

## **Home Performance with ENERGY STAR Program – Participating Contractor Survey**

The purpose of the Participating Contractor Survey was to gather information from contractors who were enrolled in the NYSERDA Home Performance with ENERGY STAR Program (HPwES) at the end of 2007. The survey was designed by GDS Associates to contribute to the Market Characterization and Assessment evaluation of the HPwES program. The survey was managed by APPRISE Incorporated. Interviews were conducted by Braun Research.

### **Sample**

#### *Target Population*

The target population for the survey was active HPwES contractors. Active contractors were defined as contractors listed as active on December 31, 2007 by the program administrator - CSG.

#### *Sample Frame*

Active contractors were listed on Exhibit HP-3C of the Monthly Report on NYSERDA's Home Performance Programs for December 2007. That report lists 144 active contractors and 52 inactive contractors.

The contractor contacts were listed in Exhibit HP-1. A review of contractor frame revealed that there were a number of related organizations, including two Hughesco offices and two Zero Draft franchises. We determined that the same contact would respond for both offices. That left 142 active contractors.

We also noted that GreenHomes America by HughesCo was listed as an inactive contractor. However, since the work of that company was continued by Hughesco, we excluded that company from the inactive contractor list, leaving 51 inactive contractors.

#### *Sample Selection*

The sample frame was stratified into five groups based on the number of HPwES projects completed in 2007, the status of the contractors, and the geographic location of the contractors. Table 1 shows the number of projects completed and the percent of projects completed for each group.

- Large Contractors – These contractors completed 60 or more HPwES projects during 2007 (one job per week or more).
- Moderate Contractors – These contractors completed at least 12 projects, but no more than 59 projects during 2007 (one job per month or more).
- Small Contractors – These contractors complete less than 12 jobs during 2007 (less than one job per month).

- NYC Contractors – These are contractors in the NYC Market that were excluded from the sample because they were being interviewed by the NYC Process Study.
- Inactive Contractors – These are contractors listed as Inactive in the CSG report.

The Large, Moderate, and Small contractor strata were eligible for interview. The NYC contractor stratum was used in the NYC Process Evaluation. The Inactive contractor stratum was used for the Former Participating Contractor study.

**Table 1 – HPwES Contractor Sample Stratification**

Stratum	Number of HPwES Contractors	Number of HPwES Projects	Percent of HPwES Projects
Large	17	2,978	69%
Moderate	35	914	21%
Small	80	233	5%
NYC	10	68	2%
Inactive	51	108	3%
TOTAL	193	4,301	100%

The survey budget allowed for 75 interviews. The final sample procedure allocated 12 interviews to the Large stratum, 27 interviews to the Moderate stratum, and 36 interviews to the Small stratum. Using that approach, the overall population statistics achieved the target confidence interval (+/- 7% with 90% confidence) and contractors with a greater market share were sampled 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 Contractors Survey Sample Allocation**

Stratum	Population	Targeted Number of Interviews	90% Confidence Interval
Large	17	14	+/- 9%
Moderate	35	25	+/- 9%
Small	80	36	+/- 10%
TOTAL	132	75	+/- 7%

## Data Collection

### *Overview of Data Collection Procedures*

The Participating Contractors Survey was administered as a telephone interview with the NYSERDA project contact. Sampled contacts were mailed an advance letter from NYSERDA and one from APPRISE notifying them of the data collection effort and describing the study. Interviewers from Braun Research conducted the interviews 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 HPwES 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 addressed 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.

We conducted extensive pretests with the draft survey instrument. The initial pretest found that the survey instrument was far too long (90 minutes) and was not appropriately formatted for CATI survey administration. The survey instrument was extensively rewritten to improve the survey flow and shorten the survey length to an estimated 40 minutes.

### *Survey Administration*

The survey was fielded in February 2008. Interviewers called project contacts between 9 am and 5 pm on weekdays. If they reached the contact's voice mail, they left a message on first contact. After the first contact, they left 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. Once the target number of interviews for a stratum was completed, interviewing was discontinued for that stratum. Survey administration averaged 37 minutes per completed interview.

Table 3 shows the final disposition of the sample.

**Table 3 – Participating Contractor Survey Sample Disposition**

Disposition		Number	Percent
Complete	Complete	75	57%
	Partial*	9	7%
Contacted	Refused	4	3%
	Not Completed	44	33%

Disposition		Number	Percent
Not Contacted	Quota Met	0	0%
Excluded	Duplicate	0	0%
	Business or contact no longer available	0	0%
	Information not available for business/contact	0	0%
	Not Eligible	0	0%
TOTAL		132	100%

\*Note: Partial completes were included in the final analysis file to supplement the available information.

Table 4 shows the number of sampled cases, the number of completed interviews, and the response rate by sample stratum. The overall survey response rate was 57%.

**Table 4 – Participating Contractor Survey Response Rate**

Stratum	Eligible Sample Size	Number of Interviews	Response Rate
Large	17	12	71%
Moderate	36	24	69%
Small	80	39	49%
TOTAL	132	75	57%

## Data Processing

### *Coding*

The survey included many “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 (or more, for some questions) of a number of pre-coded categories that were coded from the open-ended responses for the prior survey, or coding the response as “Other” and entering a text string to summarize the response. For each applicable question, staff reviewed each “Other” response and then 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 (four or more), a new code was created. If there were less than four responses, it was left as “Other.”

## *Data Processing*

The survey data were checked for consistency with the CATI survey instrument. The survey data were 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. Three weights were developed – a participant weight, a production weight, and a projects weight.

- Participant Weight – The same participant weight is computed for all completed interviews in the stratum. The formula for the participant weight (PW) is  $PW = \# \text{ of Eligible Contractors} / \# \text{ of Interviews}$ . [See Table 5] [Note: Supplemental weights are furnished for including the partial completes in the analysis.]
- Production Weight – The production weight is based on two factors – the stratum factor and the respondent production. The formula for the stratum factor (SF) is  $SF = (\text{Sum of Stratum Production}) * (\text{Eligible Population Rate}) / \text{Sum of Production for Stratum Respondents}$ . The formula for the production weight (PnW) for each respondent is  $PnW = SF * \text{Production}$ . [See Table 6] [Note: Supplemental weights are furnished for including the partial completes in the analysis.]
- Projects Weight – The projects weight is based on two factors – the stratum projects population and the number of respondents. The formula for the stratum project population (SPP) is  $SPP = \text{the sum of } PW * \text{Projects Completed for all respondents in the stratum}$ . The formula for the projects weight (PtW) is  $PtW = SPP / \text{Number of respondents}$ . [See Table 7] [Note: Supplemental weights were not developed for the partial completes since those interviews were missing the data needed to compute the weights.]

For the 2006 sample, a PPS sample based on project 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. The Production Weight will yield comparable results to the 2006 procedures.

The purpose of the Projects Weight is to allow analysts to compare respondents from the three HPwES surveys - Participant Contractors, Former Participant Contractors, and Nonparticipant Contractors. The Projects Weight represents the share of all projects in NYS “represented” by this contractor.

**Table 5 – Participating Contractor Survey Participant Weights**

<b>Stratum</b>	<b>Population</b>	<b>Number of Interviews</b>	<b>Participant Weight</b>
Large	17	12	1.42
Moderate	35	24	1.46
Small	80	39	2.05
TOTAL	132	75	N/A

**Table 6 – Participating Contractor Survey Production Weights**

<b>Stratum</b>	<b>Stratum Production Total</b>	<b>Respondent Production Total</b>	<b>Stratum Factor</b>	<b>Average Weight</b>
Large	2,867	2,368	1.21	238.92
Moderate	914	687	1.33	38.08
Small	233	117	1.99	5.97
TOTAL	4,014	3,172	N/A	53.52

**Table 7 – Participating Contractor Survey Projects Weights**

<b>Stratum</b>	<b>Stratum Project Total</b>	<b>Respondents</b>	<b>Weight</b>
Large	7,391	12	615.90
Moderate	10,471	24	436.29
Small	17,986	39	461.10
TOTAL	35,848	75	477.97