementing employee education.
- Recommended measures requiring capital outlay
    - Nearly three-fourths of the recommended electricity savings are from Ventilation (25%), Lighting (24%) and HVAC (23%) measures.
    - Nearly three-fifths (57%) of the recommended capital outlay natural gas savings are from Energy Audit measures.
- Implemented measures requiring capital outlay
    - Over one-third of total implemented electricity savings are obtained from implementing recommended Ventilation measures (36%) and about one-fourth are obtained from implementing recommended HVAC measures (27%).
        - Overall, about one-half (49%) of the total electricity savings from implementations requiring a capital outlay are obtained through participation in another NSTAR energy efficiency program.
        - Four-fifths of the implemented Ventilation measure savings (82%) and three-fifths of the implemented HVAC measure electricity savings (62%) are from implementations through NSTAR energy efficiency rebate programs.
    - The total implemented natural gas savings are obtained about equally from implementations of HVAC (50%) and Ventilation (48%) measures.
        - These respondents reported participating in other NSTAR natural gas energy efficiency rebate programs only for implementations of HVAC measures and none of their implemented Ventilation measures were through other NSTAR energy efficiency rebate programs.

[10] If respondents reported implementing a recommendation within a capital outlay category they were then asked if they implemented the recommendation through a NSTAR energy efficiency rebate program. Respondents were not asked about outside assistance from other entities.

- Overall, about one-fourth (24%) of the total natural gas savings from implementations requiring a capital outlay were obtained through participation in NSTAR energy efficiency rebate programs—all for HVAC implementations which account for about one-half (48%) of the total implemented HVAC measure natural gas savings.

## Table 4-38: Estimated 2006-2007 Energy Savings for All Measures[11]

| Measure Type | n | # of Facilities | Energy Savings Recommended | | % of Recommended Energy Savings Reported Implemented | | % of Implemented Savings Implemented through NSTAR Energy Efficiency Rebate Program | |
|---|---|---|---|---|---|---|---|---|
| | | | kWh | Therms | kWh | Therms | kWh | Therms |
| **Low/No Cost Recommendations** | | | | | | | | |
| EDU | 11 | 13 | 295,184 | 6,832 | 80% | 57% | -- | -- |
| OFF | 13 | 15 | 487,120 | -- | 57% | -- | -- | -- |
| PURCH | 12 | 12 | -- | -- | -- | -- | -- | -- |
| DR | 2 | 2 | -- | -- | -- | -- | -- | -- |
| ENLINK | 3 | 3 | 217,895 | -- | -- | -- | -- | -- |
| **Total Low/No cost** | | | **1,000,199** | **6,832** | **514,215** | **3,869** | **--** | **--** |
| **Percent of Low/No cost Implemented** | | | | | **51%** | **57%** | **--** | **--** |
| **Recommendations Requiring a Capital Outlay** | | | | | | | | |
| EMS | 5 | 5 | 320,876 | 3,839 | -- | -- | -- | -- |
| LIGHT | 16 | 18 | 1,623,064 | -- | 41% | -- | 15% | -- |
| HVAC | 10 | 11 | 1,547,386 | 8,827 | 67% | 86% | 62% | 3,609 |
| VENT | 13 | 13 | 1,685,752 | 7,185 | 82% | 100% | 82% | -- |
| VFD | 7 | 7 | 662,954 | -- | 55% | -- | -- | -- |
| REF* | 4 | 4 | -- | -- | -- | -- | -- | -- |
| LAUND* | 1 | 1 | -- | -- | -- | -- | -- | -- |
| EA | 6 | 6 | 861,253 | 25,813 | 44% | 1% | -- | -- |
| **Total Capital outlay** | | | **6,701,285** | **45,664** | **3,828,664** | **15,039** | **1,874,768** | **3,609** |
| **Percent of Capital outlay recommended savings implemented** | | | | | **57%** | **33%** | **49%** | **24%** |
| **Grand Total**** | | | **7,701,000** | **52,000** | **4,343,000** | **19,000** | **1,875,000** | **4,000** |
| **Percent of total recommended savings implemented** | | | | | 56% | 36% | 43% | 19% |

* Respondents were provided with recommendations regarding refrigeration and laundry measures but the audit reports provided by NSTAR did not provide associated estimates of energy savings.

**Given the relative imprecision of calculations the grand totals have been rounded to the nearest thousand.

[11] As noted previously, some customers have participated in multiple locations. Throughout this report "n" represents the number of surveys completed with unique contacts that received a recommendation for at least one facility and "# of Facilities" represents the number of separate facilities that received a given recommendation.

## 4.8.3 Potential Future Implementations

The survey also asked respondents if they had any plans within the next year to implement any of the measures that they reported not having implemented. Respondents reported plans to implement additional low/no cost measures totaling less than 1% of the recommended electrical and natural gas energy savings. Respondents also reported plans to implement additional measures requiring a capital outlay totaling 6% of recommended electrical savings. If respondents act on these plans and implement the recommendations, they will have implemented 62% of electrical energy savings and 36% of recommended natural gas savings (Table 4-39).

**Table 4-39: Estimated Annual Energy Savings for Measures Planned for Implementation within the Next Year**

| Measure Type | Energy Savings Planned for Implementation | |
|---|---|---|
| | kWh | Therms |
| Low/No cost | 38,890 | 123 |
| Capital outlay | 415,913 | -- |
| Total | 454,803 | 123 |

## 4.8.4 Impact of Other Programs and Free-ridership

The total energy savings resulting from ESB are a function of the measures installed by the participants after adjusting for free-ridership. We identified free-riders as participants who would have participated in other utility sponsored rebate programs in the absence of the benchmarking program or would have implemented energy saving measures in the absence of the benchmarking program.

### *4.8.4.1 Low/No Cost Recommendations*

NSTAR survey respondents reported implementing low/no cost recommendations totaling 514,215 kWh and 3,869 Therms. Since low/no cost recommendations consist of measures that do not require participants to incur capital expenditures and have very short paybacks, the NMR team assumes that respondents were either unaware of the recommendations prior to participating in the ESB program or would not have implemented the measures in the absence of the ESB program. As such, they are not subject to free-ridership and the full value of recommendations implemented can be counted toward the value of the ESB program.

### *4.8.4.2 Recommendations Requiring a Capital Outlay*

To determine the level of free-ridership for recommendations requiring a capital outlay, the NMR team evaluated each respondent's answers to questions regarding prior plans to implement measures, prior plans to participate in NSTAR energy efficiency rebate programs and the influence of the ESB program on participation in NSTAR energy efficiency rebate programs.

*Recommendations Implemented Through Other Programs*

The survey asked respondents if they had any prior plans to participate in the NSTAR programs through which they implemented recommendations before talking with someone about the ESB program and influence of the ESB program had on the decisions to participate in the other NSTAR programs.

Twelve of the 17 NSTAR respondents reported implementing at least one recommendation requiring a capital outlay and five of these respondents reported implementing at least one recommendation through NSTAR energy efficiency rebate programs.[12] Three respondents reported having no prior plans to participate in NSTAR programs before talking with anyone about the ESB program and all three of them reported that the ESB program had a strong influence on their decisions to participate in other NSTAR programs. Two respondents reported having had prior plans to participate in other NSTAR programs before talking with anyone about the ESB program.

[12] The other seven respondents reported that they did not implement any measures requiring a capital outlay through a NSTAR energy efficiency rebate program. Respondents were only asked about participation in NSTAR energy efficiency rebate programs and not about other forms of outside assistance.

Based on these responses, the NMR team estimates that recommendations totaling 732,921 kWh and 3,609 Therms implemented through other programs would not have been implemented in the absence of the ESB program (Table 4-40).

**Table 4-40: Savings Implemented through NSTAR Energy Efficiency Programs**

| Respondent | Total Savings Implemented through other Programs | | Prior Plans to Participate in another Program | Influence of ESB on other Program Participation [5 = Extremely Strong Influence, 1 = No Influence at All] | Savings Counted toward ESB | | |
|---|---|---|---|---|---|---|---|
| | kWh | Therms | | | Percent | kWh | Therms |
| Respondent 1 | -- | -- | NA | NA | NA | NA | NA |
| Respondent 2 | 21,847 | -- | YES | -- | NA | NA | NA |
| Respondent 3 | 6,416 | -- | NO | 5 | 100% | 6,416 | -- |
| Respondent 4 | -- | -- | NA | NA | NA | NA | NA |
| Respondent 5 | 691,101 | 3,609 | NO | 4 | 100% | 691,101 | 3,609 |
| Respondent 6 | -- | -- | NA | NA | NA | NA | NA |
| Respondent 7 | -- | -- | NA | NA | NA | NA | NA |
| Respondent 8 | 1,120,000 | -- | YES | -- | -- | -- | -- |
| Respondent 9 | 35,404 | -- | NO | 4 | 100% | 35,404 | -- |
| Respondent 10 | -- | -- | NA | NA | NA | NA | NA |
| Respondent 11 | -- | -- | NA | NA | NA | NA | NA |
| Respondent 12 | -- | -- | NA | NA | NA | NA | NA |
| Respondent 13 | -- | -- | NA | NA | NA | NA | NA |
| Respondent 14 | -- | -- | NA | NA | NA | NA | NA |
| Respondent 15 | -- | -- | NA | NA | NA | NA | NA |
| Respondent 16 | -- | -- | NA | NA | NA | NA | NA |
| Respondent 17 | -- | -- | NA | NA | NA | NA | NA |
| **Total** | **1,874,768** | **3,609** | **NA** | **NA** | **NA** | **732,921** | **3,609** |

*Prior Plans to Pursue Recommendations and Influence of ESB Program*

Respondents were also asked if they had any prior plans to pursue or implement any of the recommendations requiring a capital outlay that they implemented at their facilities and what influence, if any, the ESB had on their decisions to implement these measures. Table 4-41 provides a summary of the proportion of the recommendations respondents reported plans to pursue before talking with anyone about the ESB program, the influence of the ESB program on their decisions to implement recommendations they had no prior plans to pursue, and an estimate

of free-ridership. One respondent reported plans to pursue all of the recommendations prior to talking to anyone about the ESB program and seven respondents reported prior plans to pursue some but not all of the recommendations requiring a capital outlay. All of the respondents who reported plans to install some but not all of the implemented recommendations reported that the ESB program had a strong influence on their decisions to implement recommendations that they had not previously planned to pursue.

**Table 4-41: Participant Free-ridership**

| Respondent | Proportion of Implemented Capital Outlay Measures that Respondent Planned to Implement before Participating in ESB Program | Influence of ESB on Implementation | Free-ridership |
|---|---|---|---|
| Respondent 1 | 100% | NA | 100% |
| Respondent 2 | 50% | 5 | 50% |
| Respondent 3 | 50% | 5 | 50% |
| Respondent 4 | 50% | 5 | 50% |
| Respondent 5 | 20% | 5 | 20% |
| Respondent 6 | 15% | 4 | 15% |
| Respondent 7 | 0% | 5 | -0% |
| Respondent 8 | 0% | 3 | 0% |
| Respondent 9 | 50% | 5 | 50% |
| Respondent 10 | 0% | 5 | 0% |
| Respondent 11 | 40% | 5 | 40% |
| Respondent 12 | 0% | 1 | 0% |
| Respondent 13 | na | na | na |
| Respondent 14 | na | na | na |
| Respondent 15 | na | na | na |
| Respondent 16 | na | na | na |
| Respondent 17 | na | na | na |

Table 4-42 summarizes the total savings credited towards the ESB program for each respondent that implemented a recommended measure requiring a capital outlay The NMR team estimates that a total of 1,935,463 kWh and 8,871 Therms can be counted towards the value of the ESB program. This estimate incorporates reductions due to savings associated with other NSTAR programs as well as the recommendations respondents reported having had prior plans to pursue.

**Table 4-42: Net Program Impacts**

| Respondent | Savings from Capital Outlay Measures Implemented without Assistance from NSTAR Energy Efficiency Rebate Programs | | Total Implemented through NSTAR Energy Efficiency Rebate Programs Credited to ESB Program Influence | | Free-ridership | Savings Credited to ESB Program | |
|---|---|---|---|---|---|---|---|
| | kWh | Therms | kWh | Therms | | kWh | Therms |
| Respondent 1 | 405,770 | 3,950 | -- | -- | 100% | -- | -- |
| Respondent 2 | -- | -- | -- | -- | 50% | -- | -- |
| Respondent 3 | -- | -- | 6,416 | -- | 50% | 3,208 | -- |
| Respondent 4 | 91,964 | -- | -- | -- | 50% | 45,982 | -- |
| Respondent 5 | 604,797 | 7,480 | 691,101 | 3,609 | 20% | 1,036,718 | 8,871 |
| Respondent 6 | 17,581 | -- | -- | -- | 15% | 14,944 | -- |
| Respondent 7 | 52,500 | -- | -- | -- | -- | 52,500 | -- |
| Respondent 8 | 357,634 | -- | -- | -- | -- | 357,634 | -- |
| Respondent 9 | -- | -- | 35,404 | -- | 50% | 17,702 | -- |
| Respondent 10 | 371,101 | -- | -- | -- | -- | 371,101 | -- |
| Respondent 11 | 42,188 | -- | -- | -- | 40% | 25,313 | -- |
| Respondent 12 | 10,361 | -- | -- | -- | 0% | | -- |
| Respondent 13 | -- | -- | -- | -- | -- | -- | -- |
| Respondent 14 | -- | -- | -- | -- | -- | -- | -- |
| Respondent 15 | -- | -- | -- | -- | -- | -- | -- |
| Respondent 16 | -- | -- | -- | -- | -- | -- | -- |
| Respondent 17 | -- | -- | -- | -- | -- | -- | -- |
| Total | 1,953,895 | 11,430 | 732,921 | 3,609 | NA | 1,925,101 | 8,871 |

### *4.8.4.3 Net Impact of ESB*

The 17 ESB participants surveyed received energy efficiency recommendations with total electrical energy savings of 7,701,000 kWh and natural gas energy savings of 52,000 Therms. The NMR team estimates that respondents implemented recommendations totaling 2,439,000 kWh and 13,000 Therms as a result of participation in the ESB program. Based on this, the NMR

team calculates a net implementation ratio for the ESB program of 0.32 for electrical savings and 0.25 for natural gas savings. The NMR team reviewed 40 audit reports containing recommendations for energy savings of 11,554,000 kWh and 2,013,000 Therms for 38 participants. Applying the net implementation ratios to the total savings recommended to all participants, the NMR team projects the net impact of the ESB program to be 3,659,000 kWh and 503,000 Therms (Table 4-43). It is important to note that the impact evaluation of the ESB program was limited to matching respondents' self-reported implementations with energy conservation measures recommended in their Energy Efficiency Opportunity Assessment Reports. As such, the evaluation provides only an estimate of the impact and would require on-site visits to compare actual implementation savings with those reported by respondents in the survey and the savings recommended in the assessment reports. Furthermore, a goal of this evaluation is to obtain a general estimate of the net impact and net value of ESB. In doing this, we are crediting the ESB with the full value of savings from associated implementations through other NSTAR programs; a complete impact evaluation (with on-site measurement and verification of savings) would be needed to determine the actual savings realized from the implemented recommendations.

**Table 4-43: Net Impact of 2006 and 2007 ESB Program Years**

| | kWh* | Therms* |
|---|---|---|
| Recommended savings participants surveyed | 7,701,000 | 52,000 |
| Savings implemented by participants surveyed | 4,343,000 | 19,000 |
| Low/No cost savings | 514,000 | 4,000 |
| Capital outlay savings after free-ridership | 1,925,000 | 9,000 |
| Net impact (surveyed participants) | 2,439,000 | 13,000 |
| Net implementation ratio | 0.32 | 0.25 |
| Total recommended savings all participants | 11,554,000 | 2,013,000 |
| Projected net impact of ESB | 3,659,000 | 503,000 |

*Given the relative imprecision of the impact analysis these figures have been rounded to the nearest thousand

## 4.9 Participant Firmographics

The population of NSTAR participants for the 2006 and 2007 program years includes 38 unique customers representing 40 separate facilities—20 office buildings, nine schools, six hotels, two grocery stores, one hospital, one supermarket and one courthouse. The seventeen NSTAR participants surveyed represent 19 separate facilities—12 office buildings, five schools, one hotel and one grocery store (Table 4-44).

**Table 4-44: Building Type**

(all respondents)

| | All Participants | Survey Respondents |
|---|---|---|
| n | 38 | 17 |
| # of Facilities | 40 | 19 |
| Office | 20 | 12 |
| Schools | 9 | 5 |
| Hotel | 6 | 1 |
| Grocery Store/Supermarket | 3 | 1 |
| Hospital | 1 | -- |
| Courthouse | 1 | -- |

Twelve of the 17 NSTAR survey respondents reported an average of 100 or more occupants in the facilities that participated in the ESB program (Table 4-45).

**Table 4-45: Number of Building Occupants during Normal Business Hours**

(all respondents)

| | Respondents |
|---|---|
| n | 17 |
| Fewer than 5 | -- |
| 10 to 19 | -- |
| 20 to 49 | 1 |
| 50 to 99 | 2 |
| 100 to 249 | 3 |
| 250 or more | 9 |
| Don’t know | 2 |

Fifteen of the 17 NSTAR respondents reported average weekly operating schedules of less than 80 hours at the facilities that participated in the ESB program. Respondents reported that their facilities are in use an average of 65 hours a week (Table 4-46).

**Table 4-46: Average Weekly Hours of Building Use**

(all respondents)

| | Respondents |
|---|---|
| n | 12 |
| 40 to 59 hours | 6 |
| 60 to 79 hours | 9 |
| 80 to 99 hours | 1 |
| 100 or more hours | 1 |
| Average (hrs) | 65 |

## 4.10 Recommendations

**Program Goals**

**Finding.** NSTAR staff expresses different perceptions of the short-term goals for the ESB program. The program manager says the short-term goal of the program is to drive participation in other energy efficiency programs and other staff members discuss the program's short-term goals in terms of educating customer about their buildings' energy usage and how it compares to similar buildings.

**Finding.** NSTAR staff agrees that the long-term goal of the ESB program is to increase energy savings through participants implementing recommended measures. While program contractors currently track implementations the program does not have specific goals regarding measure implementations.

- **Recommendation.** Without specific and measureable goals it is not possible to evaluate program performance. NSTAR should evaluate the goals for the ESB program and create specific and measureable performance goals. Based on interviews with program staff, goals should include the number of low/no cost recommendations implemented by participants, the number of capital outlay recommendations implemented by participants, and the number of recommendations implemented through NSTAR rebate programs.
- **Recommendation.** In an effort to ensure employees have a clear understanding of the programs goals and objectives, NSTAR may want to provide ongoing education to ESB program staff.

**Program Marketing and Promotion**

**Finding.** ESB program participants have been primarily offices and, secondarily, schools and hotels.

- **Recommendation.** Pursuant to diversifying and expanding the reach of ESB, the program should try to recruit customers from other Portfolio Manager categories such as hospitals, warehouses, retail stores, medical offices, and supermarkets...

**Finding.** The ESB program manager believes cost savings are the primary motivator for participants and respondents reported a financial motivation as the most important reason for participating in the ESB program. Environmental concerns and ENERGY STAR® certification were also mentioned by some respondents.

- **Recommendation.** Include messages such as "reduce energy costs" and details about the financial savings available through program participation in program literature and when speaking to potential participants. Include details on the benefits of ENERGY STAR® certification and the impact on carbon footprint as secondary benefits of the program.

**Portfolio Manager**

**Finding.** Among the various benefits and services of the Portfolio Manager, survey respondents gave the highest ratings to "whole building approach of Portfolio Manager" and "identification of energy efficiency opportunities."

**Finding.** Program staff reported that customers are intimidated by the prospect of a lot of data gathering for their facility. A contractor also reported delays in getting the data needed for benchmarking facilities

**Finding.** The majority of respondents reported no barriers to program participation. Two respondents reported a lack of time and one respondent said the software was confusing and difficult to use.

- **Recommendation.** In an effort to help customers who may be intimidated by data entry requirements, NSTAR should work to make the data collection form more user-friendly. In addition, NSTAR should provide support to customers trying to gather benchmarking data to enter into Portfolio Manager and develop "tips" that may be offered to customers having trouble with data collection for Portfolio Manager.
- **Recommendation.** At time of customer sign-up, streamline gathering of usage data by obtaining any required authorizations from customers' organizations or facilities.
- **Recommendation.** Consider using EPA's automated system for transferring utility data to Portfolio Manager so that participants can spend more time evaluating and benchmarking their facilities and less time performing data entry. This would also enable participants to routinely and regularly complete benchmarking activities.

**Finding.** Program staff reported that large buildings with multiple tenants are particularly difficult to recruit to the program because NSTAR cannot provide data for the whole building to one tenant who may be interested in participating.

- **Recommendation.** In an effort to increase recruitment from buildings with multiple tenants, NSTAR should identify ways to facilitate obtaining tenant authorizations, e.g., provide supporting information on NSTAR letterhead, authorization letters, forms, etc.

**Finding.** A majority of respondents reported that at least one staff member was trained to use Portfolio Manager through the ESB program and most of them reported plans to benchmark their facilities at least once a year.

- **Recommendation.** The ESB program has been effective in training participants on using Portfolio Manager, which has facilitated the ongoing benchmarking of their facilities. NSTAR should therefore continue to provide training and support for Portfolio Manager.

**Finding.** When calling for the in-depth interviews, the NMR team encountered several participants whose primary contact had left the company. In these cases, the contact generally took with them all knowledge of the WBA program and on using Portfolio Manager.

- **Recommendation.** Consider including routine phone calls to participants to help identify when contacts that have been trained to use Portfolio Manager leave. When replacements are hired, meet with them to help ensure continuity on benchmarking activities.

**Benchmarking Scores and Audit Reports**

**Finding.** NMR reviewed several technical scoping studies. The reports prominently display the ENERGY STAR® performance rating on the first page; some summarize the findings and recommended measures at the beginning of the report as well. All the reports reviewed contain a summary table with estimated savings, simple paybacks, and applicable NSTAR programs followed by a short summary of each recommended measure, including action steps. In some cases, the summary table also presents payback periods after program rebates.

**Finding.** Survey respondents reported the lowest satisfaction levels with "information provided about incentives available from other sources."

- **Recommendation.** Respondents report that they are satisfied with the technical audit reports. However, NMR staff believe a few minor changes to the order in which information is presented will increase the clarity of the reports. Establish a standardized, consistent format for the report that includes the benchmarking score on the first page, set apart from text. Provide a summary section on the first page that includes: a description of what the benchmarking score indicates and how it was determined, the table of recommended measures, and an estimate of the energy savings needed to achieve ENERGY STAR® designation. For capital outlay measures, also include a description of rebates available from NSTAR energy efficiency rebate programs and the resulting project payback; also seek to identify incentives available from other sources. Including this information in the technical audit report, will help ensure that all participants are made aware of the incentive and rebates available for the recommended measures.

**Finding.** In an in-depth interview, one respondent expressed disappointment with their score at the time of the audit and the minimal improvement after implementation of recommendations.

- **Recommendation.** In order to ensure that participants understand their benchmarking score, reports should include an explanation of the benchmarking score. So as to set realistic expectations, NSTAR should also consider including an estimate of the likely impact on the score from implementing the recommendations.

**Presentation of Audit Findings**

**Finding.** According to program contractors, NSTAR staff have generally not attended the presentations of audit findings. The program manager said she notifies field staff when their customers request benchmarking and makes sure they receive draft reports and are invited to presentations. However, one staff member noted that he did not know when these presentations took place but would probably go if he were invited.

- **Recommendation.** Ensure that relevant account executives have the opportunity to review contractor's audit report and encourage them to attend the findings presentation. The presence of the account executives at this presentation is a critical step for channeling customers to the NSTAR energy efficiency rebate programs and for deriving the full benefit of the ESB program for both participants and the utility. Customer presentations provide excellent opportunities to foster customer awareness and education on energy efficiency and low/no cost measure recommendations. Finally, the utility's presence simply adds greater legitimacy and credibility to the entire process.

**Finding.** The survey respondents reported financial considerations as the primary driver of their decision to implement recommended measures. Conversely, they reported that lack of budget was the primary reason for not implementing measures.

- **Recommendation.** In an effort ensure that participants understand the full impact of participation in NSTAR rebate programs, paybacks and incentives available from NSTAR energy efficiency rebate programs should be emphasized in presentation of audit findings. Program staff attending the presentations should go prepared to recruit participants into the relevant NSTAR incentive programs for recommended measures.

**Low/No Cost Measures**

**Finding.** Respondents reported implementing 38% of the recommended low cost/ no cost measures.

- **Recommendation.** In an effort to increase the number of low/no cost measures that are implemented, NSTAR should consider including a roadmap or a plan of action for low/no cost measures with the technical audit report. The plan should be customized for each participant and reviewed with them during the presentation of the final report. NSTAR

should follow up with participants and verify that they are pursuing all of the low/no cost measures recommended.

## Capital Outlay Measures

**Finding.** Respondents reported implementing less than three-tenths (29%) of the recommendations requiring a capital outlay.

**Finding.** Respondents reported that about half (49%) of the implemented electrical energy savings were implemented through another NSTAR program and about one-fourth (24%) of the implemented natural gas savings were implemented through another NSTAR program.

**Finding.** One-third of the NSTAR respondents who reported implementing capital outlay measures through another NSTAR program, reported prior plans to participate in NSTAR programs.

**Finding.** Two-thirds of the NSTAR respondents reported prior plans to implement at least some of the capital outlay measures implemented through the ESB program and nearly half of the respondents reported prior plans to implement 50% or more of the implemented capital outlay measures. However, all of these respondents also reported that ESB strongly influenced their decision to implement recommendations that they had not previously planned to pursue.

- **Recommendation.** In the absence of cost information, it is not possible to make a definitive assessment of the ESB program's effectiveness. Additionally, there may be some free ridership in terms of plans to participate in other NSTAR programs and plans to implement recommended measures. Nevertheless, the program appears to have some value in motivating participants to actually implement measures that they had been considering as well as those that they had not previously considered. Accordingly, NMR recommends that the ESB program should continue to be used as a mechanism to drive participation in the NSTAR rebate programs but that its costs be tracked and the program's effectiveness be evaluated after an appropriate interval.

# 5 DOER and EPA Perspectives

## 5.1 DOER Perspectives

The Massachusetts Department of Energy Resources (DOER) provides benchmarking for municipal buildings, notably schools, and a few regional water treatment plants. DOER received 113 applications for benchmarking between December 2007 and February 2008; the last of these applicants will likely be served by June 2009. DOER began taking a second round of applications for benchmarking at the end of 2008. Utilities receive a list of their customers who have applied to DOER with a projected date of service.

The DOER staff members interviewed expect that funding for public-sector energy efficiency will increase, both through the Green Communities Act and federal stimulus monies. While DOER resources will increase, demand for services is likely to increasingly outstrip the state's ability to serve the municipalities. DOER staff members note that they currently have a cap on the level of technical assistance they can provide to a municipality and if that cap is exceeded, they communicate with the appropriate utility and share the responsibility. In addition, if a municipality is scheduled to be served eight or more months in the future, DOER contacts the appropriate utility so that the city or town gets some level of service regardless of its position in the state's queue. According to DOER staff, the utility can get customers started in the process and some energy efficiency measures can be quickly implemented. DOER interviewees also noted that while their organization can perform the benchmarking, it still needs the utilities to provide in-depth technical assistance. It therefore makes sense to have the utilities do some benchmarking, especially in municipalities where multiple buildings need assistance. However, DOER may not continue to need the utilities for this if DOER gets more funds and can raise or remove their technical assistance cap.

DOER staff has high praise for the communication and coordination between the state and the utilities. Ultimately, they noted, cities and towns would benefit from one-stop shopping—a municipal program that works across fuels to provide audit information and incentives for all cost-effective measures.

## 5.2 Utility Perspectives on DOER Relationship

National Grid staff also talked about collaborating with DOER in focusing on municipalities in 2009. National Grid will still only benchmark one building per city or town, but it will also assist DOER by following through on projects in buildings that have received DOER audits. DOER, due to its backlog, has not been able to benchmark all eligible buildings in a city or town and National Grid has sometimes benchmarked more than one building to make up for that. At least one customer has received an audit from National Grid after receiving a DOER report in the prior year. National Grid staff believes the process in 2008 improved from "stepping on each other's toes" in 2006 and 2007.

NSTAR staff is just beginning to work with DOER and could not provide feedback on the interaction between programs. The program manager said she would choose a sizable municipal building on DOER's wait list, benchmark, and share findings with DOER.

## 5.3 Participant Perspectives

The sample of National Grid and NSTAR respondents included six municipal governments that participated at multiple facilities. Two of these respondents reported that they have participated in the DOER's benchmarking and auditing program. Four of these respondents reported that they have facilities that have not yet been benchmarked or audited and two cited identifying additional energy efficiency opportunities as benefits of having DOER benchmark additional facilities. One respondent reported that a lack of incentives is a possible drawback of working with DOER (Table 5-1,

Table 5-2,

**Table 5-3, and**

Table 5-4).

**Table 5-1: Participation in DOER's Benchmarking and Auditing Program for Government Facilities**

| | Respondents |
|---|---|
| n | 6 |
| Have participated | 2 |
| Have not participated | 4 |

**Table 5-2: Facilities Not Yet Benchmarked and Audited**

| | Respondents |
|---|---|
| n | 6 |
| Have facilities not yet benchmarked and audited | 4 |
| Do not have facilities not yet benchmarked and audited | 2 |

**Table 5-3: Benefits of Having DOER Benchmark and Audit Additional Facilities**

| Benefit | Respondents |
|---|---|
| n | 4 |
| Enable us to identify additional energy efficiency opportunities | 1 |
| Would like the state more involved | 1 |
| See what is available and get more done | 1 |
| Don't know/refused | 1 |

**Table 5-4: Drawbacks of Having DOER Benchmark and Audit Additional Facilities**

| Drawback | Respondents |
|---|---|
| n | 4 |
| No drawbacks | 2 |
| May not have incentives National Grid offers | 1 |
| Don't know/refused | 1 |

Three of the four respondents with facilities that have not yet been benchmarked or audited reported that they would be likely to benchmark and audit their additional facilities whether or not DOER did the benchmarking for them (Table 5-5).

**Table 5-5: Likelihood of Benchmarking and Auditing Additional Facilities on Own**

| | 1 to 5 Scale, 1 = "extremely unlikely" and 5 = "extremely likely" | | | | | |
|---|---|---|---|---|---|---|
| | **n** | **1** | **2** | **3** | **4** | **5** |
| If DOER did not benchmark and audit additional facilities | 4 | -- | -- | 1 | 3 | -- |
| If DOER did benchmark and audit additional facilities | 4 | -- | -- | 1 | 2 | 1 |

Three respondents reported that they would be likely to implement at least some of the energy efficiency measures identified in benchmarking or auditing of additional facilities (Table 5-6).

**Table 5-6: Likelihood of Implementing at Least Some of the Identified Energy Efficiency Measures in Additional Facilities Benchmarked and Audited on Own**

| | 1 to 5 Scale, 1 = "extremely unlikely" and 5 = "extremely likely" | | | | | |
|---|---|---|---|---|---|---|
| | **n** | **1** | **2** | **3** | **4** | **5** |
| Respondents | 3 | -- | -- | -- | 1 | 2 |

## 5.4 EPA Perspectives

EPA is the provider of the Portfolio Manager tool. The EPA staff expects that utility energy efficiency rebate programs will face more daunting goals as the "low-hanging fruit get picked" and with increased demands on the programs to deliver additional energy savings. In such an environment, the EPA staff envisions a key role for Portfolio Manager in providing a more comprehensive, whole-building approach to drive deeper savings among more customers.

The EPA staff observed that both the NSTAR and National Grid benchmarking programs have been early adopters and nationally innovative programs. Indeed, NSTAR was the first utility to

offer a benchmarking program and was EPA's 2005 partner of the year. However, the EPA staff believes that the program set modest goals beyond which it never grew.

The EPA staff thinks that National Grid's WBA program learned from NSTAR and improved on it by embedding project expediters into the program. WBA also was more rigorous in requiring ongoing benchmarking. As a result, the National Grid program has established a good system for using Portfolio Manager as a program platform and a portal to energy efficiency rebate programs.

However, according to EPA staff, both programs face a similar challenge of further growth, particularly in the face increased demands for energy savings. In the case of NSTAR, the challenge is to grow the program beyond the relatively modest goals it sets for itself. Both utility programs have to deal with problems of scalability. While NSTAR could leverage its model of relying on other companies as implementers to drive growth without significant increases in staff, it needs to have a better system for guiding and managing the implementers. National Grid, on the other hand, has taken an approach of maintaining close control over much of the program administration and management which, according to EPA staff, sets limits on the scalability of the WBA program.

EPA staff improvement suggestions for both programs included automating data gathering for benchmarking and taking a portfolio approach to client facilities. With automation, customer bills are regularly downloaded to the Portfolio Manager so that there is an automatic process to track improvement. Note that this would also address a key source of customer concern and program delays—gathering and inputting the client data into Portfolio Manager. According to EPA staff, this also sets up a mechanism for routine and regular benchmarking as guide to fostering continuous improvement.

One of the EPA staff members also commented that some utilities are starting to look at engaging customers on their full portfolio of buildings. The Pacific Gas & Electric Company is taking this approach with large customers and benchmarking their fleet of buildings. Should NSTAR and National Grid also adopt such an approach, they will be able to identify and harvest energy efficiency opportunities more readily which, as they pick-off the low hanging fruit and face more challenging goals, becomes especially important.

The EPA program manager for the Northeast region remarked that she communicates with National Grid program staff at least once a month but less frequently with the NSTAR program staff. However, for both programs, she feels her effectiveness in providing assistance is hampered by a lack of data on program performance—which she is supposed to receive as part of both utilities' agreements with EPA.

# 6 Comparative Review and Recommendations

## 6.1 Comparative Review

As noted by the EPA staff, in an environment where energy conservation programs face increasing pressures to deliver savings and as the low-hanging fruit get picked, the NSTAR and National Grid benchmarking programs offer a comprehensive, whole-building approach that can drive deeper savings among more customers.

With comparable net implementation percentages of recommended kWh savings, both the NSTAR (32%) and National Grid (30%) benchmarking programs have been similarly effective in delivering electrical energy savings from their 2006 and 2007 program years. The National Grid program also has been effective in delivering natural gas savings, with net implementations of 52% of recommended Therm savings. The sample for this study included NSTAR respondents who account for only 3% of total recommended natural gas savings which limits the ability to develop valid projections of the effectiveness of the NSTAR program in delivering natural gas savings.

**The most significant difference in the energy savings achieved by the two programs is due to the size and type of participants. The primary participants in the National Grid program were schools (K-12) and the primary participants in the NSTAR program were office buildings (Table 6-1). NSTAR respondents use nearly three times the amount of electricity as National Grid respondents (**

Table 6-2). Because of these differences in the types participants, the NSTAR program was able to achieve greater savings on both a per customer basis and as a program overall. Adjusting the estimated net electrical savings for each utility by the total number of facilities that participated in the program in 2006 and 2007 (58 for National Grid and 44 for NSTAR) shows that the NSTAR program achieved nearly twice the total energy savings as the National Grid program (Figure 6-1). Due to the low level of natural gas recommendations represented by the NSTAR respondents, a comparative analysis based on natural gas savings is not presented here. It is important to note that all savings estimates are based only on an examination of program documents and survey responses. In order to draw more meaningful cross program comparisons regarding energy savings, on-site evaluations would be necessary to confirm energy savings and measure implementations.

### Table 6-1: Building Type

(all participants)

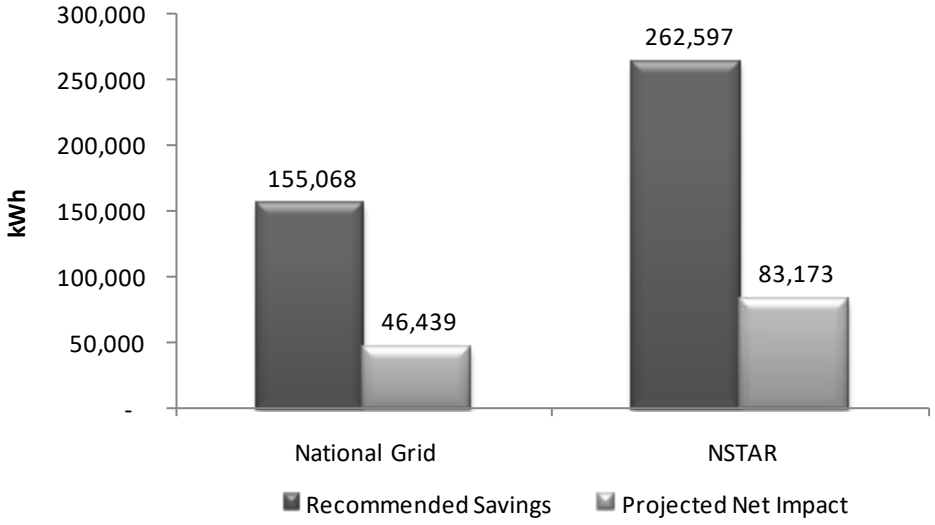
| | National Grid Whole Building Assessment Program | NSTAR ENERGY STAR Benchmarking Program |
|---|---|---|
| n | 24 | 38 |
| # of Facilities | 58 | 40 |
| School | 38 | 9 |
| Office | 12 | 20 |
| College | 4 | -- |
| Library | 1 | -- |
| Airport | 1 | -- |
| Retail | 1 | -- |
| Hotel | 1 | 6 |
| Grocery Store | -- | 3 |
| Hospital | -- | 1 |
| Courthouse | -- | 1 |

### Table 6-2: Average Annual Electricity Usage

(all respondents)

| | National Grid Whole Building Assessment Program | NSTAR ENERGY STAR Benchmarking Program |
|---|---|---|
| n | 12 | 17 |
| # of Facilities | 30 | 19 |
| Average Annual Electricity Usage | 1 Million kWh | 2.7 Million kWh |

**Figure 6-1: Net Electrical Impact by Participant**




In general, National Grid's WBA program has been the more effective conduit for channeling participants to National Grid energy efficiency rebate programs. Three-fourths (75%) of the total electricity savings from implementations requiring a capital outlay are obtained through participation in National Grid energy efficiency rebate programs as compared with about one-half (49%) of total electricity savings for the NSTAR program. Additionally, National Grid survey respondents gave among the highest satisfaction ratings to "information provided about incentive programs" whereas NSTAR respondents gave among the lowest ratings to this aspect of program participation. Attendance of National Grid staff and account executives at the Action Plan meeting appears to be a critical factor in customer hand-off to utility energy efficiency rebate programs.

On the other hand, NSTAR's ESB program has been more effective than National Grid's WBA program in driving participants to continue benchmarking facilities. Over half the NSTAR survey respondents have already used Portfolio Manager to benchmark additional facilities, as compared with one-fourth of National Grid survey respondents. Also, more than two-thirds of NSTAR respondents reported plans to use Portfolio Manger to re-benchmark their facilities at least once a year, as compared with about two-fifths of National Grid respondents. It is possible that as a result of the hands-on effort by National Grid implementation contractors in working with participants on the initial benchmarking process, participants are not acquiring the necessary training and skills to run Portfolio Manager by themselves. Indeed, less than one-half of the National Grid respondents reported that they received training on Portfolio Manager whereas about three-fourths of NSTAR respondents report receiving such training. Any such issues regarding ongoing benchmarking may be obviated if National Grid and NSTAR instituted automated benchmarking that sets up regular downloads of usage data to Portfolio Manager.

According to EPA staff, both programs face a challenge of further growth, particularly in the face of increased demands for energy savings. In the case of NSTAR, the challenge is to grow the program beyond the relatively modest goals it sets for itself. Both utility programs have to deal with problems of scalability. While NSTAR could leverage its model of relying on other companies as implementers to drive growth without incurring significant increases in staff, it needs to have a better system for directing and managing the implementers. National Grid, on the other hand, has taken an approach of maintaining close control over much of the program administration and management which, according to EPA staff, sets limits on the scalability of the WBA program.

EPA staff also suggested that NSTAR and National Grid may wish to consider engaging large customers on their full portfolio of buildings as a way to more readily identify and harvest energy efficiency opportunities. This approach is being taken by the DOER program for benchmarking municipal buildings. Thus, if NSTAR and National Grid, decide to take this approach, they may wish to consider doing so only for non-government customers, thereby avoiding duplication of effort with the DOER benchmarking program. Conversely, should the DOER program switch to benchmarking just a single facility for each municipal government customer, this may result in duplication of DOER and utility activities. In the latter event, the structure of the relationship between the DOER and utility benchmarking programs needs to be reviewed to make sure that the programs are not redundant.

## 6.2 NSTAR and National Grid Program Comparisons

This section outlines a few additional cross-program comparative differences and lessons learned.

**Program Marketing and Promotion**

**Finding.** Both the NSTAR (32%) and National Grid (30%) benchmarking programs have been similarly effective in delivering electrical energy savings from their 2006 and 2007 program years.

**Finding.** The most significant difference in the energy savings achieved by the two programs is due to the size and type of participants. The primary participants in the National Grid program were schools (K-12) and the primary participants in the NSTAR program were office buildings.

- **Recommendation.** National Grid should consider promoting the WBA program to larger customers where greater energy savings can be realized.

**Finding.** National Grid has attempted to screen customers so that those who are more likely to benefit from WBA are offered the program. As of the end of 2008, buildings must have low-to-average ENERGY STAR® benchmarking ratings and high energy intensity ratings (kWh use per square foot) in order to qualify for a technical scoping study. Furthermore, non-government customers split the cost of the technical scoping study with National Grid. NSTAR has continued to offer ESB free of charge. Program staff members attempt to offer the program to customers

that they judge will benefit from it, but there are no specific requirements that need to be met.

- **Recommendation.** NSTAR should consider utilizing similar approach to that of National Grid for screening customers. National Grid's screening criteria eliminates participants who will be unlikely to achieve large energy savings and, by sharing costs with participants, National Grid is able to further screen out customers who are not willing to make a modest investment in energy efficiency.

**Finding.** NSTAR program staff reported that large buildings with multiple tenants are particularly difficult to recruit to the program because NSTAR cannot provide data for the whole building to one tenant who may be interested in participating.

- **Recommendation.** In order to more effectively reach this market segment, National Grid may also want to consider identifying ways to facilitate obtaining tenant authorizations, e.g., provide supporting information on National Grid letterhead, authorization letters, forms, etc.

## Audit Reports

**Finding.** Based on a review of technical reports by NMR staff, the NSTAR Energy Efficiency Opportunity Assessment reports provide a good summary of recommended measures up front with the benchmarking rating prominently displayed.

- **Recommendation.** NSTAR's report format is clear and concise. Including recommendations and benchmarking rating at the beginning of the report it calls the attention of participants. National Grid should seek to develop a similar format that summarizes the information in its technical scoping study reports.

## Presentation of Audit Findings and Follow-up

**Finding.** The presence of National Grid staff at the presentation of audit findings to participants has been a key factor in facilitating customer follow-through and implementation of recommended measures.

- **Recommendation.** In an effort to increase customer follow-through and implementation of recommendations NSTAR should ensure that its staff and account executives are available to attend the presentation of findings to participants.

**Finding.** National Grid is putting in place a system to remind field staff people to call customers and follow up on recommendations made in the technical scoping study.

- **Recommendation.** In an effort to increase customer follow-through and implementation of recommendations NSTAR also should consider instituting such a system.

# Appendix A Staff Discussion Guide

## Draft staff interview guide: MA ES BENCHMARKING

Draft: November 18, 2008

Interviewer: _____

Date of Interview: _____

Time Begun_____ Time Ended _____

Respondent Name: _____

Respondent Title: _____

Contact Information:

Phone Number(s): _____

Fax Number: _____

E-mail Address: _____

Interview was: _____ By phone _____ At respondent's Office _____ Other (specify): _____

QUESTIONS AND TO WHOM THEY SHOULD BE ASKED ARE GUIDES ONLY. ADJUST TO SPECIFIC RESPONDENT/FLOW OF INTERVIEW.

(Ask questions of all respondents if no letter precedes question. If letter precedes question, ask only to that group or groups)

**A.** National Grid [Whole Building Assessment Initiative **(WBA)**]
**B.** NSTAR [ENERGY STAR Benchmarking Initiative **(ESB)**]

[NOTE: FOR NATIONAL GRID THE ASSISTANT PROGRAM MANAGER IS AN OUTSIDE CONSULTANT, BUT FOR THE PURPOSE OF THE DISCUSSION GUIDE SHE IS BEING TREATED AS A STAFF MEMBER.]

I want to talk with you about the [ENERGY STAR Benchmarking Initiative (**ESB**) / Whole Building Assessment Initiative (**WBA**)] program. As you know, I am part of the evaluation team from Nexus Market Research, or NMR, and part of our job is to determine how people involved in the program think it is operating, what is working well, and what needs to be improved. Please be aware that the information you provide will be treated as confidential.

With your permission, I would like to record the interview. We will use the recording for transcription purposes, in order to make sure we accurately represent your responses. No one but NMR staff members will listen to the recording. NMR will keep all recordings in its files. Do I have your permission to record the interview?

_____ Yes _____ No

## Respondent's Background – 5 minutes

First of all, I'd like to get some background on your involvement with [WBA, ESB]

1. How long have your worked for [National Grid, NSTAR] and how long have you been with [WBA, ESB]?

2. What is your current job title, and what roles and responsibilities do you have? Is your work limited to [WBA, ESB] or do you work on other programs or have additional responsibilities?

3. About what percentage of your time is spent on [WBA, ESB]?

4. Tell me about any training you've had that helped prepare you to work for [WBA, ESB]. Do you believe that you have received sufficient training on using the Portfolio Manager?

## Program Implementation – 5 minutes

5. What are your responsibilities specifically with respect to the [WBA, ESB] program?

6. Please describe how the [WBA, ESB] program works. Think about ways customers come to participate in the program, what services are provided to them, and when.
   Specific probes/issues to hit:
   a. FOR NATIONAL GRID – Think about the Process Overview Flowchart – 4 steps – Benchmarking, Scoping Study, Action Plan, and Implementation. For a typical project how much time does each step take? How much time typically passes between steps? What causes lags between steps?
   b. FOR NSTAR – is there a general timeline follow by projects? If so please describe the timeline to me. How much time does each step take? How much time typically passes between steps? What causes lags between steps?
   c. What documents do customers fill out – MOU, [National Grid – modified pre-screening questionnaire], Are there any other written or verbal commitments made during the program?
   d. How participants enroll in the program
   e. Program activities: who does what, where, and when
   f. Division of labor between utility staff and contractors
   g. Training provided for customers on use of benchmarking tool. Who typically receives training? Are there any requirements about who receives training?
   h. Training provided for customers to continue monitoring after initial benchmarking
   i. Training provided for customers with multiple facilities

7. What if any follow-up activities are conducted with customers after initial contact? After initial benchmarking is complete? After any action plan is implemented and completed?

## Program Goals and Objectives – 10 Minutes

8. What if any documentation exists for the program? Does the program have formal program theory and program logic documentation? How can we obtain that?

9. What would you say are the primary short, mid, and long-term goals and objectives of the [WBA, ESB] program? How do you define short, mid, and long-term? How do you arrive at or set these goals? Who is involved in the decision making? [Probe to think beyond their first response]

10. How do the program activities you described earlier help achieve these objectives?

11. How have you been measuring progress towards these goals over the past several years? How will you be measuring them into the short, mid, and long-term future?
    a. How do you measure or quantify success?

12. What are the barriers to achieving these goals and objectives? What facilitates achieving them?

    a. Is there ever an "end of the year/season" scramble to meet the [WBA, ESB] goals for the number of businesses benchmarked, energy savings targets, spending down of allocated budget?

13. What value do you think the [WBA, ESB] program brings to other [National Grid, NSTAR] energy efficiency programs? To what extent does the [WBA, ESB] program drive participation in other [National Grid, NSTAR] programs?

14. Do you think that participation in [WBA, ESB] is now at optimal levels, or is it higher or lower than it should or could be? Please explain your answer.
    a. If lower, what should be done to get more people to participate?
    b. If higher, what should be done to limit participation?
    c. Are there untapped customer types? If so how can they be reached?

15. What changes have been made to the program over time? Why were changes made? Did they have the intended effect?

16. What changes are currently planned for the future, or at least in the process of being planned? Why are the changes being made and what do you hope to accomplish with them?

## Customers – 10 minutes

17. Who is eligible to participate in [WBA, ESB]?

    a. What is the process for determining who is eligible?
    b. Does the program target any specific groups within the eligible population [Probe: industry, size, owner/renter, urban/rural, previous energy efficiency program participants]? Do most program participants fall into a targeted group? Is anyone discouraged from applying? If so, why?
    c. [IF NOT ADDRESSED IN EARLY RESPONSES] How does [WBA, ESB] attract customers? What communication channels are used to pursue customers? What is the general awareness level among customers of the program?

18. Why do you think customers decide to participate in the program? Are customers more interested in energy savings, financial savings or non-energy benefits? Are customers

more likely to participate if they have previously participated in a program with [National Grid, NSTAR]?

d. What non-energy benefits are customers most interested in? [Probe: learning how their benchmark score for their building compares to similar buildings, improved working environment, Energy Star designation, environmental benefits, reduced carbon footprint, marketing/public relations benefits, education & training, etc.]

19. What situations or factors do you think might keep some customers from participating in the program, even if they are eligible? [Program participation is defined as conducting benchmarking and adhering to terms and conditions outlined in the MOU.] [Probe: budgeting, facility staff cooperativeness, availability of metering readings, lack of perceived value to customer, time required, lost interest or momentum]

e. What factors may cause a customer to be ineligible to participate in the program? How often does the program encounter customers who want to participate but do not qualify for participation in the program? What advice do you give them? Do you steer them towards other programs that might be able to offer them energy efficiency assistance? What are those programs?

20. How do you think customers use the benchmarking scores? Along with benchmarking scores what other information is provided to customers? In what way is the information useful to customers? Do you conduct any follow up on the benchmarking score with customers? Is the score tracked and are any goals set against the score? IF GOALS ARE SET: How successful have you been in achieving those goals? IF SUCCESSFUL: Do you have any plans to set a new for a higher benchmarking score?

21. Do you think the reports and information provided to customers meet needs and expectations? Is information provided of suitable quality for decision making? Is there enough information provided to support decision making?

22. What kind of feedback, if any, do you typically receive from customers? Please think both about what they like and don't like, the things they praise, and the things they complain about. [Probe: Do customers want or ask for other facilities to be benchmarked? How are these requests handled?] How do you handle complaints? How do you attempt to resolve them?
    - 

23. Do you believe customers experience changes in attitudes regarding energy usage in their facilities after participating in the [WBA, ESB] program? Why or why not? What kind of changes? [Probe: increased awareness of energy efficiency, surprised by how low/high facility rates against other similar facilities, discouraged/encouraged by ranking, motivated to improve or upgrade energy efficiency in their facilities.]

24. Do the customers ask for any other types of help or services? What do they ask for? What do you tell them?

25. Is the customer training on use of the Portfolio Manager adequate? Do customers request additional training to continue benchmarking activities after initial participation?

## Marketing and Outreach – 5 minutes

[NOTE: SOME QUESTIONS MAY HAVE BEEN ADDRESSED BY ANSWERS IN EARLIER SECTIONS. SKIP QUESTIONS IF ALREADY ADDRESSED.]

26. How is the [WBA, ESB] program marketed?
    a. Who is targeted in your marketing? How do you market to them specifically?
    b. Are a variety of customer types approached? Are there any eligible groups which have shown little/no interest?
    c. How are prospective participants identified?
    d. Are there adequate materials and information available for customer presentations and meetings?

27. Are there specific times of year that marketing is done and why?

28. How much money is allocated/spent on marketing (2006/2007)?

29. Who is responsible for marketing the program? Is the program marketed by multiple companies? [National Grid, NSTAR, EMA or ICF]? What components of the marketing is each entity responsible for? Do you supply the contractors with the materials?

30. What methods of marketing are most effective? Have the methods and their effectiveness changed over time?

31. Are there any eligible groups which are not being reached? How could these groups be reached? Are there other communication channels that are not currently being used to market the [WBA, ESB] program? Why are these channels not being utilized?

## Relationship with Other Programs – 5 minutes

32. What other types of energy efficiency programs are available for customers? How do those programs relate to [WBA, ESB]?

33. Describe the current ways in which other federal and state programs, including DOER and other EPA programs, as well as utility-sponsored energy efficiency programs, are integrated or have cooperative, coordinated service delivery with [WBA, ESB]. What actions do you take to bring other programs to the attention of customers through the [WBA, ESB] program? How are resources shared or leveraged among these programs?

34. How are [WBA, ESB] participants handed off or enrolled in other utility, state, and federal programs? Is there continued involvement from [WBA, ESB] staff when participants enlist in other programs? Is the progress of [WBA, ESB] participants in other programs tracked? How? If not, why not?

35. In what ways do you monitor customers implementing energy efficiency measures? How do you help influence customers to move on from benchmarking to implementation of low cost/no cost measures? What factors lead customers to implement low cost/no cost measures? What factors prevent customers from implementing low cost/no cost measures?

36. How do you influence customers to implement other recommended measures, beyond the low cost/no cost measures? What factors lead customers to implement these measures? What factors prevent customers from implementing these measures?
    - 

37. Do you influence customers to implement other measures, beyond the recommended measures? What factors lead customers to implement these measures? What factors prevent customers from implementing these measures?

38. How would you enhance the cooperation, coordination, or integration of other federal, state or utility sponsored energy efficiency programs and [WBA, ESB]? How would the coordination benefit program participants? Your company?

## Program Administration – 10 minutes

39. What kinds of quality control mechanisms do you have in place? Think broadly about what you might check the quality of (installation, professionalism of staff/contractors, checking eligibility, etc.), but please refer to specific mechanisms. How do you keep track of this information?

40. Describe how you track program data. What data are currently being tracked and by whom?

41. Do you share tracking data with any contractors or vendors? How easy is it to integrate your data? Does the integration work well? What, if anything, needs to be improved?

42. What data would you like to see tracked that are not? What data are currently tracked that could be excluded from the database?

43. Describe any intra-utility communication procedures specifically related to [WBA, ESB]? Please think about the program staff and contractors, marketing departments, credit and collections, community relations, economic development etc. How frequently are you in communication with other people working for the program? How about the other departments? Are current interactions adequate? Why or why not? How can interactions/communication be improved? Have there been any breakdowns in communications? If so, how were they resolved and what steps have been taken to avoid future breakdowns?

44. Describe any intra-utility procedures for coordinating data tracking on possible or past program participants.
    - 

45. Describe the interaction and communication between yourself and the technical staff and contractors? How closely do you work with the technical staff and contractors? Are current interactions adequate? Why or why not? How can interactions/communication be improved? Have there been any breakdowns in communications? If so, how were they resolved and what steps have been taken to avoid future breakdowns?

46. Describe the interaction and communication between [National Grid, NSTAR, EMA, ICF] EPA and DOER staff. How frequently are you in communication? How closely do you work with EPA and DOER staff members? Are current interactions adequate? Why or why not? How can interactions/communication be improved? Have there been any breakdowns in communications? If so, how were they resolved and what steps have been taken to avoid future breakdowns?

47. Do you and EPA / DOER staff engage in any joint problem solving regarding the program?

48. What are the benefits of working with EPA / DOER? What are the drawbacks of working with EPA / DOER?

49. Are the program resources adequate to get the job done? [Resources: budget, agency staffing, availability of contractors, utility staff]. How does demand from customers balance with program resources? Can you handle more demand with available resources? Would the program benefit with more resources? Which resources and why? Do the programs have any limitations that keep you from getting the job done in the way you would like?

50. How do you decide how to allocate the budget? [Probe: marketing, overhead, measures, etc.]

51. Besides the budget, how adequate are other resources, such as staff time or any other resources
    - 

52. Do you believe the [WBA, ESB] program delivers value to [National Grid, NSTAR]? In what way do you believe it delivers value? [PROBE: program's benefits exceed the program's expenses?]

53. What are the key strengths and weakness of the program?
    - 

54. How could the program be improved? [Probe: broader, deeper savings, more customer participation]

55. Is there anything else you would like to tell me about the program, including additional suggestions to make the program work better or more effectively in the future?

# Appendix B Contractor Discussion Guide

## Draft Implementation contractor and technical support specialist interview guide: MA ES BENCHMARKING

Draft: November 18, 2008

Interviewer: _____

Date of Interview: _____

Time Begun_____ Time Ended _____

Respondent Name: _____

Respondent Title: _____

Other Contact Information:

Phone Number(s): _____

Fax Number: _____

E-mail Address: _____

Interview was: _____ By phone _____ At respondent's Office _____ Other (specify): _____

[NOTE: QUESTIONS AND TO WHOM THEY SHOULD BE ASKED ARE GUIDES ONLY. ADJUST TO SPECIFIC RESPONDENT/FLOW OF INTERVIEW.]

I want to talk with you about the [ENERGY STAR Benchmarking Initiative (**ESB**), Whole Building Assessment Initiative (**WBA**)] program. As you know, I am part of the evaluation team from Nexus Market Research, or NMR, and part of our job is to determine how people involved in the program think it is operating, what is working well, and what needs to be improved. Please be aware that the information you provide will be treated as confidential.

With your permission, I would like to record the interview. We will use the recording for transcription purposes, in order to make sure we accurately represent your responses. No one but NMR staff members will listen to the recording. NMR will keep all recordings in its files. Do I have your permission to record the interview _____ Yes _____ No

## Respondents' Background – 5 minutes

First of all, I'd like to get some background on your involvement with [WBA, ESB]

1. How long have your worked for _____ and how long have you been working with the [WBA, ESB] program?

2. What is your current job title, and what roles and responsibilities do you have for the [WBA, ESB] program? Is your work limited to [WBA, ESB] or do you work on other programs for [National Grid, NSTAR]? [If YES: What other programs do you support?] If you were not working on [WBA, ESB] what program(s) do you think you would be supporting?

3. Are you a full time (40 hr a week) employee? If not how many hours do you work each week? About what percentage of your time is spent on [WBA, ESB]?

4. Tell me about any training you've had that helped prepare you to work for [WBA, ESB].

5. What training has been most helpful to your work with the [WBA, ESB] program? Do you believe that you have received sufficient training on using the Portfolio Manager? Do you believe additional training would be helpful? What kind?

## Program Implementation – 10 minutes

6. What are your specific responsibilities for the [WBA, ESB] program?

7. Please describe how the [WBA, ESB] program works. Think about ways customers come to participate in the program, what services are provided to them, and when.
   Specific probes/issues to hit:

   a. FOR NATIONAL GRID – Think about the Process Overview Flowchart – 4 steps – Benchmarking, Scoping Study, Action Plan, and Implementation. For a typical project how much time does each step take? How much time typically passes between steps? What causes lags between steps?
   b. FOR NSTAR – is there a general timeline follow by projects? If so please describe the timeline to me. How much time does each step take? How much time typically passes between steps? What causes lags between steps?
   c. What documents do customers fill out – MOU, [National Grid – modified pre-screening questionnaire], Are there any other written or verbal commitments made during the program?
   d. How participants enroll in the program
   e. Program activities: who does what, where, and when
   f. Division of labor between utility staff, contractors, and participants
   g. Training provided for customers on use of benchmarking tool. Who typically receives training? Are there any requirements on who receives training?
   h. Training provided for customers to continue monitoring after initial benchmarking
   i. Training provided for customers with multiple facilities

8. What if any follow-up activities do you have with customers after initial contact? After initial benchmarking is complete? After any action plan is implemented and completed?

## Customers – 10 minutes

9. How do you receive customer contact information? Whom do you usually interface with on the customer's side? [Facility/building manager, principal/head of staff] Are there any requirements or recommendations on who participates?

10. Do you setup any appointments with customers?

11. About how long after you first receive contact information do you first try and contact customers?

12. Who is eligible to participate in [WBA, ESB]?

    a. What is the process for determining who is eligible? Who makes the determination about program eligibility (you, contractor, program administrator, other)?

b. Does the program target any specific groups within the eligible population [Probe: industry, size, owner/renter, urban/rural, previous energy efficiency program participants]? Do most program participants fall into a targeted group? Is anyone discouraged from applying? If so, why?

c. How does [WBA, ESB] attract customers? What communication channels are used to pursue customers? What is the general awareness level among customers for the program?

13. Why do you think customers decide to participate in the program? Are customers more interested in energy savings, financial savings or non-energy benefits? Are customers more likely to participate if they have previously participated in a program with [National Grid, NSTAR]?

    a. What non-energy benefits are customers most interested in? [Probe learning how their benchmark score for their building compares to similar buildings, improved working environment, Energy Star designation, environmental benefits, reduced carbon footprint, marketing/public relations benefits, education and training, etc.]

14. What situations or factors do you think might keep some customers from participating in the program, even if they are eligible? Program participation is defined as conducting benchmarking and adhering to terms and conditions outlined in the MOU . [Probe: budgeting, facility staff cooperativeness, availability of metering readings, lack of perceived value to customer, time required]

    f. What factors may cause a customer to be ineligible to participate in the program? How often does the program encounter customers who want to participate but do not qualify for participation in the program? What advice do you give them? Do you steer them towards other programs that might be able to offer them energy efficiency assistance? What are those programs?

15. How do customers use the benchmarking scores? Along with benchmarking scores what other information is provided to customers? In what way is the information useful to customers? Do you conduct any follow up on the benchmarking score with customers? Is the score tracked and are any goals set against the score? IF GOALS ARE SET: How successful have you been in achieving those goals? IF SUCCESSFUL: Do you have any plans to set a new for a higher benchmarking score?

16. Do you think the reports and information provided to customers meet needs and expectations? Is information provided of suitable quality for decision making? Is there enough information provided to customers to support decision making?

17. What kind of feedback, if any, do you typically receive from customers? Please think both about what they like and don't like, the things they praise, and the things they complain about. [Probe: Do customers want or ask for other facilities to be benchmarked? How are these requests handled?] How do you handle complaints? How do you attempt to resolve them?
    - 
18. Do you believe customers experience changes in attitudes regarding energy usage in their facilities after participating in the [WBA, ESB] program? Why or why not? What kind of changes? [Probe: increased awareness of energy efficiency, surprised by how low/high facility rates against other similar facilities, discouraged/encouraged by ranking, motivated to improve or upgrade energy efficiency in their facilities.]

19. Do the customers ask about any other types of help or services? What do they ask for? What do you tell them?

20. Is the customer training on use of the Portfolio Manager adequate? Do customers request additional training to continue benchmarking activities after initial participation?
    - 

## Marketing and Outreach – 5 minutes

[NOTE: SOME QUESTIONS MAY HAVE BEEN ADDRESSED BY ANSWERS IN EARLIER SECTIONS. SKIP QUESTIONS IF ALREADY ADDRESSED.]

21. How is the [WBA, ESB] program marketed?

    a. Who is targeted in your marketing? How do you market to them specifically?
    b. Are a variety of customer types approached? Are there any eligible groups which have shown little/no interest?
    c. How are prospective participants identified?
    d. Are there adequate materials and information available for customer presentations and meetings?

22. Are there specific times of year that marketing is done and why?

23. Who is responsible for marketing the program, [National Grid, NSTAR, EMA, ICF, other consultants]? Is the program marketed by multiple companies? [National Grid, NSTAR, EMA or ICF]? What components of the marketing is each entity responsible for? Does anyone provide you with marketing materials?

24. What methods of marketing are most effective? Have the methods and their effectiveness changed over time?

## Customer Follow-through – 5 minutes

25. What process or steps are taken to hand off, or enroll customers in other programs to help them implement energy efficiency measures identified through the [WBA, ESB] program? Is there continued involvement from [WBA, ESB] staff when participants enlist in other programs?

26. Is the information contained in the [Energy Efficiency Opportunity Assessment Report, Technical Scoping Study] of sufficient depth and quality to help customers make decisions regarding energy efficiency improvements? How important is the role of the report in the participant's decisions to implement energy efficiency measures? Please explain why or why not.
    - 
27. In what ways do you monitor customers implementing energy efficiency measures? How do you help influence customers to move on from benchmarking to implementation of low cost/no cost measures? What factors lead customers to implement low cost/no cost measures? What factors prevent customers from implementing low cost/no cost measures?
    - 
28. How do you influence customers to implement the other recommended measures, beyond the low cost/no cost measures? What factors lead customers to implement these measures? What factors prevent customers from implementing these measures?
    - 
29. Do you influence customers to implement other measures, beyond the recommended measures? What factors lead customers to implement these measures? What factors prevent customers from implementing these measures?

30. Do participants find the benchmarking tool to be valuable and useful? Why or why not? What could be done to increase the value of the benchmarking tool?

31. Do participants continue to use the benchmarking tool after completing the program? Do customers use the tool to benchmark additional buildings and facilities? If not, why not?

32. Have any customers contacted you for additional advice, or information when benchmarking other facilities?

33. How can participants be persuaded to continue benchmarking the initial facility? How can participants be persuaded to carry forward benchmarking to other facilities and ultimately adopt additional energy efficiency measures?

## Relationship with Other Programs – 5 minutes

34. What other types of energy efficiency programs are available for customers? How do those programs relate to [WBA, ESB]?

35. Do you think the [WBA, ESB] program leads to customers participating in other [National Grid, NSTAR] energy efficiency programs that they would not otherwise have participated in? Why/Why not? About what percentage of the projects you have worked on do you believe would have participated in other energy efficiency programs without having first participated in the [WBA, ESB] program?

36. Describe the current ways in which other federal, including DOER and other EPA programs, as well as utility-sponsored energy efficiency programs, are integrated or have cooperative, coordinated service delivery with [WBA, ESB]. What actions do you take to bring other programs to the attention of customers through the [WBA, ESB] program? How are resources shared or leveraged among these programs?

37. How are [WBA, ESB] participants handed off or enrolled in other programs? Is the progress of [WBA, ESB] participants in other programs tracked? How? If not, why not?
    - 

38. What follow through occurs to help ensure customers implement energy efficiency measures identified? How is this tracked?

39. How would you enhance the cooperation, coordination, or integration of other energy efficiency programs and [WBA, ESB]? How would the coordination benefit program participants? Your company?

## Quality Control and Communications – 5 minutes

40. How well do you think the program staff work together as a team to promote achievement of program goals and to encourage customers to participate in the program?

41. Describe any intra-utility communication procedures specifically related to [WBA, ESB]? Please think about the program staff and contractors, marketing departments, credit and collections, community relations, economic development etc. How frequently are you in communication with other people working for the program? How about the other departments? Are current interactions adequate? Why or why not? How can interactions/communication be improved? Have there been any breakdowns in

communications? If so, how were they resolved and what steps have been taken to avoid future breakdowns?

42. Describe any intra-utility procedures for coordinating data tracking on possible or past program participants.

43. Describe the interaction and communication between [National Grid, NSTAR, EMA, ICF] EPA and DOER staff. How frequently are you in communication? How closely do you work with EPA or DOER staff members? Are current interactions adequate? Why or why not? How can interactions/communication be improved? Have there been any breakdowns in communications? If so, how were they resolved and what steps have been taken to avoid future breakdowns?

44. What kinds of quality control mechanisms are in place to verify that you are doing high quality work? Include your own mechanisms as well as any used by [National Grid, NSTAR]. How do you keep track of this information?

45. Describe how you track program data. What data are currently being tracked and by whom?

46. Do you share tracking data with [National Grid, NSTAR]? What, if anything, needs to be improved?

47. What data would you like to see tracked that are not? What data are currently tracked that could be excluded from the database?

48. Describe any procedures for coordinating data tracking on possible or past program participants.
    - 

49. Do you believe the [WBA, ESB] program delivers value to [National Grid, NSTAR]? In what way do you believe it delivers value? [PROBE: program's benefits exceed the program's expenses?]

50. What are the key strengths and weakness of the program?
    - 

51. How could the program be improved?

52. Is there anything else you would like to tell me about the program, including additional suggestions to make the program work better or more effectively in the future?

# Appendix C EPA Staff Discussion Guide

## MA ES BENCHMARKING

## Draft ENERGY STAR staff interview guide

Draft: November 12, 2008

Interviewer: _____

Date of Interview: _____

Time Begun_____ Time Ended _____

Respondent Name: _____

Respondent Title: _____

Contact Information:

Phone Number(s): _____

Fax Number: _____

E-mail Address: _____

Interview was: _____ By phone _____ At respondent's Office _____ Other (specify): _____

**C.** EPA Staff

I want to talk to you about the ENERGY STAR Benchmarking Initiative program (**ESB**) run by National Grid, and the Whole Building Assessment Initiative (**WBA**) program run by NSTAR. I am part of the evaluation team, and part of our job is to understand how these programs interact with the ENERGY STAR Portfolio Manager program. What is working well, and what needs to be improved. Please be aware that the information you provide will be treated as confidential. . By the way, if I ask you about areas you don't know about, please feel free to tell me and we will move on. Do you have any questions before we start?

With your permission, I would like to record the interview. We will use the recording for transcription purposes, in order to make sure we accurately represent your responses. No one but NMR staff members will listen to the recording. NMR will keep all recordings in its files. Do I have your permission to record the interview?

_____ Yes _____ No

## Roles and Responsibilities– 10 minutes

First of all, I'd like to get some background on your involvement with WBA and ESB.

56. How long have your worked for the ENERGY STAR Portfolio Manager benchmarking program? How long have you been working with the WBA and ESB programs?

57. What is your current job title, and what roles and responsibilities do you have? Is your work limited to ENERGY STAR Benchmarking or do you work on other programs or have additional responsibilities?
    - 
58. What would you say are the primary short, mid, and long-term goals and objectives of the ENERGY STAR Benchmarking program? How do you arrive at or set these goals? Who is involved in the decision making? [Probe to think beyond their first response]
    - 
59. Who do you consider to be your customers? Do you consider the National Grid and NSTAR benchmarking programs to be your customers? Why do you feel this way?
    - 
60. What if any documentation exists for ENERGY STAR benchmarking program? Does the program have formal program theory and logic models? Where can we obtain copies of these documents?

61. Please describe how the ENERGY STAR benchmarking program works.
    - 

62. What interactions do you have with the National Grid and NSTAR benchmarking programs? How do these programs help you achieve your own program goals? How effective have these programs been in helping you achieve your program goals? What are the reasons for their effectiveness / lack of effectiveness?
    - 
63. To what extent do you think you have been able to help the National Grid and NSTAR benchmarking programs achieve their goals? Why do you think this? Is there anything that you could be doing differently that would help improve the programs?
    - 

## Joint Program Marketing – 5 Minutes

64. Does the ENERGY STAR benchmarking program engage in any joint program marketing with National Grid or NSTAR? Is the program marketed by multiple organizations? [National Grid, NSTAR, EPA, DOER etc]? What components of the marketing is each entity responsible for?

65. What changes have been made to the program over time? Why were changes made? Did they have the intended effect?

66. What changes are currently planned for the future, or at least in the process of being planned? Why are the changes being made and what do you hope to accomplish with them?

## Customers – 10 minutes

67. Who can use the EPA's Portfolio Manager benchmarking tool?
    g. What is the general awareness level of EPA's Portfolio Manager among potential users?
    h. What does the EPA do to attract or inform potential users?
    i. Do participants generally find out about the EPA's Portfolio Manager first or do they first encounter either the WBA or ESB program?

68. Why do you think participants decide to participate in the program? Are participants more interested in energy savings or non-energy benefits? Are participants more likely to perform benchmarking if there are funding sources available to pay for the benchmarking? Are participants more likely to perform benchmarking if there is assistance available?
    a. What non-energy benefits are participants most interested in? [Probe: improved working environment, ENERGY STAR designation, environmental benefits, reduced carbon footprint, marketing/public relations benefits, etc.]

69. How do you think participants use the benchmarking scores? Along with benchmarking scores what other information is provided to participants? In what way is the information useful to participants?

70. Do you think the reports and information provided through the WBA and ESB programs met the needs and expectations of participants? Is information provided of suitable quality for decision making? Is there enough information provided to support decision making?

71. What kind of feedback, if any, do you typically receive from participants? Please think both about what they like and don't like, the things they praise, and the things they complain about. How do you handle complaints? How do you attempt to resolve them?

72. Do participants continue to use the benchmarking tools? Do they follow-through with benchmarking all of their facilities?
    - 

73. Do participants complete energy efficiency improvements identified through the benchmarking process? What steps are taken to track the progress of participants implementing improvements?
    - 

## Relationship with Other Programs – 5 minutes

74. Are you aware of ways in which other programs, including DOER and other EPA programs, as well as utility-sponsored energy efficiency programs, are integrated or have cooperative, coordinated service delivery with WBA and ESB? What actions do you take to bring other programs to the attention of customers through the WBA and ESB programs? How are resources shared or leveraged among these programs?

75. How are WBA and ESB participants handed off or enrolled in other programs? Is the progress of WBA and ESB participants in other programs tracked? How? If not, why not?
    - 

76. What follow through occurs to help ensure participants implement energy efficiency measures identified? How is this tracked?

77. How would you enhance the cooperation, coordination, or integration of other energy efficiency programs with WBA or ESB? How would the coordination benefit program participants? National Grid and NSTAR? Your organization?

## Program Administration – 10 minutes

78. What level of training for Portfolio Manager is provided to National Grid and NSTAR? Is this level of training adequate? Is additional training ever requested? Does the EPA help train or answer questions for participants in the WBA and ESB programs?

79. Describe the interaction and communication between National Grid, NSTAR, EPA and DOER staff. How frequently are you in communication? How closely do you work with National Grid or NSTAR staff members? Are current interactions adequate? Why or why not? How can interactions/ communication be improved? Have there been any breakdowns in communications? If so, how were they resolved and what steps have been taken to avoid future breakdowns?

80. Do you engage in any joint problem solving regarding the programs with the National Grid or NSTAR?

81. What are the advantages of working with DOER, National Grid and NSTAR?

82. What are the key strengths and weakness of the WBA and WSB programs?
    - 

83. How could the programs be improved?

84. Is there anything else you would like to tell me about the program, including additional suggestions to make the program work better or more effectively in the future?

# Appendix D DOER Staff Discussion Guide

## MA ES BENCHMARKING

## Draft DOER staff interview guide

Draft: November 12, 2008

Interviewer: _____

Date of Interview: _____

Time Begun_____ Time Ended _____

Respondent Name: _____

Respondent Title: _____

Contact Information:

Phone Number(s): _____

Fax Number: _____

E-mail Address: _____

Interview was: _____ By phone _____ At respondent's Office _____ Other (specify): _____

**D.** DOER Staff

I want to talk to you about the ENERGY STAR Benchmarking Initiative program (**ESB**) run by National Grid, and the Whole Building Assessment Initiative (**WBA**) program run by NSTAR. I am part of the evaluation team, and part of our job is to understand how these programs interact with DOER programs. What is working well, and what needs to be improved. Please be aware that the information you provide will be treated as confidential. . By the way, if I ask you about areas you don't know about, please feel free to tell me and we will move on. Do you have any questions before we start?

With your permission, I would like to record the interview. We will use the recording for transcription purposes, in order to make sure we accurately represent your responses. No one but NMR staff members will listen to the recording. NMR will keep all recordings in its files. Do I have your permission to record the interview?

_____ Yes _____ No

## Roles and Responsibilities– 5 minutes

First of all, I'd like to get some background on your involvement with WBA and ESB.

85. How long have your worked for DOER and how long have you been working to benchmark local government buildings?

86. What is your current job title, and what roles and responsibilities do you have? Is your work limited to benchmarking local government buildings or do you work on other programs or have additional responsibilities?
    - 

87. Please describe how DOER's benchmarking program works. Think about ways that customers come to participate in the program, what services are provided, and when.
    Specific probes/issues to address:
    a. How participants enroll in the program
    b. Types of participants served
    c. Program activities: who does what, where, and when
    d. Training provided for customers on use of benchmarking tools
    e. Training provided for customers to continue monitoring after initial benchmarking
    f. Training provided for customers with multiple facilities
    - 

88. What would you say are the primary short, mid, and long-term goals and objectives of DOER's Benchmarking program? How do you arrive at or set these goals? Who is involved in the decision making? [Probe to think beyond their first response]
    - 

89. What if any documentation exists for DOER's benchmarking program? Does the program have formal program theory and program logic documentation? Where can we obtain copies of these documents?

90. Please describe how the ENERGY STAR benchmarking program works.
    - 

91. What interactions do you have with the National Grid and NSTAR benchmarking programs? How do the National Grid and NSTAR benchmarking programs help you achieve your own program goals? How effective have these programs been in helping you achieve your program goals? What are the reasons for their effectiveness / lack of effectiveness?
    - 

92. To what extent do you think you have been able to help the National Grid and NSTAR benchmarking programs achieve their goals? Why do you think this? Is there anything that you could be doing differently that would help improve the programs?

- 

## Relationship and Impact on Utility Benchmarking Programs – 5 minutes

93. Which benchmarking program are local governments more familiar with? DOER's or the utility programs (WBA/ESB)? Which program do local governments usually participate in first? How long after their initial application do local governments get their facilities benchmarked? [IF VERY LONG]: How much of a concern is this and is there a role for the utility programs to help address this concern?

94. What impact, if any, do the WBA and ESB programs have on DOER's benchmarking program? Does working together with the utility help achieve greater results or increase participation? Do customers participate who otherwise would not? Do customers implement more or different energy efficiency measures in the DOER program because of the WBA and ESB programs?
    - 

95. The utility programs benchmark one building per customer. As we understand it, DOER's program benchmarks all of the government and municipal buildings. What is the impact of these different approaches? Why did DOER take the decision to benchmark all the buildings? What are the relative advantages and disadvantages of the two approaches?

96. What impact, if any, do you think the DOER's program has on the WBA and ESB programs? Does working together with DOER help the utility achieve greater results or increase participation? Do customers participate who otherwise would not? Do customers in the WBA and ESB programs implement more or different energy efficiency measures because of the DOER program?
    - 

97. Does DOER's benchmarking program help local governments take advantage of or participate in other National Grid and NSTAR energy efficiency programs? Does DOER's benchmarking program help local governments take advantage of or participate in other federal, state, or local programs?

98. How are benchmarking participants handed off or enrolled in other programs? Is the progress of local governments in other programs tracked? How? If not, why not?
    - 

99. What follow through occurs to help ensure local governments implement energy efficiency measures identified? How is this tracked?

100. How would you enhance the cooperation, coordination, or integration of other energy efficiency programs with WBA and ESB? How would the coordination benefit program participants? National Grid and NSTAR? DOER?

•

## Joint Program Marketing – 5 Minutes

101. Does DOER engage in any joint program marketing with National Grid or NSTAR? Is the program marketed by multiple organizations? [National Grid, NSTAR, EPA, DOER etc]? What components of the marketing is each entity responsible for?

102. What changes have been made to the program over time? Why were changes made? Did they have the intended effect?

103. What changes are currently planned for the future, or at least in the process of being planned? Why are the changes being made and what do you hope to accomplish with them?

## Customers – 10 minutes

104. Who is eligible to participate in DOER's benchmarking program?
   j. What is the process for determining who is eligible?
   k. [IF NOT ADDRESSED IN EARLY RESPONSES] What is the general awareness level of DOER's program among local governments? How does DOER attract / inform local governments about the program? What communication channels are used to promote the program with local governments?
   l. What is the awareness level of WBA and ESB programs among local governments?

105. Why do you think local governments decide to participate in the program? Are local governments more interested in energy savings or non-energy benefits? Are local governments more likely to participate if they are eligible to participate in WBA or ESB? PROBE: Customer perspectives on DOER benchmarking all facilities but waiting vs. Utility benchmarking of a single facility sooner.

   a. What non-energy benefits are local governments most interested in? [Probe: improved working environment, Energy Star designation, environmental benefits, reduced carbon footprint, marketing/public relations benefits, etc.]

106. What situations or factors do you think might keep some local governments from participating in the program, even if they are eligible? [Probe: budgeting, facility staff cooperativeness, availability of metering readings, lack of perceived value to customer, time required]

107. How do you think local governments use the benchmarking scores? Along with benchmarking scores what other information is provided to local governments? In what way is the information useful to local governments?

108. Do you think the reports and information provided through the WBA and ESB programs met the needs and expectations of local governments? Is information provided of suitable quality for decision making? Is there enough information provided to support decision making?

109. What kind of feedback, if any, do you typically receive from local governments? Please think both about what they like and don't like, the things they praise, and the things they complain about. How do you handle complaints? How do you attempt to resolve them?

110. Do the local governments ask any other types of help or services? What do they ask for? What do you tell them?

111. Do local governments continue to use the benchmarking tools? Do they follow-through with benchmarking all of their facilities?

- 

112. Do local governments complete energy efficiency improvements identified through the benchmarking process? What steps are taken to track the progress of local governments implementing improvements?

## Program Administration – 10 minutes

113. What kinds of quality control mechanisms do you have in place? Think broadly about what you might check the quality of (installation, professionalism of staff/contractors, checking eligibility, etc.), but please refer to specific mechanisms. How do you keep track of this information?

114. Describe how you track program data. What data are currently being tracked and by whom?

115. Do you share tracking data with National Grid or NSTAR? Do National Grid or NSTAR share information with DOER? How easy is it to integrate the data? Does the integration work well? What, if anything, needs to be improved?

116. What data would you like to see tracked that are not? What data are currently tracked that could be excluded from the database?

117. Describe any procedures for coordinating data tracking on possible or past program participants.

118. Describe the interaction and communication between National Grid, NSTAR, EPA and DOER staff. How frequently are you in communication? How closely do you work with National Grid or NSTAR staff members? Are current interactions adequate? Why or why not? How can interactions/communication be improved? Have there been any breakdowns in communications? If so, how were they resolved and what steps have been taken to avoid future breakdowns?

119. Do you engage in any joint problem solving regarding the programs with the EPA, National Grid or NSTAR?

120. What are the advantages of working with the EPA, National Grid and NSTAR?

121. What are the key strengths and weakness of the WBA and WSB programs?

- 

122. How could the programs be improved?

123. Is there anything else you would like to tell me about the program, including additional suggestions to make the program work better or more effectively in the future?

# Appendix E Participant Discussion Guide

## Draft participant interview guide: MA ES BENCHMARKING

Draft: November 14, 2008

Interviewer: _____

Date of Interview: _____

Time Begun_____ Time Ended _____

Respondent Name: _____

Respondent Title: _____

Contact Information:

Phone Number(s): _____

Fax Number: _____

E-mail Address: _____

Interview was: _____ By phone _____ At respondent's Office _____ Other (specify): _____

**E.** Participating Customer

I want to talk to you about the [ENERGY STAR Benchmarking Initiative (**ESB**), Whole Building Assessment Initiative (**WBA**)] program. I am a member of the team evaluating this program, and part of our job is to determine why people do or do not decide to participate in the program. We are also interested in participants' opinions on the services they received. We will use this information to help improve the program in the future. Please be aware that the information you provide will be treated as confidential.

With your permission, I would like to record the interview. We will use the recording for transcription purposes, in order to make sure we accurately represent your responses. No one but NMR staff members will listen to the recording. NMR will keep all recordings in its files. Do I have your permission to record the interview _____ Yes _____ No

Do you have any questions before I begin?

## Background – 5 minutes

First of all, I'd like to get some background on you and your company / organization.

A. Are you the person in your company / organization who is most knowledgeable about your experience with the [WBA, ESB] program?

    a. If respondent answers no PROBE: Who at your company / organization would be most knowledgeable about your experience with the [WBA, ESB] program?
    b. We would like to talk to the person who was most knowledgeable about your experience with the [WBA, ESB] program. Could you give me the name and telephone number of this person? (PROBE: This individual may be an engineer, equipment contractor, or utility account manager.) (NOTE: THANK & TERMINATE. SCHEDULE INTERVIEW WITH BEST CONTACT REGARDING EXPERIENCE WITH THE PROGRAM)

WHEN SPEAKING WITH CORRECT RESPONDENT:

1. What is your current job title, and what roles and responsibilities do you have?

2. My records indicate that you participated in [National Grid, NSTAR]'s benchmarking program? Is this correct?

3. Did your company / organization participate in any [National Grid, NSTAR]'s energy efficiency programs before [WBA, ESB]? Which programs and when? What motivated [COMPANY / ORGANIZATION NAME] to participate in these programs?
    •

## Participating Customers – 5 minutes

4. How did you first hear about the [WBA, ESB] program?

5. Once you became aware of it, did you request / receive additional information on the program? How important was this additional information to your decision to participate in the program?

6. What most interested [COMPANY / ORGANIZATION NAME] about the [WBA, ESB] program? What was [COMPANY / ORGANIZATION NAME]'s primary reason for participating in the program? What other reasons influenced your decision to participate in the program? (Probe: energy savings, reducing maintenance costs, non-energy savings, technical assessment, ENERGY STAR designation, advice of contractor/utility rep/designer/installer, past utility program participation, etc.)

7. Prior to participating were there any challenges or barriers that your company / organization needed to overcome? How were those challenges or barriers overcome? (Probe: budget, staffing, time, etc.) Did you have any concerns about participating in the program? Were those concerns addressed? How were those concerns addressed?

8. How would you describe interactions with program staff? Was staff knowledgeable and informed about the benefits of the [WBA, ESB] program? How would you describe interactions with vendors/contractors?

    a. How would you describe the application forms and the MOU? Were they simple and easy to fill out? How comfortable were you with making the commitment to satisfy the MOU requirements?

9. Before participating in the program what expectations did you have about the services the program offered? What services did you actually receive? Did these services meet your expectations?

10. Please describe each step of the process of participation in the [WBA, ESB] program. How long did each step take? How long did you have to wait between each step? Was the amount of time that the program process took acceptable to you? IF NO: Why not?

11. As part of the [WBA, ESB] program[National Grid, NSTAR] provided a free [Technical Scoping Study, Energy Efficiency Opportunity Assessment Report] for your facility. Do you recall this report?
    a. How satisfied were you with this report? Did it meet your expectations?
    b. Did the analysis and recommendations provide you with sufficient information regarding your facility's energy usage? Did the analysis and recommendations

provide you with enough information to help you make any decisions regarding energy efficiency improvements to your facility?

c. If [National Grid, NSTAR] had not paid for the study would your company / organization have paid [STUDY COST] to have a similar assessment study done? IF YES: When would this study have taken place [PROBE: Within one year of conducting the study?]

12. Did the [WBA, ESB] program inform you about other utility programs or funding sources that might help with rebates for the purchase and installation of recommended energy efficiency measures? (Probe: National Grid, NSTAR, Federal, State, etc.). IF YES: Have you pursued or will you pursue these funding sources? Why or why not? Were you aware of these funding sources or programs prior to participating in the [WBA, ESB] program?

13. What if any follow-up activities has [National Grid, NSTAR] conducted with you after the initial benchmarking was completed?

14. Did your company / organization ever have to call program staff with concerns about the services? What did you have to call about? How were your concerns or problems addressed? Are you satisfied with how the concerns or problems were resolved?

15. Overall, how successful do you think the program has been for you? How do you assess or quantify the success of the program?
    - 

16. Have you, or will you recommend the [WBA, ESB] program to other companies? Why or why not?

17. Do you have suggestions on ways to inform other companies / organizations about the program?

## Portfolio Manager – 5 minutes

18. Before participating in the [WBA, ESB] program were you aware of EPA's Portfolio Manager? Before participating in the [WBA, ESB] program had you used Portfolio Manager to benchmark any facilities?

19. Who in your company / organization received training from the program on using Portfolio Manager? Are there any employees in your company / organization that did not receive the training but should have?
    - 

20. How satisfied were you with the training that the program provided on using Portfolio Manager? Why do you feel this way? Did you find this training valuable? IF YES: What was valuable about the training? Did the training provide your company / organization with sufficient knowledge of using the Portfolio Manager that you could benchmark additional facilities on your own?
    - 
21. Did you ever have to contact [National Grid, NSTAR] for additional assistance with Portfolio Manager? If so, why? How satisfied were you with their response?

22. Are there ways in which training on using the Portfolio Manager could be improved?

23. How useful was the benchmarking score as a measure to assess your facility? In what way was it useful? Do you have any plans to use the benchmarking score to set even higher goals for your facility? IF NO: Why not?
    - 
24. Will you continue to benchmark buildings through Portfolio Manager after this initial benchmark project is complete? Will you benchmark additional buildings utilizing Portfolio Manager? If so why? If not why not?

## Energy Efficiency Measures Implemented – 10 minutes

25. To what extent were the [WBA, ESB] program staff engaged with you when you installed recommended energy efficiency measures either through another program or on your own? Was that level of subsequent involvement of the [WBA, ESB] program staff sufficient? Or do you think they should have been more or less involved? Why do you feel that way?

26. Did the program make any recommendations on low cost / no cost energy efficiency measures for your facility?
    a. IF YES: Have you implemented these recommendations for low cost / no cost energy efficiency measures? IF NO: Why have you not implemented those measures?

27. According to our records, your company / organization implemented the following improvements [list of energy efficiency measures].
    a. Do you recall implementing [measure 1]?
    b. Do you recall implementing [measure 2]?
    c. ….
    d. Do you recall implementing [measure x]?

28. Some companies work with a design professional, project architect, engineer, equipment contractor, or a utility account manager as part of the project design phase. Who do you feel was most responsible for specifying the measures to install through the [WSB, ESB] program? [Probe: Was it someone at your company / organization, an outside design professional, contractor, manufacturer representative or a utility account manager?]

(ASK Q29-Q34 FOR EACH MEASURE RECALLED.)

29. What factors motivated your firm to implement [measure x]? [PROBE: energy savings, reducing maintenance costs, non-energy savings, technical assessment offered, ENERGY STAR designation, advice of contractor/utility rep/designer/installer, past utility program participation, program incentives, etc.]

30. Did your company / organization have specific plans set aside to pursue [measure x] prior to talking with anyone about [WBA, ESB]?
    a. IF YES: What had you planned to do? Was it necessary to change the type of equipment, the efficiency level of equipment or the timing of your plans in order to qualify for the [WBA, ESB] program?

31. If [National Grid, NSTAR] had not provided any technical assistance or education through the [WBA, ESB] program would your company / organization have pursued [measure x] within one year of when it was installed?

32. Without technical assistance and education provided through [WBA, ESB] would your company / organization have pursued the exact same quantity / size of [measure x] within one year?
    a. IF APPLICABLE: What percent of [measure x] do you think your company / organization would have pursued on its own within one year?

33. Without technical assistance and education provided through [WBA, ESB] would your company / organization have pursued the same level of efficiency for [measure x]?
    a. IF APPLICABLE: What percent of this equipment would have been of the same or higher efficiency level than the equipment that was installed through the program?

34. How important was the information or advice you received through [WBA, ESB] to your decision to pursue [measure x]?

(REPEAT Q29-Q34 FOR EACH MEASURE RECALLED)

35. Were there any recommended measures that you did not install or implement? IF YES: What measures were they? Why did you not implement those measures?

## Spillover – 5 minutes

36. Since participating in the [WBA, ESB] program in [2006 or 2007], has your company / organization pursued any benchmarking or technical assessments on its own for other facilities served by [National Grid, NSTAR]?
    a. IF YES. Did you utilize Portfolio Manager to benchmark these facilities?
    b. IF NO GO TO QUESTION 38

37. Which of the following influenced your company's / organization's decision to pursue additional benchmarking or technical assessments on other facilities served by [National Grid, NSTAR]? (Select all that apply)
    a. Your experience with the benchmarking / technical assessment performed through the [WBA, ESB] program?
    b. Your experience with the energy efficient equipment installed through the [WBA, ESB] program?
    c. Some other reasons. (PROBE: What were those reasons)

38. Since participating in the [WBA, ESB] program in [2006 or 2007]. Has your company / organization purchased or installed any energy efficiency measures on its own for this facility—that is, beyond the list of measures we just went over? How about at other facilities served by [National Grid, NSTAR]. (IF NO SKIP TO END OF THIS SECTION)

39. How does the quantity or scale of energy efficiency measures implemented by your company / organization on its own, at this or other facilities served by [National Grid, NSTAR], compare to the quantity or scale of energy efficiency measures implemented through the [WBA, ESB] program, as a percentage compared to the measures installed through the program? (PROBE: 25%, 50%, 200%?)

40. Which of the following influenced your decision to install additional energy efficiency measures on your own? (Select all that apply)
    a. A recommendation by the contractor or designer who you worked with under the [WBA, ESB] program?
    b. Your experience with the energy efficient equipment installed through the [WBA, ESB] program?
    c. Your participation in other programs offered by [National Grid, NSTAR]?

## Government Customers – 5 minutes

41. Are you aware of the benchmarking program from the Massachusetts Department of Energy Resources, or DOER?
    (IF YES, CONTINUE. IF NO, GO TO Q44, WRAP UP)

42. Is/are your facilit(y/ies) qualified to participate in the DOER program?
    (IF YES, CONTINUE. IF NO, GO TO Q44, WRAP UP)

43. Have you participated in the DOER program?
    a. IF YES: When did you participate in the DOER program? Before or after participating in [WBA, ESB]?
    b. Why did you decide to participate in both programs?
    c. What would you say are the most important differences between the two programs?
    d. If you had to choose between participation in either the DOER program or the [WBA, ESB] program, which one would you choose? Why?

    e. IF NO: Why have you not participated in the DOER program?
    f. What do you think are the most important differences between the two programs?

## Wrap Up – 5 minutes

44. Do you have any suggestions do you have on how to improve the [WBA, ESB] program? [Probe: Process, marketing, interactions with utility staff, interactions with contractors, Portfolio Manager]

45. Is there anything else you would like to tell me about the [WBA, ESB] program?

46. Finally, we will also be conducting a follow-up telephone survey of program participants. We would appreciate it if you would also help us by responding to that survey. May we contact you again for that survey? Is this best phone number to call you?

# Appendix F Participant Survey Questionnaire

## Draft participant QUESTIONNAIRE: MA ES BENCHMARKING

Draft: February 24, 2009

Hello, I am with Nexus Market Research, and we are performing an evaluation of energy efficiency services provided by [National Grid, NSTAR]. Our records indicate that you or your firm participated in [National Grid's WHOLE BUILDING ASSESSMENT Program, NSTAR's ENERGY STAR BENCHMARKING Program]. We would appreciate twenty minutes of your time to answer some questions related to your participation in this program. The information you provide will be used to help [National Grid, NSTAR] evaluate and improve the program. Is this a good time for you?

1. Participation in the [WHOLE BUILDING ASSESSMENT Program, ENERGY STAR BENCHMARKING Program] includes includes development of a benchmarking score that compares the facility's energy use to that of other similar buildings. Participation also generally includes an audit of a facility, which results in recommendations for energy efficiency improvements.. [Anita Hagspiel, Cherie Miles] manages this program for [National Grid, NSTAR].

   [National Grid, NSTAR]'s records indicate that your company / organization participated in [National Grid, NSTAR]'s [WHOLE BUILDING ASSESSMENT PROGRAM, ENERGY STAR BENCHMARKING PROGRAM]. **(Do not read)**

   Is this correct?

   1 (Yes) [SKIP TO Q4]

   2 (No)

   99 (Don't know/Don't recall)

2. [IF Q1=2 or 99] Is there someone else in your company / organization who could have been involved with that program? (Do not read)

1 (Yes)

2 (No) [THANK AND TERMINATE]

99 (Don't know/refused) [THANK AND TERMINATE]

3. [IF Q2=1, ASK] Can you provide us with a contact name and phone number for a person who can help us?

Name: _____ Phone #: _____)

**[ASK Q4 ONLY IF FLAGGED AS SINGLE FACILITY IN SAMPLE FILE – OTHERWISE SKIP TO Q5]**

4. Are you the person who is most familiar with your company's / organization's experience of participating in the [WHOLE BUILDING ASSESSMENT Program, ENERGY STAR BENCHMARKING Program]? (Do Not Read)

1 (Yes)

2 (No) (if NO, "We would like to talk to the person who is most knowledgeable about your company's / organization's experience with the program. Can you provide us with a contact name and phone number for a person that can help us?"

Name: _____ Phone #: _____)

**[ASK Q5 ONLY IF FLAGGED AS MULTIPLE FACILITIES IN SAMPLE FILE – OTHERWISE SKIP TO Q7]**

5. According to [National Grid's/NSTAR's] records, your organization had multiple facilities that participated in the [WHOLE BUILDING ASSESSMENT/ENERGY STAR Benchmarking] Program. I am going to read you a list of facility names, and for each name please tell me if you are the person who is most familiar with your company's / organization's experience with the program at that facility.

**[FACILITY LIST FROM FILE]**

1 (Yes)

2 (No)

99 (Don't know/refused)

**[ASK Q6 FOR ANY FACILITY THAT IS LISTED AS 2 OR 9 in Q5]**

6. We would like to talk to the person who is most knowledgeable about your company's / organization's experience with the program at **[FACILITY NAME]**. Can you provide us with a contact name and phone number for a person that can help us? **[99 = Don't know/refused]**

Name: _____ Phone #: _____)

**[IF Q5 = NO OR DK FOR ALL FACILITIES THANK AND TERMINATE]**

## Section I. Awareness, Overall Satisfaction/Perceptions, Reasons for Participating

7. Did your company / organization participate in any other [National Grid, NSTAR] energy efficiency programs before the [WHOLE BUILDING ASSESSMENT, ENERGY STAR BENCHMARKING] program? **(Do not read)**

1 (Yes)

2 (No)

99 (Don't know/refused)

8. **(ASK If Q7 = YES. OTHERWISE, SKIP TO Q10)** Which other energy efficiency programs did your company / organization participate in prior to the [WHOLE BUILDING ASSESSMENT, ENERGY STAR BENCHMARKING] program? **(Probe for program name. If program name unknown, probe for program description and enter under Other Program 1, 2, 3 or 4; multiple response.)**

1 (Energy Initiative (EI))

2 (Design 2000plus (D2))

3 (Small Business Services (SBS))

4 (Energy Efficiency Program)

5 (Commercial Energy Advisor)

6 (Operations and Maintenance Advisor)

7 (Construction Solutions)

8 (Business Solutions)

9 (Small Business Solutions)

10 (Load Response)

11 (Engineering/Technical Services)

12 (Lighting)

13 (Motors/Premium Efficiency Motors)

14 (Compressed Air Efficiency)

15 (Vending Machine)

16 (Variable Speed Drives)

17 (HVAC Systems)

18 (Commissioning

19 (Custom Projects)

20 (Buyers Alliance (discounts on energy efficient lighting))

21 (Building Operator Training)

22 (Other Program 1_____)

23 (Other Program 2_____)

24 (Other Program 3_____)

25 (Other Program 4_____)

99 (Don't know/refused)

9. **[SKIP TO Q10 IF Q8 = 99]** In what year did your company / organization **first** participate in an energy efficiency program prior to the [WHOLE BUILDING ASSESSMENT, ENERGY STAR BENCHMARKING] program? **(Do not read)**

1 (Before 2000)

2 (2000)

3 (2001)

4 (2002)

5 (2003)

6 (2004)

7 (2005)

8 (2006)

9 (2007)

10 (2008)

99 (Don't know/refused)

10. How did you first hear about the [WHOLE BUILDING ASSESSMENT Program, ENERGY STAR BENCHMARKING Program]? **(Do not read; multiple response)**

1 (From utility literature)

2 (From utility staff person)

3 (From contractor or vendor)

4 (From a business associate or friend – word of mouth)

5 (From someone who had previously participated in the program)

6 (Through a course or seminar)

7 (From EPA staff or literature)

8 (From DOER staff or literature)

9 (Through Boston Green Tourism)

10 (Other SPECIFY: _____)

99 (Don't know/refused)

11. What was the ONE most important reason your company / organization chose to participate in the program? **(Do not read)**

1 (To take advantage of program incentives)

2 (To save on energy costs/bills)

3 (In response to tenants' desire to reduce energy costs/bills)

4 (To learn about existing energy efficiency programs)

5 (To see how we compared with other facilities like ours)

6 (To reduce maintenance costs)

7 (To find ways to reduce carbon footprint)

8 (To help protect the environment)

9 (Recommended by utility account rep)

10 (Positive impression of program staff)

11 (Recommended by contractor)

12 (Past participation in utility programs)

13 (Other: Specify: _____)

99 (Don't know/refused)

12. **[Ask National Grid Participants Only]** Did you participate in a "webinar" with National Grid staff to learn more about the program? **(Do not read)**

1 (Yes)

2 (No) [SKIP TO Q14]

99 (Don't know/refused) [SKIP TO Q14]

13. **[Ask to National Grid Participants Only]** On a scale of 1 to 5, where 1 = "not at all useful" and 5 = "very useful" how useful did you find the webinar? **[99 = Don't know]**

_____

**14.** Were there any challenges or barriers that you needed to overcome to be able to participate in the [WHOLE BUILDING ASSESSMENT Program, ENERGY STAR BENCHMARKING Program]? Note that participation in the program simply entails having one or more facilities audited for opportunities to save energy. **(Do not read)**

1 (Yes)

2 (No) [SKIP TO Q16]

99 (Don't know/refused) [SKIP TO Q16]

**15.** What was the ONE most important barrier? **(Do not read)**

1 (Concern that bill savings would be less than estimated)

2 (Concern that program structure/requirements would conflict with bidding rules/laws)

3 (Lack of information)

4 (Too little incentive)

5 (Too much work required to obtain funding)

6 (Too few STAFF resources to participate, e.g., do ongoing benchmarking / benchmark other facilities)

7 (Too few MONETARY resources to participate)

8 (Cost savings not worth the effort required)

9 (Approval takes too long)

10 (Equipment/Upgrades do not meet payback requirements)

11 (Decision made elsewhere)

12 (Do not own building – have to work through owner)

13 (Insufficient support from management)

14 (Other: Specify: _____)

99 (Don't know/refused)

## Section II. Communication, Interaction with Staff, Training with Portfolio Manager, MOU

Now I would like to ask you a few questions about your experience with Portfolio Manager, the software provided by ENERGY STAR that allows companies to benchmark and compare the energy usage of their facilities to the energy usage of other similar facilities.

16. Before participating in this program had you, or others in your company used Portfolio Manager? **(Do not read)**

1 (Yes)

2 (No)

9 (Don't know/refused)

**17.** As part of the [WHOLE BUILDING ASSESSMENT Program, ENERGY STAR BENCHMARKING Program], did you or any other staff members receive training on using Portfolio Manager to benchmark your facilities? **(Do not read)**

1 (Yes)

2 (No) [SKIP TO Q22]

99 (Don't know) [SKIP TO Q22]

18. How many people received training on using Portfolio Manager? **(Do not read)**

1 (One)

2 (Two)

3 (Three)

4 (Four)

5 (More than four)

99 (Don't know/refused)

19. What are the job titles of those who received training on Portfolio Manager? **(Do not read)** [MULTIPLE RESPONSE IF Q18 = 2 THROUGH 5]

1 (Facilities Manager/Director)

2 (Director of Assets)

3 (Director of Buildings and Grounds)

4 (Finance/Fiscal Director or Business Manager)

5 (Engineer/Engineering Coordinator)

6 (Custodian)

7 (Director of Environmental Programs)

8 (Owner)

9 (Other: Specify) _____

99 (Don't know/refused)

20. Was the training provided for Portfolio Manager sufficient to allow you to continue benchmarking this facility and others? **(Do not read)**

1 (Yes) [SKIP to Q22]

2 (No)

99 (Don't know/refused)

21. In what ways was the training insufficient to allow you to continue benchmarking? **(Do not read)** [MULTIPLE RESPONSE]

1 (Didn't train us on how to obtain utility bills/energy usage data)
2 (Don't use it often enough to remember how it works)
3 (Other: Specify_____)
99 (Don't know/refused)

On a scale of 1 to 5, where 1 = "not at all valuable" and 5 = "very valuable", how valuable would you say the following aspects of Portfolio Manager were? **[99 = Don't know]**

[RANDOMIZE Q22 TO Q25]

22. The identification of energy efficiency improvement opportunities
23. The help provided by program contractors or utility staff in using Portfolio Manager

24. The whole building approach of Portfolio Manger, as opposed to looking at individual equipment
25. The comparisons to other similar facilities provided by the benchmark score

26. [ASK ONLY IF Q25 = 99] As part of the [WHOLE BUILDING ASSESSMENT PROGRAM, ENERGY STAR BENCHMARKING PROGRAM] program, were you provided with a benchmarking score that compared your facility's energy usage to other similar facilities? **(Do not read)**

1 (Yes)

2 (No) [SKIP TO Q28]

99 (Don't know/refused) [SKIP TO Q28]

27. [ASK IF Q25 = 1, 2, 3, 4 OR 5 OR Q26 = 1] What do you primarily use the benchmarking score for? [**Do not read; MULTIPLE RESPONSE**]

1 (To set goals for facility performance)

2 (To identify poor performing facilities)

3 (To help determine which facilities to address first)

4 (To set a baseline for future comparisons)

5 (Other: Specify: _____)

99 (Don't know/refused)

**28.** How frequently do you plan to use the Portfolio Manager to re-benchmark the facility that was initially benchmarked through the [WHOLE BUILDING ASSESSMENT Program, ENERGY STAR BENCHMARKING Program]? **(DO NOT READ)**

1 (monthly or more frequently)

2 (quarterly)

3 (biannually – twice per year)

4 (annually – once a year)

5 (less than once a year)

6 (Never)

99 (Don't know/refused)

# Section III. Report Satisfaction, Use of Benchmarking Score

**[ASK Q29 TO Q31 ONLY TO NATIONAL GRID CUSTOMERS**

29. Did the Whole Building Assessment Program provide your organization with a separate lighting report identifying recommended lighting efficiency opportunities? **(Do not read)**

1 (Yes)

2 (No) [SKIP TO Q32]

99 (Don't know/refused) [SKIP TO Q32]

30. On a scale of 1 to 5, where 1 = "not at all satisfied" and 5 = "very satisfied", how would you rate the following specific aspects of the lighting report provided by the Whole Building Assessment Program? **[99 = Don't know]**

**[RANDOMIZE B-F AND]**

A. B. Level of detail of the report

C. Range of the energy efficiency recommendations

D. Amount of information provided that was new to you

E. Usefulness of the information in making decisions about whether to implement the energy efficiency recommendations

F. Format of the report

Q30A. On a scale of 1 to 5, where 1 = "not at all satisfied" and 5 = "very satisfied", how would you rate the overall quality of the lighting report provided by the Whole Building Assessment Program?

31. [IF Q30A=1 OR 2]: Why were you not satisfied with the lighting report provided by the Whole Building Assessment Program? [PROBE; MULTIPLE RESPONSE]

_____

32. **[Ask National Grid Participants]** Did the Whole Building Assessment Program provide your organization with a technical audit report identifying recommended energy efficiency opportunities other than lighting? **(Do not read)**
**[Ask NSTAR Participants]** Did the ENERGY STAR BENCHMARKING Program provide your organization with a technical audit report identifying recommended energy efficiency opportunities? **(Do not read)**

    1 (Yes)

    2 (No) [SKIP TO Q35]

    99 (Don't know/refused) [SKIP TO Q35]

33. On a scale of 1 to 5, where 1 = "not at all satisfied" and 5 = "very satisfied", how would you rate the following specific aspects of the technical audit report provided through the [WHOLE BUILDING ASSESSMENT Program, ENERGY STAR BENCHMARKING Program]? **[99 = Don't know]**

**[RANDOMIZE B-F]**

A. B. Level of detail of the report

C. Range of the energy efficiency recommendations

D. Amount of information provided that was new to you

E. Usefulness of the information in making decisions about whether to implement the energy efficiency recommendations

F. Format of the report

Q33A. On a scale of 1 to 5, where 1 = "not at all satisfied" and 5 = "very satisfied", how would you rate the overall quality of the technical audit report provided by the Whole Building Assessment Program?

**34.** [IF Q33A=1 OR 2]: Why were you not satisfied with the technical audit report provided by the [WHOLE BUILDING ASSESSMENT Program, ENERGY STAR BENCHMARKING Program]? [PROBE; MULTIPLE RESPONSE]

_____

## Section IV. Free ridership / Spillover, Interaction with Other Programs

**[ASK Q35 & Q36 ONLY FOR FIRST FACILITY IN SAMPLE FILE. FOR CONTACTS WITH MULTIPLE FACILITIES, ASK FOR FACILITY WITH FIRST "YES" RESPONSE IN Q3] [Q35 & Q36 ARE ASKED ONLY ONCE]**

The [WHOLE BUILDING ASSESSMENT Program, ENERGY STAR BENCHMARKING Program] recommended measures to improve the energy efficiency of your facility or facilities.

**[ONLY ASK IF VARIABLE = "YES" IN SAMPLE FILE SEE VARIABLE LIST IN TABLE]**

**35.** I'm first going to ask you about the low cost and no cost measures recommended for [FACILITY NAME]. For each category, please tell me if any measures were implemented at that facility, approximately what percentage of the total number of recommended measures were implemented and approximately when they were implemented? [**IF THE MEASURES WITHIN A CATEGORY WERE IMPLEMENTED AT DIFFERENT TIMES, PROBE FOR WHEN THE BULK OF THE MEASURES WERE IMPLEMENTED OR WHEN THE LAST MEASURE WAS IMPLEMENTED, IN THAT ORDER OF PREFERENCE.]**

Have you implemented……

| **VARIABLE** | Low/No Cost Measures | Implemented?<br>(1=Yes, 2=No, 9=Don't know) | [IF IMPLEMENTED = 2 (NO) THEN ASK]<br>Do you have any plans to implement these recommendations in the next year?<br>(1 = Yes, 2 = No, 9 = Don't know) | Approximately what percentage of the recommended measures have you implemented?<br>[1% to 100%] | If implemented: Approximately when did you implement these measures?<br>(Month: 01-12; Year: 2006, 2007, 2008, 2009) |
|---|---|---|---|---|---|
| EDU | Have you implemented any of the | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | recommendations for employee education regarding energy efficiency? | | | | |
| OFF | Have you instituted the recommended changes in order to turn off equipment when not in use? This includes properly setting PCs and monitors as well as utilizing motion sensors for vending machines, or specifying the use of Energy Star vending machines. **This does not include the installation of motion sensors for lighting.** | | | | |
| PURCH | Any changes to your purchasing process to specify Energy Star or high efficiency | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | equipment? | | | | |
| DR | Utility demand response or demand management programs? These programs allow you to work with the utility to decrease your demand during peak periods. | | | | |
| ENLINK | Enrolled in NSTAR's EnergyLink program? | | | | |

**36.** Now I'd like to ask you about measure categories that required a capital outlay. For each category, please tell me if any measures were implemented at [FACILITY NAME], if so, approximately what percentage of the total number of recommended measures were implemented, approximately when they were implemented, and if you implemented them through another National Grid/NSTAR energy efficiency program. [**IF THE MEASURES WITHIN A CATEGORY WERE IMPLEMENTED AT DIFFERENT TIMES, PROBE FOR WHEN THE BULK OF THE MEASURES WERE IMPLEMENTED, OR WHEN THE LAST MEASURE WAS IMPLEMENTED, IN THAT ORDER OF PREFERENCE.]**

Have you implemented…

| **VARIABLE** | Measures needing capital outlay | Implemented? (1=Yes, 2=No, 9=Don't know) | [IF IMPLEMENTED = 2 (NO) THEN ASK] Do you have any plans to implement | Approximately what percentage of the recommended measures have you implemented | If implemented: Approximately when did you implement these measures? | If implemented: Did you implement any of the measures through |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | these recommendations in the next year? (1 = Yes, 2 = No, 9 = Don't know) | ? [1% to 100%] | (Month: 01-12; Year: 2006, 2007, 2008, 2009) | another National Grid/NSTAR energy efficiency program? That is, did you receive an incentive from National Grid/NSTAR to install the measure? (1=Yes, 2=No, 99=Don't know) |
| EMS | Energy Management Systems or building automation system improvements or installations? | | | | | |
| LIGHT | Lighting retrofits or lighting controls? | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Lighting controls might include motion sensors, dimmers, daylight sensors or timers. | | | | | |
| HVAC | Improvements, replacements or installations for your heating or cooling systems, such as chillers, furnaces, boilers, or air conditioners? | | | | | |
| VENT | Ventilation controls or CO2 sensors, or other improvements to help regulate the | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | amount of outside air introduced into a building through the HVAC system? | | | | | |
| VFD | Variable Frequency Drives VFDs, Variable Speed Drives or high efficiency motor replacements? | | | | | |
| HW | Improvements, replacements or installations for your hot water or steam systems? | | | | | |
| REF | Improvements, replacements or installations for your | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | refrigeration systems? | | | | | |
| BE | Improvements to your building envelope, such as insulation, weatherization, efficient windows or window film? | | | | | |
| HUMID | Improvements, replacements or installations of humidification systems? | | | | | |
| LAUND | Improvements, replacements or installations of laundry systems? | | | | | |
| EA | Building commissioning or hired | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | anyone to perform additional energy audits for your facilities? | | | | | |

**[ASK Q37 & Q38 ONLY IF MORE THAN ONE FACILITY WAS IDENTIFIED IN Q5 AND ONLY FOR THOSE FACILITIES WITH A "YES" RESPONSE IN Q5– OTHERWISE SKIP TO Q39]**

I am now going to review the measures that were recommended for each of your **OTHER** facilities by the [WHOLE BUILDING ASSESSMENT Program, ENERGY STAR BENCHMARKING Program].

**[ONLY ASK IF VARIABLE = "YES" IN SAMPLE FILE SEE VARIABLE LIST IN TABLE]**

Thinking next of [FACILITY X] (REPEAT FOR EACH FACILITY)

**37.** Once again I would like to start by asking you about the low cost and no cost measures recommended for [FACILITY X]. For each category of measures, please tell me if any measures were implemented at[FACIILITY X], if so, approximately what percentage of the total number of recommended measures were implemented, and approximately when they were implemented. [**IF THE MEASURES WITHIN A CATEGORY WERE IMPLEMENTED AT DIFFERENT TIMES, RECORD WHEN THE BULK OF THE MEASURES WERE IMPLEMENTED, OR WHEN THE MEASURE WITH THE GREATEST ENERGY SAVINGS WAS IMPLEMENTED, OR WHEN THE LAST MEASURE WAS IMPLEMENTED, IN THAT ORDER OF PREFERENCE.]**

Have you implemented…

| **VARIABLE** | Low/No Cost Measures | Implemented?<br>(1=Yes, 2=No, 9=Don't know) | [IF IMPLEMENTED = 2 (NO) THEN ASK]<br>Do you have any plans to implement these recommendations in the next year?<br>(1 = Yes, 2 = No, 9 = Don't know) | Approximately what percentage of the recommended measures have you implemented?<br>[1% to 100%] | If implemented: Approximately when did you implement these measures?<br>(Month: 01-12; Year: 2006, 2007, 2008) |
|---|---|---|---|---|---|
| EDU | Have you implemented any of the recommendations for employee education regarding energy efficiency? | | | | |
| OFF | Have you instituted the recommended changes in order to turn off equipment when not in use? This includes properly setting PCs and monitors as well as utilizing motion sensors for vending machines, or specifying the | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | use of Energy Star vending machines. **This does not include the installation of motion sensors for lighting.** | | | | |
| PURCH | Any changes to your purchasing process to specify Energy Star or high efficiency equipment? | | | | |
| DR | Utility demand response or demand management programs? These programs allow you to work with the utility to decrease your demand during peak periods. | | | | |
| ENLINK | Enrolled in NSTAR's EnergyLink program? | | | | |

**[ASK FOR MEASURES FLAGGED AS "capital outlay"]**

**38.** Now I'd like to ask you about the measures that required a capital outlay. For each recommended measure, please tell me if it was implemented at [FACILITY X], if so, approximately what percentage of the total number of recommended measures were implemented, approximately when they were implemented, and if you implemented them through another National Grid/NSTAR energy efficiency program. [**IF THE MEASURES WITHIN A CATEGORY WERE IMPLEMENTED AT DIFFERENT TIMES, RECORD WHEN THE BULK OF THE MEASURES WERE IMPLEMENTED, OR WHEN THE MEASURE WITH THE GREATEST ENERGY SAVINGS WAS IMPLEMENTED, OR WHEN THE LAST MEASURE WAS IMPLEMENTED, IN THAT ORDER OF PREFERENCE.]**

Have you implemented…

| **VARIABLE** | Measures needing capital outlay | Implemented? (1=Yes, 2=No, 9=Don't know) | [IF IMPLEMENTED = 2 (NO) THEN ASK] Do you have any plans to implement these recommendations in the next year? (1 = Yes, 2 = No, 9 = Don't know) | Approximately how much of the recommended measures have you implemented? [1% to 100%] | If implemented: Approximately when did you implement these measures? (Month: 01-12; Year: 2006, 2007, 2008) | If implemented: Did you implement any of the measures through another National Grid/NSTAR energy efficiency program? That is, did you receive an incentive from National Grid/NSTAR to install the measure? (1=Yes, 2=No, 99=Don't |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | know) |
| EMS | Energy Management Systems or building automation system improvements or installations? | | | | | |
| LIGHT | Lighting retrofits or lighting controls? Lighting controls might include motion sensors, dimmers, | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | daylight sensors or timers. | | | | | |
| HVAC | Improvements, replacements or installations for your heating or cooling systems, such as chillers, furnaces, boilers, or air conditioners? | | | | | |
| VENT | Ventilation controls or CO2 sensors, such improvemen | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | ts to help regulate the amount of outside air introduced into a building through the HVAC system? | | | | | |
| VFD | Variable Frequency Drives, VFDs, Variable Speed Drives or high efficiency motor replacements? | | | | | |
| HW | Impro | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | vements, replacements or installations for your hot water or steam systems? | | | | | |
| REF | Improvements, replacements or installations for your refrigeration systems? | | | | | |
| BE | Improvements to your building envelope, such as | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| | insulation, weatherization, efficient windows or window film? | | | | | |
| HUMID | Improvements, replacements or installations of humidification systems? | | | | | |
| LAUND | Improvements, replacements or installations of laundry systems? | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| EA | Building commissioning or hired anyone to perform additional energy audits for your facilities? | | | | | |

REPEAT Q35 & Q36 FOR EACH FACILITY

37B. **(ASK IF ONE OR MORE LOW COST / NO COST MEASURES WERE NOT IMPLEMENTED IN Q35 OR Q37)** You indicated that you have not implemented some of the low cost and not cost measures. What was the ONE most important factor that influenced your decision not to implement those low cost/no cost measures? **(Do not read)**

1 (Budget)

2 (Time)

3 (Pursuing other measures at the same facility first)

4 (Pursuing other measures at another facility first)

5 (Obtaining more in-depth energy efficiency information/report/audit/study)

6 (Difficulties in purchasing requirements)

7 (Measures not needed/not relevant)

8 (Decision made elsewhere)

9 (Implemented before participating in program)

10 (Unaware of measure)

11 (Other—SPECIFY: _____)

99 (Don't know/refused)

Thinking now of the measures requiring capital outlay that you implemented at **[FIRST FACILITY NAME / FOR CONTACTS WITH MULTIPLE FACILITIES, FACILITY NAME WITH FIRST "YES" RESPONSE IN Q3]**.

39. Who would you say was more responsible for making the final decision regarding which measures to install?

1 Someone within your company / organization

2 Outside contractor

3 Utility representative

4 Manufacturer representative

5 (Other)

99 Don't know/refused

40. What ONE factor was the most important in motivating your company / organization to implement or pursue [FIRST MEASURE EMS/LIGHT/HVAC/VENT/VFD/HW/REF/BE/HUMID/LAUND/EA WITH A YES RESPONSE IN Q36] at [FIRST FACILITY NAME]? **(Do not read)**
    1 (To take advantage of program incentives)
    2 (To save on energy costs/bills)
    3 (Cost effectiveness)
    4 (Quick payback)
    5 (Easy to install)
    6 (Common/proven technology)
    7 (To reduce maintenance costs)
    8 (To improve existing lighting conditions)
    9 (To find ways to reduce carbon footprint)
    10 (To help protect the environment)
    11 (To replace non-working equipment)
    12 (Recommended by utility account rep)
    13 (Recommended by contractor)
    14 (Past participation in utility programs)
    15 (Other (Please explain _____))
    99 (Don't know/Don't recall)

41. [IF MORE THAN ONE CAPITAL OUTLAY MEASURE WAS INSTALLED AT FIRST FACILITY IN Q36 THEN ASK]: Were the factors motivating you to implement or pursue the other capital outlay measures at [FIRST FACILITY] any different? **(Do not read)**

1 (Yes)

2 (No) (SKIP TO Q44)

99 (Don't know/refused) (SKIP TO Q44)

42. [IF Q36 & Q38 = NO TO ALL MEASURES SKIP] Considering all of the OTHER recommended measures requiring capital outlay that you installed at this and other facilities what was the ONE factor that was the most important in motivating your company / organization to implement or pursue these measures? **(Do not read)**
    1 (To take advantage of program incentives)
    2 (To see what else I should be doing as part of a planned project)
    3 (To save on energy costs/bills)
    4 (Cost effectiveness)
    5 (Quick payback)
    6 (Easy to install)
    7 (Common/proven technology)
    8 (To reduce maintenance costs)
    9 (To improve existing lighting conditions)
    10 (To find ways to reduce carbon footprint)

11 (To help protect the environment)
12 (To replace non-working equipment)
13 (Recommended by utility account rep)
14 (Recommended by contractor)
15 (Past participation in utility programs)
16 (Other (Please explain _____))
99 (Don't know/Don't recall)

43. [IF Q36 & Q38 = NO TO ALL MEASURES SKIP] What other factors were important in motivating your company / organization to implement or pursue the other recommended capital outlay measures at this and other facilities? **(Do not read) [MULTIPLE RESPONSE]**

1 (To take advantage of program incentives)

2 (To see what else I should be doing as part of a planned project)

3 (To save on energy costs/bills)

4 (Cost effectiveness)

5 (Quick payback)

6 (Easy to install)

7 (Common/proven technology)

8 (To reduce maintenance costs)

9 (To improve existing lighting conditions)

10 (To find ways to reduce carbon footprint)

11 (To help protect the environment)

12 (To replace non-working equipment)

13 (Recommended by utility account rep)

14 (Recommended by contractor)

15 (Past participation in utility programs)

16 (Other (Please explain _____))

99 (Don't know/Don't recall)

44. **[ASK ONLY IF AT LEAST ONE OF THE MEASURES IN Q36 OR Q38 ARE REPORTED AS HAVING BEEN IMPLEMENTED THROUGH ANOTHER**

**NATIONAL GRID/NSTAR ENERGY EFFICIENCY PROGRAM. OTHERWISE, GO TO Q47]** You said that you had implemented one or more measures through another National Grid / NSTAR program. Did your company / organization have any specific plans to participate in any of these other National Grid / NSTAR programs prior to talking with anyone about the [WHOLE BUILDING ASSESSMENT, ENERGY STAR BENCHMARKING] program? **(Do not read)**

1 (Yes)

2 (No) go to Q46

99 (Don't know/refused) go to Q46

**45.** [ASK IF Q44=1] Which other National Grid / NSTAR program(s) did your company / organization have plans to participate in prior to talking with anyone about the [WHOLE BUILDING ASSESSMENT, ENERGY STAR BENCHMARKING] program? **(Do not read) [MULTIPLE RESPONSE]**

1 (Energy Initiative (EI))

2 (Design 2000plus (D2))

3 (Small Business Services (SBS))

4 (Energy Efficiency Program)

5 (Commercial Energy Advisor)

6 (Operations and Maintenance Advisor)

7 (Construction Solutions)

8 (Business Solutions)

9 (Small Business Solutions)

10 (Load Response)

11 (Engineering/Technical Services)

12 (Lighting)

13 (Motors/Premium Efficiency Motors)

14 (Compressed Air Efficiency)

15 (Vending Machine)

16 (Variable Speed Drives)

17 (HVAC Systems)

18 (Commissioning

19 (Custom Projects)

20 (Buyers Alliance (discounts on energy efficient lighting))

21 (Building Operator Training)

22 (Other Program 1_____)

23 (Other Program 2_____)

24 (Other Program 3_____)

25 (Other Program 4_____)

99 (Don't know/refused)

46. [ASK IF Q44=NO OR DON'T KNOW] To what extent did the [WHOLE BUILDING ASSESSMENT, ENERGY STAR BENCHMARKING] program influence your decision to participate in the other National Grid / NSTAR programs? Please give your response on scale of 1 to 5, where 1=No influence at all and 5=Extremely strong influence.

47. Thinking specifically about the capital outlay measures that you implemented at your facilities, what percentage of these measures did your company / organization have any plans to pursue prior to talking with anyone about the [WHOLE BUILDING ASSESSMENT, ENERGY STAR BENCHMARKING] program? _____% (100% =All of them; 0%=None of them; 999=Don't know /Refused)

48. [If Q47 = under 100%] To what extent did the [WHOLE BUILDING ASSESSMENT, ENERGY STAR BENCHMARKING] program influence your decision to install the capital outlay measures that you had not planned prior to talking with anyone about the [WHOLE BUILDING ASSESSMENT, ENERGY STAR BENCHMARKING] program? Please give your response on a scale of 1 to 5, where 1 = No influence at all and 5 = Extremely strong influence.

**[IF ANY RESPONSE TO Q36 = NO ASK Q49 OTHERWISE SKIP TO Q52]**

Now I would like to ask you about those measures requiring capital outlay that your company / organization chose not to implement.

49. Do you have any plans to implement any of those other capital outlay measures that were identified by the [WHOLE BUILDING ASSESSMENT PROGRAM, ENERGY STAR BENCHMARKING PROGRAM] in the next year? **(Do not read)**

1 (Yes)

2 (No) [SKIP TO Q51]

99 (Don't know) [SKIP TO Q51]

Thinking about the capital outlay measures that you have plans to implement within the next year…

50. What was the ONE most important factor that influenced your decision not to implement these capital outlay measures previously? **(Do not read)**

1 (Budget)

2 (Time)

3 (Pursuing other measures at the same facility first)

4 (Pursuing other measures at another facility first)

5 (Waiting for incentive approval from utility)

6 (Obtaining more in-depth energy efficiency information/report/audit/study)

7 (Difficulties in purchasing requirements)

8 (Other-SPECIFY: _____)

99 (Don't know/refused)

Now thinking about just the measures requiring capital outlay that you have **no plans** to implement within the next year…

51. What was the ONE most important factor that influenced your decision not to implement these capital outlay measures? **(Do not read)**

0 (Plan to implement all remaining recommended measures in the next year)

1 (Budget)

2 (Time)

3 (Pursuing other measures at the same facility first)

4 (Pursuing other measures at another facility first)

5 (Waiting for incentive approval from utility)

6 (Obtaining more in-depth energy efficiency information/report/audit/study)

7 (Difficulties in purchasing requirements)

8 (Measures not needed/not relevant)

9 (Decision made elsewhere)

10 (Implemented before participating in program)

11 (Unaware of measure)

12 (Other—SPECIFY: _____)

99 (Don't know/refused)

52. Subsequent to completing benchmarking of this facility through the program,…(**Read responses**)

1 have you benchmarked all your other facilities using Portfolio Manager? [SKIP TO Q54]

2 do you plan to benchmark all your other facilities using Portfolio Manager? [SKIP TO Q54]

3 have you benchmarked some other facilities and plan to benchmark others? [SKIP TO Q54]

4 have you no plans to benchmark any of your other facilities?

99 (Don't know/refused) [SKIP TO Q54]

53. Why do you not plan to benchmark any of your other facilities using Portfolio Manager? **(Do not read; multiple response)**

1 (Don't have time)

2 (Don't have enough knowledge)

3 (I'm not responsible for our other facilities)

4 (We plan to pursue environmental initiatives through other means)

5 (We are too busy making/monitoring improvements in the buildings that have already been benchmarked)

6 (Waiting for DOER program to benchmark them)

7 (Other: specify_____)

99 (Don't know/refused)

54. After receiving an energy audit for this facility through the [WHOLE BUILDING ASSESSMENT, ENERGY STAR BENCHMARKING] program, have you already or do you have plans to perform or hire a contractor to perform energy audits at additional facilities? **(Do not read)**

1 (Yes) [SKIP TOQ56]

2 (No)

99 (Don't know/refused) [SKIP TO Q56]

55. Why do you not plan to perform or hire a contractor to perform energy audits at additional facilities? (multiple response) **(Do not read)**

1 (Don't have time)

2 (Don't have money)

3 (Don't have enough knowledge)

4 (I'm not responsible for our other facilities)

5 (We plan to pursue environmental initiatives through other means)

6 (We are too busy making/monitoring improvements in the buildings that have already been audited)

7 (Other: specify_____)

99 (Don't know/refused)

56. On a scale of 1 to 5, where 1 = "not at all satisfied" and 5 = "very satisfied", how satisfied are you with each of the following stages of participation in the [WHOLE BUILDING ASSESSMENT, ENERGY STAR BENCHMARKING] program? [RANDOMIZE A-L]

A Forms and materials

B Initial application process

C Memorandum of Understanding

D Amount and complexity of paperwork involved in the program

E Communication with staff

F Communication with contractors

G Convenience of scheduled times for audits

H Ability of the program to address your needs

I Timeliness of report

J Information provided about incentive programs – offered by [National Grid, NSTAR]

K Information provided about incentives available from sources other than [National Grid, NSTAR]

L Outcome of the program, in terms of benefits your organization has realized

[ASK Q57 - Q64 ONLY IF FLAGGED AS PUBLIC SECTOR AND MULTIPLE FACILITIES IN SAMPLE FILE. OTHERWISE, SKIP TO Q65]

57. Have you participated in the Department of Energy Resources' (DOER's) benchmarking and auditing program for government facilities? **(Do not read)**

1 (Yes)

2 (No)

9 (Don't know/refused)

58. Does your organization have facilities that have not yet been benchmarked and audited? **(Do not read)**

1 (Yes)

2 (No) [SKIP TO Q65]

99 (Don't know/refused) [SKIP TO Q65]

59. In addition to the facilities that have already been audited by [National Grid/NSTAR], what would be the benefit to you of having DOER benchmark and audit additional facilities? [**Do not read; MULTIPLE RESPONSE**]

1 (No benefit)

2 (Enable us to benchmark/audit additional facilities)

3 (Enable us to identify additional energy efficiency opportunities)

4 (Save us money on additional audits)

5 (Provide us with an independent/non-commercial assessment)

6 (Other: Specify_____)

99 (Don't know/refused)

60. What would be the drawbacks of having DOER benchmark and audit additional facilities for you? [**Do not read, MULTIPLE RESPONSE**]

1 (It would be a long time before DOER would get to it)

2 (DOER does not communicate well)

3 (DOER has high staff turnover, so the continuity is poor)

4 (DOER is not familiar with what is going on at our site, the way our utility rep is)

5 (No drawbacks)

6 (Other: Specify _____)

99 (Don't know/refused)

**61.** If DOER did NOT benchmark and audit other facilities for you, what would be the likelihood that you would go on to benchmark and audit other facilities on your own? Please give your response on a scale of 1 to 5, where 1 = "extremely unlikely" and 5 = "extremely likely." **[99 = Don't know]**

**62.** If DOER benchmarked and audited some additional facilities for you, what would be the likelihood that you would go on to benchmark and audit other facilities on your own? Please give your response on a scale of 1 to 5, where 1 = "extremely unlikely" and 5 = "extremely likely". **[99=Don't know]**

[If Q61 OR Q62= 1 or 2], You indicated just now that you'd be unlikely to benchmark and audit additional facilities on your own. Why would you be unlikely to do so? **(Do not read)**

1 (Don't have time)

2 (Don't have money)

3 (Don't have enough knowledge)

4 (I'm not responsible for our other facilities)

5 (We plan to pursue environmental initiatives through other means)

6 (We are too busy making/monitoring improvements in the buildings that have already been audited)

7 (Other: specify_____)

99 (Don't know/refused)

**63.** [IF Q61 OR Q62= 4 OR 5] For the additional facilities that you are likely to benchmark and audit on your own, what is the likelihood that you would implement at least some of the identified energy efficiency measures at those facilities? Please give your response on a scale of 1 to 5, where 1 = "extremely unlikely" and 5 = "extremely likely". **[99=Don't know]**

64. [IF Q63 = 1 or 2] Why would you be unlikely to implement energy efficiency measures at those facilities? **(Do not read)**

1 (Don't have time)

2 (Don't have money)

3 (Don't have enough knowledge)

4 (I'm not responsible for our other facilities)

5 (We plan to pursue environmental initiatives through other means)

6 (We are too busy making/monitoring improvements in the buildings that have already been audited)

7 (We are just interested in knowing the benchmarking score/how we compare)

8 (We are just interested in knowing if we qualify for an ENERGY STAR plaque)

8 (Other: specify_____)

99 (Don't know/refused)

**65.** What is the job title of the employee that is most influential in the daily energy operations at your facilities? **(Do not read)**

1 (Facilities Manager/Director)

2 (Director of Assets)

3 (Director of Buildings and Grounds)

4 (Finance/Fiscal Director or Business Manager)

5 (Engineer/Engineering Coordinator)

6 (Custodian)

7 (Director of Environmental Programs)

8 (Owner)

9 (Property Manager)

10 (Other: Specify) _____

99 (Don't know/refused)

66. Who is most influential in making capital decisions regarding changes or improvements to facility energy operations? (**Do not read; PROBE FOR TITLE IF NECESSARY**]

1 (Facilities Manager/Director)

2 (Director of Assets)

3 (Director of Buildings and Grounds)

4 (Finance/Fiscal Director or Business Manager or Chief Financial Officer)

5 (Engineer)

6 (Director of Environmental Programs)

7 (Owner)

8 (Chief Executive Officer)

9 (Property Manager)

10 (Other: Specify) _____

99 Don't know/refused

## Section V. Company/Facility Characteristics

**[ASK Q67 AND Q68 ONLY IF FLAGGED AS SINGLE FACILITY IN SAMPLE FILE – OTHERWISE SKIP TO Q69]**

67. During normal business hours, approximately how many occupants does [FIRST FACILITY] have?

1 Fewer than 5

2 5 to 9

3 10 to 19

4 20 to 49

5 50 to 99

6 100 to 249

7 250 or More

99 (Don't know/Don't recall)

68. On average, how many hours per week is [FIRST FACILITY] in use? [Any number between 0 and 168] **(99 = don't know)**

_____ hrs/wk

[8 hrs/day, 5 days per week = 40 hrs]

[10 hrs/day, 5 days/week = 50 hrs]

[12 hrs/day, 5 days/week = 60 hrs]

[14 hrs/day, 5 days/week = 70 hrs

[8 hrs/day, 7 days per week = 56 hrs]

[10 hrs/day, 7 days per week = 70 hrs]

[12 hrs/day, 7 days per week = 80 hrs]

[14 hrs/day, 7 days/ per week = 98 hrs]

[24 hrs/day, 7days/per week = 168 hrs]

69. During normal business hours, what is the average number of occupants in the buildings we've discussed?

1 Fewer than 5

2 5 to 9

3 10 to 19

4 20 to 49

5 50 to 99

6 100 to 249

7 250 or More

99 (Don't know/Don't recall)

70. What is the average number of hours per week that the facilities we've discussed are in use?

[Any number between 0 and 168] **(99 = don't know)**

_____ hrs/wk

[8 hrs/day, 5 days per week = 40 hrs]

[10 hrs/day, 5 days/week = 50 hrs]

[12 hrs/day, 5 days/week = 60 hrs]

[14 hrs/day, 5 days/week = 70 hrs

[8 hrs/day, 7 days per week = 56 hrs]

[10 hrs/day, 7 days per week = 70 hrs]

[12 hrs/day, 7 days per week = 80 hrs]

[14 hrs/day, 7 days/ per week = 98 hrs]

[24 hrs/day, 7days/per week = 168 hrs]