1/30/2009

**New Construction Program – Participating Architect & Engineer (A&E) Survey**

The purpose of the Participating A&E Survey was to gather information from architects and engineers for buildings that participated in the NYSERDA New Construction Program (NCP). The survey was designed by Summit Blue to contribute to the Market Characterization and Assessment evaluation of the NCP program. Questions were added to the survey to contribute to the Impact Evaluation of the program. The survey was managed by APPRISE Incorporated. Interviews were conducted by Braun Research.

## Sample

### *Target Population*

The target population for the survey was architects and engineers associated with projects that had participated in the NCP and received incentives through the program. Eligible projects were defined as those that were completed during the time period 9/1/2005 through 12/15/2007. The survey respondent was the individual listed as the project architect (engineer, if no architect was listed) in the Buildings Portal data.

### *Sample Frame*

The sample frame was downloaded from the NYSERDA Buildings Portal. The sample frame consisted of 227 projects that were completed and received NCP incentives during the targeted time period. Eight projects were excluded from the survey because they were part of a special study of the Top 30 Savers being conducted by the Impact Evaluation Team. Among the 219 projects, 38 had an architect only, 93 had both an architect and an engineer, 29 had an engineer only, and 59 had neither an architect nor an engineer listed. The sample was selected from the 160 projects with an architect or an engineer listed.

### *Sample Selection*

The sample frame was stratified into three groups based on NCP incentive amount. Table 1 shows the number of unique A&E contacts, the percent of A&E contacts, and the percent of NYSERDA incentives for each stratum. [1]

[1] [1] The incentive range for the large stratum was $200,000 or more, for the moderate incentive was $37,000 to less than $200,000, and for the small incentive was $0 to less than $37,000.

**Table 1 – Participating A&E Survey Sample Stratification**

| Stratum | Number of A&Es Contacts | Percent of A&Es Contacts | Percent of Incentives |
|---|---|---|---|
| Large | 25 | 18% | 62% |
| Moderate | 65 | 45% | 33% |
| Small | 53 | 37% | 5% |
| TOTAL | 143 | 100.00 | 100.00 |

The survey budget allowed for 60 interviews. Two sample allocation alternatives were considered.

- Simple Random Sample (SRS) - A SRS sample would have yielded the smallest confidence interval for statistics for all participants. However, it would have allocated only 10 interviews to the large incentive projects that account for over 62% of the incentives.
- Probability Proportionate to Size (PPS) – A PPS sample with NYSERDA incentive as the measure-of-size would allocate 62% of the sample (37 interviews) to the large incentive group. However, the large incentive group only had 25 population members. Furthermore, only 1 interview would be allocated to the small incentive group. That would significantly increase the confidence intervals for statistics related to all participants.

The final sample procedure allocated 20 interviews to each stratum. Using that approach, the overall population statistics achieved the target confidence interval (+/- 9% with 90% confidence), and projects with larger incentives also sample at a higher rate. Table 2 furnishes information on the sample size by stratum, the confidence interval for each stratum, and the confidence interval for the overall sample.

**Table 2 – Participating A&E Survey Sample Allocation[2]**

| Stratum | Number of A&E'S | Target Number of Interviews | 90% Confidence Interval |
|---|---|---|---|
| Large | 25 | 20 | +/- 8% |
| Moderate | 65 | 20 | +/- 15% |
| Small | 53 | 20 | +/- 15% |
| TOTAL | 143 | 60 | +/- 9% |

[2] At the same time that the NCP Participating A&E Survey was being conducted, the Process Evaluation team was also conducting in depth interviews with NYSERDA program participants in the New York City area. NYSERDA set aside 15 sample cases for the NYC study, 3 from the large stratum, 4 from the moderate stratum, and 8 from the small stratum.

**Data Collection**

*Overview of Data Collection Procedures*

The Participating A&E Survey was administered as a telephone interview with the NYSERDA project contact. Sampled contacts were sent an e-mail notifying them of the data collection effort, including an advance letter from NYSERDA and APPRISE regarding the study. Interviewers from Braun Research conducted the surveys using a computer-assisted telephone interview (CATI) survey instrument.

*Survey Instrument*

The survey instrument was designed to collect information on key performance indicators identified for the NCP in the Program Theory and Logic Model. One objective of the survey instrument was to update the time series measurements of market indicators obtained from previous surveys. So, it was important to ensure that questions were consistent with the prior surveys. However, the survey also was addressing some new issues of interest to NYSERDA program staff. Those questions, in particular, needed to be pretested to ensure that they collected the required information and used clear and concise language. Pretests found that the questionnaire exceeded the target survey length and that the language for certain questions needed to be improved. Survey administration averaged 20 minutes per completed interview.

*Survey Administration*

Interviewers called project contacts between 9 am and 5 pm on weekdays. If they reached the contact's voice mail, they would leave a message on first contact. After the first contact, they would leave a message every other day. The study was in the field for two weeks. Attempts were made with each project contact at least once per day during the field period.

Table 3 shows the final disposition of the sample.

**Table 3 – Participating A&E Survey Sample Disposition**

| **Disposition** | | **Number** | **Percent** |
|---|---|---|---|
| Complete | Complete | 60 | 65% |
| | Partial | 2 | 2% |
| Contacted | Refused | 6 | 6% |
| | Not Completed | 24 | 26% |
| Not Contacted | Quota Met | 0 | 0% |
| Excluded | Duplicate | 0 | 0% |
| | Business or contact no longer available | 0 | 0% |
| | Information not available for business/contact | 1 | 1% |

| Disposition | | Number | Percent |
|---|---|---|---|
| | Not Eligible | 0 | 0% |
| TOTAL | | 93 | 100% |

Table 4 shows the number of sampled cases, the number of completed interviews, and the response rate by sample stratum.

**Table 4 – Participating A&E Survey Response Rate**

| Stratum | Eligible Sample Size | Number of Interviews | Response Rate |
|---|---|---|---|
| Large | 22 | 19 | 86% |
| Moderate | 39 | 26 | 67% |
| Small | 31 | 15 | 48% |
| TOTAL | 92 | 60 | 65% |

**Data Processing**

*Coding*

The survey included a number of "field-coded" questions. In these questions, the respondent was asked an open-ended question. The interviewer had the choice of coding the response as one of a number of pre-coded categories (coded from the open-ended responses for the prior surveys), or coding the response as "Other" and entering a text string to summarize the response. For all "Other" responses, the text was reviewed. The coder either selected one of the pre-coded responses or made the response eligible for development of a new code. After reviewing all questionnaires, text responses were grouped into categories. If a group represented at least 5% of responses (3 or more), a new code was created. If there were less than 3 responses, it was left as "Other."

*Data Processing*

The survey data were checked for consistency with the CATI survey instrument, then combined with the sample frame data. A number of data file formats were developed, including SAS, SPSS, Stata, and Excel. All files were labeled with variable labels and value labels.

*Weights*

Since the survey was stratified and differential sampling rates were applied to each stratum, survey weights were developed and used for analysis of the data. Two weights were developed – a participant weight and an incentive weight.

- Participant Weight – The same participant weight is computed for all completed interviews in the stratum. The formula for the participant weight (PW) is PW = # of A&Es / # of Interviews. [See Table 5]

- Incentive Weight – The incentive weight is based on two factors – the stratum factor and the respondent incentive. The formula for the stratum factor (SF) is SF = Sum of Stratum Incentives / Sum of Incentive for Stratum Respondents. The formula for the incentive weight (IW) for each respondent is IW = SF * Incentive. [See Table 6]

For the 2006 sample, a PPS sample based on kWh savings was implemented. Since a PPS sample is self-weighting with respect to the measure-of-size variable, the analysis for 2006 used unweighted data. Since one of the factors that NYSERDA uses to set program incentives is kWh savings, tabulations developed using the incentive weight furnishes statistics that are comparable to those developed for previous NCP surveys. The Market Assessment results presented in this report are weighted according to project incentives.[3]

**Table 5 – Participating A&E Survey Participant Weights**

| Stratum | Geography | Population | Number of Interviews | Participant Weight |
|---|---|---|---|---|
| Large | NYC | 6 | 3 | 2.00 |
| | Other | 19 | 16 | 1.19 |
| Moderate | NYC | 19 | 4 | 4.75 |
| | Other | 46 | 21 | 2.19 |
| Small | NYC | 14 | 3 | 4.67 |
| | Other | 39 | 12 | 3.25 |
| TOTAL | | 143 | 59[4] | 2.42 |

[3] NYSERDA sets program incentives based on the value of both KW and kWh savings for projects. From that perspective, higher incentive projects are of greater value to NYSERSDA.

[4] There is one record that we had to pick the engineer because the architect was selected for another interview. Participant weights were split half-and-half between these two records and incentive weights were split based on their NYSERDA incentives.

**Table 6 – Participating A&E Survey Incentive Weights**

| Stratum | Geography | Stratum Incentive Total | Respondent Incentive Total | Stratum Factor | Average Weight |
|---|---|---|---|---|---|
| Large | NYC | 2,029,385 | 1,075,371 | 1.89 | 676,461 |
| | Other | 6,913,017 | 6,310,707 | 1.10 | 432,064 |
| Moderate | NYC | 1,393,497 | 149,574 | 9.32 | 348,374 |
| | Other | 3,281,361 | 1,517,475 | 2.16 | 156,255 |
| Small | NYC | 184,726 | 77,154 | 2.39 | 61,575 |
| | Other | 573,911 | 376,376 | 1.52 | 47,826 |
| TOTAL | | 14,375,897 | 9,506,657 | 1.51 | 243,659 |