
2010–2012 PG&E WHOLE HOUSE RETROFIT PROGRAM PHASE II PROCESS EVALUATION STUDY– METHODS AND FINDINGS – PGE0302.06

Prepared For **PACIFIC GAS AND ELECTRIC COMPANY**

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1. INTRODUCTION

Pacific Gas and Electric (PG&E) operates part of the statewide Energy Upgrade California™ (EUC) initiative. A broad-based evaluation of the program was completed in 2012 and covered program operations from July 2011 through February 2012. For PG&E, this period immediately followed a pilot phase of the program. That evaluation will be referred to as Phase I. The Phase I final report provided recommendations for improving the program marketing, implementation, and design.

A two-volume report describes Phase II of the evaluation, which focused on PG&E's portion of the program. In Phase II, various elements of data collection were repeated to allow for analysis of trends and to examine the impact of changes made in program design and operation. New types of data were also collected to complete work that was not feasible during Phase I, such as survey of homeowners that interacted with the program but did not complete an upgrade job.

This document is the second volume of the Phase II report. This volume describes the methodology and findings of this evaluation. The final section of this volume contains the instruments used to collect data, and frequency tabulations for each of the questions asked in these instruments.

2. METHODOLOGY

2.1. Participant Survey

The evaluation team conducted quantitative telephone surveys of program participants. Our survey instrument was designed to:

- Profile customer characteristics
- Assess satisfaction with services received from the program and its contractors
- Determine how customers learned of the program and their motivations for participation
- Quantify energy and non-energy benefits of the program
- Explore year-to-year trends
- Identify areas of program improvement

2.1.1. Sample Design

We selected the sample using program records received in July 2013, which included participants in various stages of project completion. We selected 2,226 participants whose rebates had been approved, even if a check had not yet been sent. The sample frame was limited to participants who joined the program between February 15, 2012 and June 27, 2013, and excluded SMUD customers.

2.1.2. Final Sample and Response Rates

Each utility offered their participants a \$50 incentive to complete the survey. We randomly called a sample of 663 and completed 100 interviews between June 24 and July 26, 2013. Using AAPOR¹ standards and formulas, we calculated a 16% response rate and a 60% cooperation rate. The 100 interviews provide data that is representative of the population at the 90% confidence interval with $\pm 8\%$ precision.

2.2. Energy Upgrade California Website Drop-Out Survey

The evaluation team conducted quantitative telephone surveys of PG&E customers who used the Energy Upgrade California website and asked for a contractor or rater to contact them but were not present in program records. The purpose of the survey was to:

- determine the reason why some customers, who initially investigate the program, fail to continue;

¹ *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys*, AAPOR, 2011.
http://www.aapor.org/AM/Template.cfm?Section=Standard_Definitions2&Template=/CM/ContentDisplay.cfm&ContentID=3156

- determine how customers learned about the program and what motivated customers to investigate the program;
- assess barriers to program participation; and
- identify strategies for overcoming these barriers.

2.2.1. Sample Design

We selected the sample using program records received in April 2013, which included PG&E customers who created an action plan and/or contacted a qualified contractor through the Energy Upgrade California website. We did not place any date restrictions on the timing of when the customer used the website, but we excluded any customers who were in the program records. We also removed any customers who did not provide valid phone numbers. Our final sample frame consisted of 874 total customers.

2.2.2. Final Sample and Response Rates

Survey respondents received a \$50 incentive for their participation. Ultimately, we completed 100 interviews from June 19 to June 25, 2013. Using AAPOR standards and formulas, we calculated a 20% response rate and a 53% cooperation rate.

2.3. Build It Green Drop-Out Survey

The evaluation team conducted quantitative telephone surveys of PG&E customers who appear in BIG program records as having a home assessment but did not fully complete a project yet. The purpose of the survey was to:

- determine the reason why some customers, who received an assessment through the program, failed to continue;
- determine how customers learned about the program and what motivated customers to investigate the program;
- assess barriers to program participation; and
- identify strategies for overcoming these barriers.

2.3.1. Sample Design

We selected the sample using program records received in June 2013, which included PG&E customers who appear in BIG program records for receiving an assessment through the program, but did not fully complete a project. We did not place any date restrictions on the timing of when the customer received the assessment, but we excluded any customers who were in the program records as having completed any equipment installations through the program. We also removed any customers who did not provide valid phone numbers. Our final sample frame consisted of 307 total customers.

2.3.2. Final Sample and Response Rates

Survey respondents received a \$50 incentive for their participation. We tried to interview every participant in the sample frame and we called each multiple times. Ultimately, we completed 50 interviews from June 20 to June 28, 2013. Using AAPOR standards and formulas, we calculated a 21% response rate and a 54% cooperation rate.

2.4. Energy Rater Interviews

We conducted interviews with six (out of 9 potential) participating Energy Raters from April 23–29, 2013. To qualify for the interviews, the Rater must serve homes in PG&E territory and have conducted at least one assessment through the Energy Upgrade California program at any point during the program period. Two Raters said that they had not yet conducted any Whole House assessments at the time of the interview, making them ineligible to participate, and one Rater never responded to multiple contact attempts.

The purpose of these interviews was to assess Raters’ overall satisfaction with the program and to gather their feedback on the strengths and weaknesses of the program’s training, marketing, service delivery, and design. We also asked Raters about their interactions with contractors and customers, as well as customer barriers to participation. The findings from the Rater interviews will support our findings from the contractor interviews, as well as the participant and Build-It-Green drop-out surveys.

We recruited participants by phone and offered an incentive of \$100 to be interviewed.

2.5. Contractor Interviews

During May and June of 2013 we conducted 20 qualitative, in-depth interviews with contractors who had completed jobs during 2012. Three groups of contractors were interviewed based on their level of program activity:

- **One Job:** Completed only one job through the program in 2012.
- **Low Volume:** Completed between two and nine jobs through the program in 2012.
- **High Volume:** Completed ten or more jobs through the program in 2012.

We attempted to follow-up with as many contractors as possible from the previous phase of this process evaluation to obtain updates on their opinions about program performance. Four of the respondents were interviewed in the first phase of this evaluation. Table 1 shows the population and number of completed surveys by year and contractor group.

Table 1: Contractor Survey Sample

Year	Type	Contractor Group*			Total
		One Job	Low Volume	High Volume	
2012	Population	21	35	21	77

Year	Type	Contractor Group*			Total
		One Job	Low Volume	High Volume	
	Completed	6	8	6	20
	2011 Follow-Ups	1	2	1	4
Total	Population	21	35	21	77
	Surveyed	6	8	6	20

* Low Volume = 2–9 jobs. High Volume = 10 or more jobs.

All interviews addressed the contractors’ experiences with the program and solicited input on the strengths and weaknesses of program training, marketing, service delivery, customer relations, and quality-control strategies. Responses addressed their attitudes about the two levels of services offered by the program, along with information about their service area and business.

In addition to the questions asked of all contractors, we explored special topics with each of the three groups:

- **One Job and Low Volume:** Barriers to increasing number of jobs completed through program.
- **High Volume:** Factors that have led to success in the program.

We recruited participants by phone and offered an incentive of \$100.

2.6. Contractor Training Assessment

To be eligible for the program’s incentives, homeowners who participate in the Pacific Gas & Electric Company’s (PG&E) Whole-House Program under Energy Upgrade California (EUC) must use qualified contractors, typically home performance professionals, to perform the energy efficiency upgrades. Contractors who want to participate must meet capability and credential requirements and must attend Whole-House Program training and orientation sessions.

The purpose of this assessment is to closely assess the training required of contractors in PG&E’s Whole-House Program. We examined the design, training methods, and materials to determine the appropriateness and effectiveness of the training. Specifically, as with our prior assessment of Southern California Edison’s (SCE) similar training materials for the Whole-House Program, we wanted to determine whether the training objectives address the tasks the contractors must perform as part of the program, and whether the training prepares the contractors to succeed. This assessment was limited to the PG&E training and implementation of the Energy Upgrade California program within the PG&E territory, though the findings may have statewide implications.

The evaluation team consulted with Build It Green, a non-profit organization who currently oversees the implementation of the Whole-House Program for PG&E. Build It Green is responsible for the training materials currently used for the program, and engages the instructors. Our assessment included interviewing instructors and program managers, and

reviewing the training and program materials provided by Build It Green. This review includes recommendations for improving the training materials and procedures.

The training materials and other documentation we reviewed were those used prior to the changeover in June, 2013 to the new “Home Upgrade Program” that was designed to replace the current Basic Upgrade Package of the Whole-House Program. While the evaluation team understands that the training materials for this program are being updated to conform to the new approach, our observations are based on the training and documentation as they exist at this point in time (i.e. Summer 2013).

Throughout the program’s operation, gaps in certain aspects of contractor performance have become apparent. Specifically, contractors were not consistently meeting the Quality Assurance (QA) requirements of the program. (As defined by Efficiency First California, “Quality Assurance is a third-party inspection conducted to ensure projects comply with programmatic or code requirements, i.e., contractors are doing the right things the right way.”) One purpose of this evaluation is to determine if these performance gaps can be addressed by training, and if so, whether they are being addressed by training.

2.6.1. EUC Program Scope

The Whole-House Program is currently open to qualified home-performance contractors and Whole-House Home Energy Raters (HERS II), who are referred to in this report simply as Raters.

Participating homeowners can choose between two levels of service—the Basic Upgrade Package and the Advanced Upgrade Package, as described in the Whole-House Program “Participation Handbook” and elsewhere. Contractors can qualify to perform only the measures in the Basic Upgrade Package, or those in both the Basic and Advanced Upgrade Packages. The training required by the program relates directly to the measures available in each of these two service levels and to the minimum credentials required of the contractors.

- For PG&E’s Whole-House Program, the **Basic Upgrade Package** measures include air sealing, attic insulation, duct sealing, hot-water-pipe insulation, thermostatic shut-off valve, combustion-appliance-safety testing, and installation of a carbon monoxide (CO) monitor. A low-flow showerhead is recommended but not required. This package requires test-in and test-out Combustion Appliance Safety (CAS), building-leakage, and duct-leakage testing.
- An **Advanced Upgrade Package** is customized for a particular house, and the incentives are based on the expected energy savings. This service involves auditing the house to identify possible energy-saving measures. Advanced Upgrade projects also require a test-in assessment to determine current conditions that affect energy consumption and a test-out assessment to confirm energy savings and rebate amount, including CAS, building-leakage, and duct-leakage testing. Test-in and test-out procedures are compatible with the requirements of Home Energy Rating System (HERS II) assessments and the Building Performance Institute (BPI).

For the Advanced Upgrade Package, while not required, it is recommended that the scope of work include any Basic Upgrade measures not already installed. The homeowner may

select a combination of upgrade measures that have the potential, according to the program promotional materials, to save 10–45% of home energy use. These measures include replacing heating and/or cooling systems with high-efficiency units; adding wall, floor, and attic insulation, sealing and replacing duct insulation, upgrading water-heating systems, and more. (The “Participant Handbook” provides a complete list of the Advanced Upgrade Package measures.)

2.6.2. Required Contractor Credentials

As described in the “Participant Handbook,” the minimum contractor credentials for the Basic Upgrade Package include Contractors State License Board (CSLB) B license (general contractor), or a combination of C-2 (insulation) and C-20 (HVAC) licenses. Contractors must also have a BPI-certified professional on staff, or company leadership and crew leads must complete Basic and Advanced Upgrade Package Technical Trainings. The company must have a HERS II Whole House Rater or BPI-certified professional or properly trained staff employed by a BPI-accredited company available to conduct project diagnostic assessment test-in and test-out procedures. Finally, a BPI-certified professional or properly trained staff employed by a BPI-accredited company must perform the Combustion Appliance Safety tests.

The minimum contractor credentials for the Advanced Upgrade Package include all of the Basic Upgrade Package requirements plus CSLB B license (general contractor) and at least one BPI-certified professional on staff at each business location. The Basic Package training is recommended but not required. BPI-certified professionals must complete the Advanced Upgrade Package Technical Training.

All contractors must attend an online Participation Workshop that orients them to some of the benefits, requirements, and features of the Energy Upgrade California program. Also, participating contractors must attend other EUC-required training, have expertise in energy efficiency, have two years of prior experience, and present proof of proper insurance and valid CA licenses.

2.6.3. Required HERS Energy Raters Credentials

There also are specific credentials required of HERS Whole House Energy Raters within the Whole-House Program, as described in the “Participant Handbook.” To enroll in the Whole-House Program in the PG&E territory, Energy Raters must meet these minimum requirements:

- HERS II Whole House Rater certification
- BPI-Building Analyst certification
- Attend Participation Workshop
- Execute Rater Participation Agreement
- Advanced Upgrade Package Technical Training (Basic Package Technical Training is recommended but not required)

- Advanced training for Combustion Safety and able to perform diagnostic assessment test-in, test-out, and combustion appliance tests
- Two years of experience

Raters have the same training requirements as contractors but since they are BPI-certified, none that were interviewed for this report attended the Basic Package training. After Raters are approved and enrolled, they qualify to offer customers both Basic and Advanced Upgrade Package audits. The major difference between contractors and Raters is that Raters do not have contractors' licenses and are not qualified to perform energy efficiency upgrades.

HERS I Raters and HERS II Raters provide different services. Briefly, HERS I Raters are primarily concerned with Title-24 compliance regarding HVAC-system field verification and diagnostics testing, typically in verifying changes made to existing HVAC systems or for entirely new systems. The California 2008 Building Energy Efficiency Standards (Title 24, Part 6) define these procedures.

HERS II Raters are certified to perform field assessment and energy modeling of residences using computer-modeling software approved by the California Energy Commission to determine a residence's relative energy efficiency, to recommend energy upgrades, and to assess whether the recommendations are cost effective.

2.6.4. Assessment Activities

One primary objective of this assessment was to compare the contents of the training to the specific tasks contractors must perform for the program. The standards that contractors are expected to meet are defined by the quality-installation requirements of PG&E's program.

The training assessment included:

- Reviewing of all the training and program materials received from Build It Green.
- Summarizing contractor performance requirements for Basic and Advanced Upgrade Packages.
- Mapping training objectives to the specific tasks, skills, and knowledge required by the program. (Because the program did not document formal performance objectives for the training, we derived objectives from several sources, including the course descriptions provided by online and hard-copy advertising brochures, the agendas found in the training materials, and from the training materials themselves.) We attempted to answer whether the training addresses what contractors really need to do on the job.
- Designing questionnaires and scheduling and conducting interviews with instructors and key program managers to understand program requirements and how training was delivered.
- Assessing discrepancies between desired and actual fieldwork performance by identifying gaps in Quality Assurance (QA) workmanship and safety that could be mitigated by training.
- Analyzing gaps in training content relating to program standards and best practices.

- Analyzing training methods and structure, including reviewing the training materials for incorporation of adult-learning principles.
- Comparing and contrasting to the training materials and outcomes of SCE’s Whole-House Program.
- Developing preliminary findings and associated recommendations.

2.6.5. Interviews

For this assessment, the evaluation team interviewed a variety of subject matter experts who were closely involved with PG&E’s Whole-House Program. These included utility program managers, Build It Green program and project managers, analysts who conducted interviews with program contractors and Raters, and instructors who were thoroughly familiar with the training materials and conducted the classes. These interviews helped us understand the workings of the EUC as it is conducted in the PG&E territory and of the training itself.

Within the context of the training materials, the evaluation team created interview questionnaires and interviewed the following individuals who contributed to the findings and recommendations in this report:

- The instructors for the required training, including: the instructor for the Basic Upgrade Package Contractor Training and the instructor for the Advanced Upgrade Package Technical Training, Hands-On Duct Leakage Training, and Combustion Safety and Depressurization Testing Hands-on Training.
- Program and project managers from Build It Green who are directly involved with implementing the Whole-House Program and training.
- We created interview instruments and conducted in-depth interviews with Whole-House Program contractors and Raters, and collected and summarized the responses. (The training evaluation team also contributed questions to the contractor and Rater surveys that helped us understand attitudes about the training they received from the program. We reviewed these survey responses as part of the training assessment.)
- PG&E’s Energy Training Center staff and PG&E staff provided context for the training assessment.

2.6.6. Materials Reviewed

The primary training and associated materials that we reviewed include:

- PG&E Energy Upgrade California program materials—online marketing, program description, how to get involved, the benefits of becoming a participating contractor
- PG&E Energy Upgrade California policy and procedures manuals—the specifics of program requirements for completing upgrade measures, including reporting documents
 - *Energy Upgrade California 2011-2012 Whole House Rebate Program Participant Handbook*, by Build It Green (v. 3.6, 12/27/12)

- *Energy Upgrade California 2011-2012 Whole House Rebate Program Installation Specifications*, by Build It Green (v. 1.3, 1/16/12)
- *Whole House Combustion Safety Test Procedure*
- Materials from required program training:
 - *Participation Workshop* slide deck and online recorded webinar
 - *Basic Training Energy Upgrade California*—workbook, slide deck, and supporting documents
 - *Advanced Training Energy Upgrade California*—workbook, slide deck, and supporting documents
 - *Combustion Safety and Depressurization Testing Hands-on Training*—slide deck and handouts
 - *Duct Leakage to Outside Hands-on Training*—slide deck and handouts
- PG&E’s Energy Upgrade CA web page
 - Recorded webinars:
 - *SALES: Whole House Sales Strategies that Work*
 - *The Business Opportunity through Energy Upgrade California*
 - *MARKETING: Whole House Marketing Tactics Worth Stealing*
 - *Modeling Existing Homes with EnergyPro*
 - *An Introduction to Green Energy Compass*
 - *Green Energy Compass* job submission portal
 - Contractor online resources:
 - Online document library
 - Events calendar
 - FAQ’s
- *Field Quality Assurance (QA) Score Sheets*—a random sample of QA score sheets for 50 jobs were selected and reviewed to identify performance gaps
- *Workshop in a Box*—marketing resources to enable contractors to host homeowner workshops

2.6.7. Assessment Methodology and Criteria

Our methodology and criteria for assessing contractor training were similar to those we used to assess the similar EUC training offered by Southern California Edison (SCE) as reported in our earlier report *2010–2012 PG&E and SCE Whole House Retrofit Program Process Evaluation*

Study – PGE0302.01. This approach supported both a separate assessment of training effectiveness for PG&E and comparison of the two training efforts.

To assess the PG&E training, we asked the following questions that we also asked when assessing SCE’s training:

- Does the training provide an agenda or a statement of the topics and training objectives?
- Are the training objectives precise and measurable?
- Is the training instructor-centric or student-centric? That is, does the instructor drive the training and the students simply listen and attempt to retain what is presented, or do the students actively participate interactively with the instructor?
- Are there opportunities for students to practice the skills described in the training objectives?
- Did the training apply adult-learning principles and practices?

In reviewing the training materials, we considered the following:

- How well do the materials support behavioral change? For example, were there specific job aids or worksheets to help assess or analyze options and to help take action? Did the training include information on where or how to get help taking action?
- Did the materials include motivation for action? For example, were there examples of “typical” benefits realized through actions or measures addressed by the course? Were there case studies of actual implementations and benefits derived?

The adult-learning principles that we considered during this assessment are as follows.

- **Learner orientation, buy-in, and engagement**

The focus of the training is on the learner rather than the presenter. Buy-in is supported with content or an activity that helps participants see the value of the training; the usefulness of the learning is demonstrated. There are activities that enable the learners to discover important information on their own, and activities that enable the participants to contribute ideas. The class builds on the students’ prior learning or experience and the class meets needs of different learning styles.

- **Learner success engineering**

The class includes activities that enable the participants to indicate and/or demonstrate their level of experience and expertise, and examples and stories that connect new learning to the participants’ prior learning and experience. A variety of instructional methods are used to ensure that visual, aural, and kinesthetic learners’ needs are addressed.

- **Practice, application, interactivity**

The class activities reflect the learning objectives, including an appropriate mix of terminal performance and enabling objectives. There are problem-solving activities that actively engage the learners, and opportunities for participants to apply immediately their new learning in the classroom. Class materials include a participant workbook for hands-on

activities to check learning and comprehension. Learners are actively engaged in discovering answers, and the design includes checks for comprehension before leaving a key topic area. The class includes opportunities for learners to practice what they have learned as they learn it.

■ Practice and application are crucial to training effectiveness

Many studies indicate that adults learn best—and are more likely to retain and apply their learning—when the learning experience includes a variety of teaching styles and methods and delivery modes. Research clearly shows the positive affect that actively involving participants has on the long-term effect of the training.

■ Lesson plan and content decisions

The learning objectives are specific, observable, and measurable. There is a clear focus on key content and there is an organizing principle. There is an appropriate amount of content given the length of the training.

■ Learning objectives include Terminal Performance Objectives (TPOs) and Enabling Objectives (EOs):

- TPOs are the “main things” you want participants to do as a result of the training. The TPOs of a course should directly reflect the desired outcomes. They describe what the training activities should address, and they define the parameters of what would be a final exam.
- Enabling Objectives (EOs) are the subsidiary things that participants must know or do to accomplish the TPOs. They are the building blocks of the TPOs. The EOs set the parameters for teaching points and practice opportunities.

Both TPOs and EOs should be written as measurable, observable behaviors. Learning objectives describe what the student will be able to do after attending the training, and do not describe what the instructor is going to present in the training.

3. FINDINGS

3.1. Participant Survey

Table 2 shows how participants learned about the program. The most common ways are through contractors, family or friends, PG&E letters, and city or county governments (which also increased over 2011). While mortgage lenders played a notable role in 2011, none of the respondents acknowledged financial agents in 2012. Instead, neighborhood parties appear of increased importance.

Table 2: How Participants Heard of the Program

	2012 (n=100)	2011 (n=62)
Contractor	32%	34%
Family/Friend	12%	16%
Letter from PG&E	8%	5%
City or County	8%*	2%
Neighborhood party	7%	2%
Online	6%	5%
The Whole House Program Website	4%	2%
Flyer or door hanger	4%	2%
Other	4%	2%
Don't know	4%	-
Newspaper advertisement	3%	5%
Radio	3%	3%
Local Government and/or Local Energy Efficiency Rebate Program	2%	—
Email announcement	1%	—
Television	1%	3%
Retailer	1%	—
Transit/Bus	—	2%
Mortgage lender / real estate agent / bank	—	11%
Energy champion or ambassador	—	2%
Mail (unspecified)	—	5%

* Statistically significant difference at 90%

Table 3 shows that the Whole-House Program website remains an important source of information as roughly half of participants visit it. Participants also rate it highly for content.

Table 3: Participants EUC Website Visitation & Feedback

	2012 (n=100)	2011 (n=62)
Visited Site	47%	52%
Gave a good understanding of program offerings	8.5	8.2
Information was easy to understand	8.4	8.5
Accurately reflected my program experience	8.1	8.2

Means are from those visiting the site, and are derived from 11-point scales where 0 means “completely disagree” and 10 means “completely agree.”

Table 4 provides information about contractor marketing. Referrals remain the dominant way of finding a contractor, followed by the Whole House program website and other websites. While the majority of participants contacted only one contractor, almost 60% seek a second or third opinion.

Table 4: How Participants Find a Contractor

	2012 (n=100)	2011 (n=62)
Number of Contractors Considered		
Contacted one contractor	41%	53%
Contacted two contractors	33%*	13%
Contacted three contractors or more	25%	35%
Mean	2	2
Median	1	1
How Participants Found the Contractor (Multiple Response)	(n=100)	(n=62)
Referral from a friend/neighbor	24%	29%
Whole House Program website	13%	13%
Internet/other website	11%	10%
Contacted by the contractor (primarily face-to-face and telephone)	10%	6%
PG&E website	7%	5%
A workshop/meeting I attended about the program	7%*	2%
Town/city government	5%	0%
Angie’s list	5%	3%
Retailer	4%	0%
Yellow pages of a phone book	3%	3%
Through the program/other party involved in the project	2%	8%
Flyer/mailer	1%	10%*

	2012	2011
Already knew the contractor	1%	5%
TV/radio	1%	2%
Mortgage lender / loan officer / real estate agent or bank	0%	11%
Newspaper, magazines or other print media	0%	5%
Don't know	5%	0%
Other	5%	3%

* Statistically significant difference at 90%.

3.1.1. Participant Motivation

Table 5 lists various factors that influence program participation. The most important factors motivating home-energy upgrades remain the improvement of home comfort, monetary savings, and lower energy usage. Interestingly, it appears that PG&E and local government incentives were not as important in 2012 compared to 2011, this may be because of the decrease in ARRA funding and the associated additional incentives offered by cities and counties.

Table 5: Participant Motivation to Complete Home Energy Upgrades

	2012 (n=100)	2011 (n=62)
Improving the comfort of your home	4.6	4.7
Saving money on your energy bills	4.5	4.5
Reducing your energy usage	4.5	4.6
Incentives available from the utility	4.1	4.6*
Reducing the environmental impact of your home	4.0	4.0
The home energy assessment you received	4.0	4.3*
Improving the air quality in your home	3.7	4.0
Increasing the value of your home	3.7	3.7
Addressing health and safety issues in your home	3.6	3.9
Addressing energy efficiency prior to the installation of solar panels	3.5	N/A
Replacing failing or broken equipment	3.5	4.0*
Incentives available from your city or county	3.0	4.1*

* Statistically significant at 90%.

Means are on a 5-point scale where 1 means “not at all important” and 5 means “very important.” All means are derived using valid responses, i.e., a few data points were removed when respondents stated “don't know” or refused to answer.

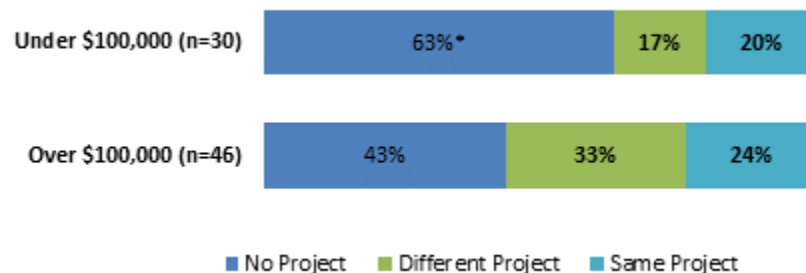
While incentives ranked highly overall as a motivating factor, program incentives are more important for some customers than others. Table 6 shows that almost a quarter of participants would have done the exact same project without PG&E incentives.

Table 6: Program Incentive Influence on Project Decision

Without program incentives, I would have done...	2012 (n=100)	2011 (n=62)
No project at all	48%	35%
A slightly different project	24%	39%*
The exact same project	22%	21%
Don't know or refused to answer	6%	5%

* Statistically significant difference at 90%.

The program has more of an influence on customers with household incomes of \$100,000 or less (Figure 1).

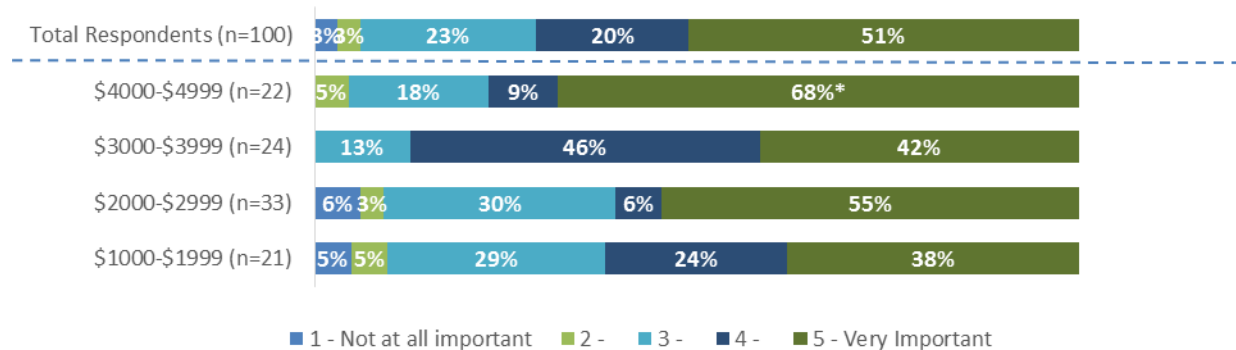


Based on valid responses. * Difference statistically significant at 90%.

Question: Which of the following best describes the type of home remodel you would have done without the program's incentives?

Figure 1: Relationship between Income and Likelihood to Conduct the Same Project

Half of all participants said the incentive was “very important” in their decision to conduct home upgrades. We explored whether incentive importance was different based on the incentive amounts received. Figure 2 shows that incentives of \$4,000+ have a greater influence on decision making than smaller amounts.



* The difference is statistically significant at 90%. Based on valid responses.

Figure 2: Incentive Importance Overall and by Rebate Amount

3.1.2. Participant Characteristics

Table 7 provides an overview of program participants’ demographic information. Notable characteristics include:

- Two-thirds of all program participants are between 35 and 64 years old, another 21% are over 65 years old.
- 61% of all program participants have an annual household income above \$ 75,000, and almost half of the participants above \$100,000.
- The majority (76%) is at least college educated.

Table 7: Participant Demographics

	2012	2011
Participant Age	(n=100)	(n=62)
18-24	0%	3%
25-34	6%	15%
35-44	19%	19%
45-54	16%	23%
55-64	30%*	15%
65-74	16%	19%
75 and older	5%	6%
Refused	8%	-
Household Income	(n=80)	(n=61)
Over \$150,000	30%	34%
\$100,000 to \$150,000	31%*	18%
\$75,000 to \$100,000	15%	8%
\$50,000 to \$75,000	10%	18%*
\$35,000 to \$50,000	6%	11%
Under \$35,000	8%	10%
Education	(n=100)	(n=62)
Less than high school	-	-
High school graduate	9%	5%
Some college, vocational , or technical school	15%	19%
College educated (including post graduate)	74%	74%
Refused	2%	2%
Race/Ethnicity (multiple response)	(n=100)	(n=62)
White/Caucasian	73%	77%
Hispanic, Mexican, Latino, Puerto Rican, Hispanic	8%	5%

	2012	2011
Chinese	6%	10%
Other Asian, Pacific Islander	3%	3%
Indian, South Asian	7%	3%
Mixed, Multi-racial	3%	2%
Black or African American	1%	-
Refused	2%	2%

* Statistically significant difference at 90%.

Table 8 shows that most participants live in a two-person household. While most participants are childless, the average household size is 2.7.

Table 8: Household Size and Composition

	2012	2011
Number of People in Home (including children)	(n=100)	(n=62)
1	13%	8%
2	37%	52%*
3	24%	19%
4	16%	15%
5 or more	7%	6%
Refused	3%	-
Number of Children in Household	(n=100)	(n=62)
0	48%	58%
1	19%	18%
2	15%	13%
3	3%	2%
4	0%	2%
Refused	15%	6%

Table 9 highlights key features of upgraded homes. More than half of the participants live in 1,000–2,000-square-foot homes built before 1960.

Table 9: Housing Characteristics

	2012	2011
Size of Home	(n=100)	(n=62)
3500 or more square feet	7%	N/A
3000 to 3499 square feet	4%	N/A

	2012	2011
2500 to 2999 square feet	6%	N/A
2000 to 2499 square feet	14%	N/A
1500 to 1999 square feet	34%	N/A
1000 to 1499 square feet	23%	N/A
Less than 1000 square feet	3%	N/A
Don't know	3%	N/A
Year House was Built	(n=100)	(n=62)
2001 and more recent	1%	-
1991 to 2000	1%	11%
1981 to 1990	12%	11%
1971 to 1980	13%	11%
1961 to 1970	8%	11%
1951 to 1960	14%	18%
1941 to 1950	10%	19%
1940 or earlier	21%	18%
Don't know	20%	-
Length of Ownership	(n=100)	(n=62)
Less than 5 years	29%	48%*
6-10 years	10%	13%
11-15 years	10%	6%
16-20 years	15%	8%
21-25 years	11%*	2%
26-30 years	6%	8%
More than 30 years	17%	15%
Length of Intended Future Ownership	(n=100)	(n=62)
Less than 5 years	9%	5%
6-10 years	18%	19%
11-15 years	10%	8%
16-20 years	10%	10%
More than 20 years	49%	42%

* Statistically significant at 90%

Table 10 shows that most home upgrades are standalone projects, not an extension of existing home remodeling.

One-third of participants completed the project when replacing central heating or cooling, many others upon the purchase of a new home, upon retirement, or when expecting changes to the household energy usage over the next six months.

One-fifth of the respondents sought loans or other financing to pay for the upgrade.

Table 10: Project Type, Timing and Finance

			2012	2011
Project Type			(n=100)	(n=62)
Stand Alone			88%	90%
Extension of Existing			11%	10%
Project Timing			(n=100)	(n=62)
Replacement of heating or A/C needed			32%	44%
Other changes to household within 6 months		(electric cars)	13%	N/A
Home sale			2%	N/A
Life Events			(n=100)	(n=62)
New Home Purchase			18%	32%*
Recently Retired			15%	19%
Number of people in home declined			4%	3%
Number of people in home increased			3%	5%
Expect children			3%	8%
Payment Type			(n=100)	(n=62)
Used Cash			71%	74%
Additional non-PG&E incentives			27%	60%*
	HH Income Less than \$100,000 (n=30)	HH Income Over \$100,000 (n=46)		
Financing	23%	16%	21%	50%*

* Statistically significant difference at 90%. Multiple responses possible for some questions.

3.1.3. Participant Satisfaction

Table 11 indicates that a vast majority is highly satisfied with the program. Key reasons for participant satisfaction include meeting general expectations, affordability due to financial incentives, home comfort, and future cost savings. Among satisfied customers, the most prominent complaint was the long waiting time to receive the rebate. Among neutral or dissatisfied program participants, the predominant negative experiences were problems with the contractor and the quality of their work, and a lack of changes in the energy bill.

Table 11: Overall Satisfaction with Program

	2012 (n=100)	2011 (n=62)
Overall Satisfaction*	4.6	4.7
Program Experiences for Satisfied Participants (4 or 5 rating)	(n=91)	(n=58)
Positive Experiences		
Met expectations/no problems (general)	27%	24%
The financial incentives/rebates were good/made it affordable	25%	36%
House is more comfortable	21%	28%
The retrofit is saving me money	21%	22%
Program/service is good/easy/helpful	16%	21%
Satisfied with improvements/equipment/appliances	13%	10%
Contractor/staff was good, professional, nice, etc.	12%	12%
The retrofit is saving me energy / is good for environment	8%	19%*
House is better for my health/safety	7%	5%
Negative Experiences		
It took a long time to receive rebate/haven't received rebate	3%	9%
Too much/cumbersome paperwork	1%	7%
No results/no difference in bill/home comfort	1%	2%
Poor quality of work/didn't do what was promised	1%	—
Program Experiences for Neutral and Dissatisfied Participants (1–3 rating)	(n=9)	(n=3)
Positive Experiences		
The retrofit is saving me energy / is good for environment	11%	—
Satisfied with improvements/equipment/appliances	—	33%
Negative Experiences		
Contractor/staff was not good, professional, nice, etc	56%*	33%
Poor quality of work/didn't do what was promised	33%	-
No results/no difference in bill/home comfort	33%	33%
Too much/cumbersome paperwork	11%	33%*
It took a long time to receive rebate/haven't received rebate	—	67%

Multiple responses possible.

Scores are on a 5-point scale where 1 means “very dissatisfied” and 5 means “very satisfied.”

* Statistically significant difference at 90%.

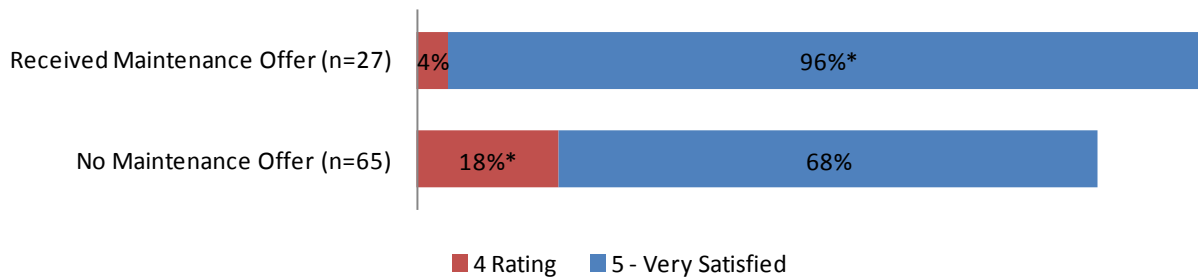
Table 12 shows participant satisfaction with contractors and the inspection process (if applicable). Almost all participants (90%) would recommend their assessment contractor. Reasons for dissatisfaction predominantly focus on customer relations such as rude or rushed staff, poor communications, and pricing. Notably, all respondents who were offered a maintenance program were highly satisfied (5 rating) with their contractor.

Table 12: Satisfaction with Contractors and Inspection Process

	2012	2011
	(n=100)	(n=62)
Satisfaction with Assessment Contractors		
Level of knowledge about the work to be done	4.6	4.6
Professionalism	4.6	4.5
Knowledge of available rebates	4.5	4.5
Answers to questions	4.5	4.5
Knowledge of available financing options	4.0	4.2
Would recommend the assessment contractor	90%	90%
Satisfaction with the Contractor Who Performed the Upgrades	(n=100)	(n=62)
Overall quality of the equipment installed by the contractor	4.6	4.7
Overall quality of the work performed by the contractor	4.3	4.4
Satisfaction with Inspection	(n=64)	(n=42)
Satisfaction with inspection process	4.7	4.7

Means are on a 5-point scale where 1 means “very dissatisfied” and 5 means “very satisfied.” All means and percentages are derived using valid responses, i.e., a few data points were removed when respondents stated “don't know” or refused to answer.

The data shows that maintenance offers from contractors are associated with higher overall program satisfaction scores. Of all customers receiving a maintenance offer, 96% were “very satisfied” with the program overall compared to 68% of customers who did not receive this offer (see Figure 3).



* Statistically significant difference at 90%.

Figure 3: Relationship between Overall Program Satisfaction and Maintenance Offerings

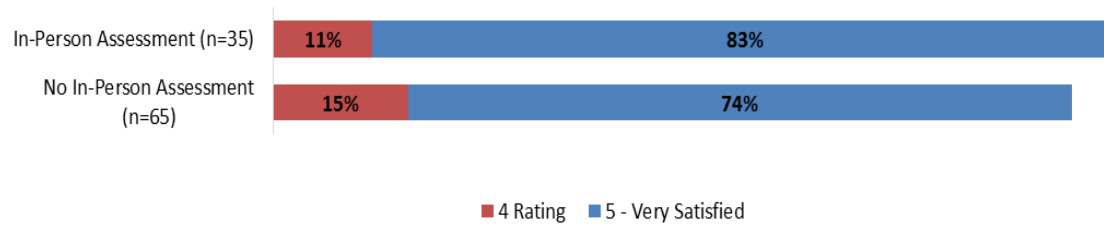
Table 13 summarizes participant satisfaction with the initial energy assessment. Most participants received the assessment report in writing or in-person.

Table 13: Participant Satisfaction with Assessment Report

	2012 (n=72)	2011 (n=43)
Quality of the report		
Satisfaction with the report	4.5	4.6
Comprehensiveness of the report	4.5	4.4
Format of Report	(n=100)	(n=62)
A written report was handed/mailed/ emailed to me	74%	71%
The contractor discussed it with me in-person	35%	45%
I went online to get the results	5%	0%
The contractor did not provide me with the results	1%	3%
I viewed it on the contractor's laptop computer	0%	2%
The contractor discussed it with me over the phone	0%	0%
Don't know	2%	2%

Means are on a 5-point scale where 1 means “very dissatisfied” or “not at all comprehensive” and 5 means “very satisfied” or “very comprehensive.” All means are derived using valid responses, i.e., a few data points were removed when respondents stated “don't know” or refused to answer.

Satisfaction with the assessment report and its comprehensiveness is high for both assessment formats (written or in-person). But customers that receive in-person assessments give higher overall program satisfaction ratings, as shown in Figure 4. Although the differences are not statistically significant, the data do indicate a trend that the program should consider. Of all participants receiving in-person assessments, 83% gave the highest ranking, opposed to only 74% of those receiving a written report (Figure 4).



Difference not statistically significant at the 90% level.

Figure 4: Relationship between Overall Program Satisfaction and Report Format

Table 14 shows what participants would tell their friends about the program. The top three answers highlight positive aspects such as affordability, savings potential, and positive experiences. The extent of sharing negative experiences remains low.

Table 14: What Participants Say About the Program

	2012	2011
What participants would tell friends ... (n=100)	(n=59)	
Do it/ worthwhile/ affordable	45%	39%
Energy or monetary savings	24%	42%*
Positive experience and satisfaction	24%	37%*
Increased comfort / positive effects	11%	7%
Negative experience	10%	3%
Negative information about the contractor	3%	-
Positive information about contractor	1%	-
Other	6%	1%

*Statistically significant at the 90% level. Multiple response.

While one-quarter of participants do not see the need for program improvements, the top three improvements recommended by other participants are more publicity for program; larger incentives; and better communication, program information, and customer service.

Table 15: Participant Recommendations

	2012	2011
Participant Suggestions for Improvement	(n=100)	(n=57)
No improvements needed	25%	26%
Publicize program more	18%	21%
More money (rebates, incentives, free goods, etc.)	14%	9%
Better communication/customer service/program information	10%	16%
Shorten the time it takes to get rebates/incentives	9%	12%
Loosen contractor restrictions/be able to use any contractor	8%	7%

	2012 (n=100)	2011 (n=57)
Participant Suggestions for Improvement		
Better training for contractors	7%	16%
Better prediction of savings	3%	-
Decrease the number of parties involved/streamline process	2%	5%
Make the process easier to understand	1%	4%
Other	5%	7%

Multiple responses possible.

3.1.4. Program Experience, Incentives & Benefits

Table 16 reveals that 46% of participants completed all recommended upgrades from the assessment. Interestingly, the participants who were offered a maintenance service were more likely to do all recommended upgrades (63%) compared to those who were not offered this service (40%).

Table 16: Participant Experience with the Implementation of Recommendations

	2012			2011
Portion of Recommendations Completed	Maintenance Service	No Maintenance Service		
	(n=27)	(n=65)	(n=100)	(n=57)
All	63%*	40%	46%	61%
Some	37%	57%*	52%*	39%
Don't know / Refused answer		3%	2%	0%
Reasons for Not Completing All Recommendations (multiple response)			(n=52)	(n=21)
Could not afford the rest of the work/ Ran out of money			54%	62%
They were relatively unimportant/not effective for savings			13%	19%
Planning on completing some in the future			10%	10%
They were unnecessary			6%	24%*
Did not want to have that additional work/disruption in the home			4%	-
They were not covered by the rebate			2%	5%
Haven't had the time to follow-up or schedule the work			2%	5%

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Other	8%	0%
Don't know	6%	0%

Maintenance and No Maintenance data does not add to 100 because of Don't Know responses. Only shown to highlight significant difference at 90%.

Table 17 highlights changes in participants' energy costs (self-reported by customers and not validated through billing analysis). Most participants say they reduced energy costs.

Table 17: Self-Reported Changes in Energy Costs

	2012 (n=95)	2011 (n=62)
Change in Utility Bills Since Home Upgrade		
Lower than past bills	81%	82%
Same as past bills	13%	8%
Higher than past bills	1%	5%
Too early to tell	n/a	2%
Don't know	5%	5%
Were You Surprised to See an Increase / No Change? (n=13)		
Yes	54%	N/A
No	46%	N/A

Participants reported equipment and behavior changes as shown in Table 18.

Table 18: Energy Using Equipment and Behavior Changes

	2012	
Operation of Central Heating System	%	n
Had operational central heating system before participating	98%	(n=100)
Central heating system has programmable thermostat	82%	(n=100)
Set heating system at a lower temperature than before	46%	(n=82)
Use heating system more often than before	13%	(n=98)
Operation of Central Air Conditioner		
Had operational central cooling system before participating	44%	(n=100)
Central cooling system has programmable thermostat	91%	(n=44)
Set cooling system at a higher temperature than before	30%	(n=40)
Use cooling system more often than before	20%	(n=44)

Table 19 shows that incentive estimates given to customers are mostly accurate from their perspective. Less than one-third applied for incentives outside the program, down from 57% in 2011, which is unsurprising given the drop in ARRA funding.

Table 19: Expected Incentives from PG&E and Other Organizations

	2012	2011
How the Actual Incentive Amount Compared to the Contractor's Estimate	(n=90)	(n=61)
Roughly the same	82%	79%
Lower than expected	9%	10%
Higher than expected	9%	11%
Incentives from Other Organizations	(n=93)	(n=60)
Applied for incentives outside of PG&E	29%	57%*
Did not apply, but aware of other incentives or financing options	14%	18%
Not aware of financing options	54%*	27%

* Statistically significant at 90%, based on valid responses.

Table 20 provides an overview of PG&E incentives and expected additional (incentives offered by external organizations) incentives. While PG&E incentives range from \$1,000 to \$4,500, additional incentives cover a significantly wider range. Among those additional incentives (27%), they ranged from a minimum of \$200 to a maximum of \$10,000.

Table 20: IOU and Additional Incentives Received

	2012 Incentive Amount		
	Low	High	Mean
PG&E Incentives (n=100)	\$1,000	\$4,500	\$2,710
Additional Incentives (n=100)	—	\$10,000	\$400
Total Incentives (n=100)	\$1,000	\$14,500	\$3,159

From 27 respondents who expected additional incentives, 11 (41%) could not estimate the rebate amount.

Table 21 shows the energy and non-energy benefits to the participants. Participants identify monetary savings, energy savings, and increased home comfort as the three top benefits from program participation.

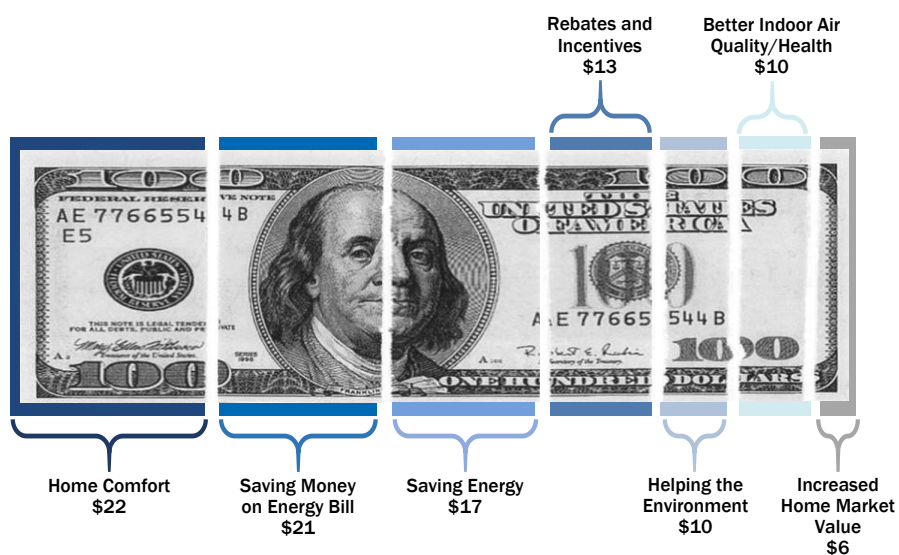
Table 21: Importance of Program Benefits

	Importance
Energy and Non-Energy Benefits	(n=100)
Saving money on utility bills	56%
Saving energy	52%
Home comfort	46%
Rebates and incentives	40%
Helping the environment	28%
Better indoor air quality/health	28%

Importance	
Energy and Non-Energy Benefits	(n=100)
Increased home market value	16%
Don't know	2%
None of these	1%

To rate the importance of program benefits, respondents were asked to list their three top benefits out of the list of options above. Thus, multiple responses were possible.

To help quantify energy and non-energy benefits for the program, we asked customers to represent the relative value of the top three program benefits they experienced by distributing \$100 between those three benefits. We aggregated the results and show the value of energy versus non-energy benefits in Figure 5. The survey split the categories of “saving money on energy bills” and “saving energy,” but it can be argued that these should be combined into one to represent energy benefits. If so, then out of \$100 dollars, participants would give \$38 for energy benefits and the rest to non-energy benefits.



“Considering the cost of your recent retrofit and these main benefits that you experienced, if you were to express the value of each of these benefits by distributing 100 dollars across your list – how much out of 100 dollars would you pay for...?”

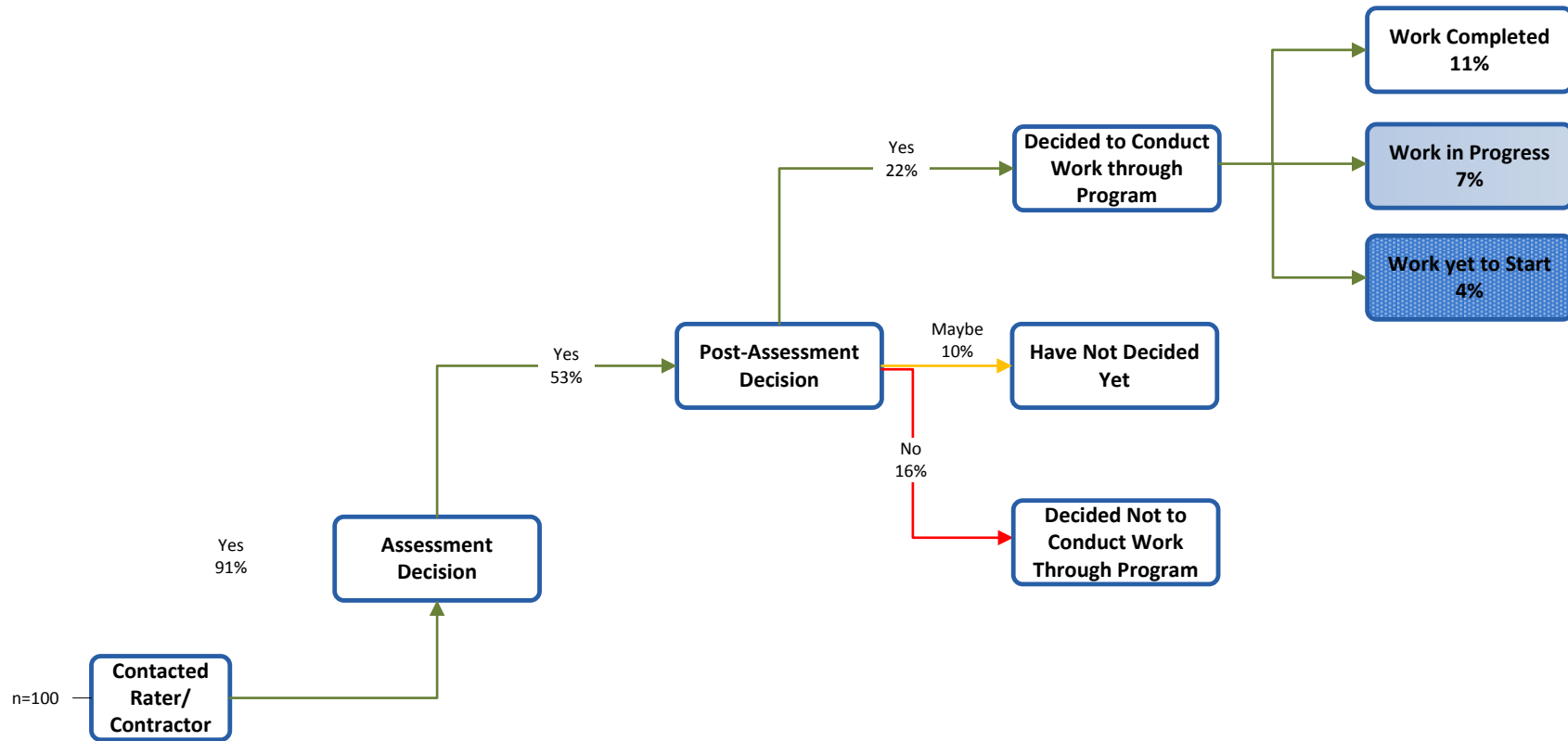
n=87

Figure 5: Quantifying Energy and Non-Energy Benefits

3.2. Energy Upgrade California Website Drop-Out Survey

Below we present the detailed findings from the survey of customers who visited the EUC website, requested that a contractor or rater contact them for more information but had not shown up in program records yet. While these customers were not found in program records at the time of our survey, we found that many of them self-reported that they indeed had a home assessment and some said they had already completed a job through the program. There are

several possible reasons for the discrepancy between survey results and program records including: (1) quality control issues within program data records; (2) a delay in contractors submitting paperwork to the program and program records getting updated; (3) the customer's perception of when a job is complete may differ from the program's definition, i.e. they could have not received/been approved for a rebate yet; and (4) we did not ask drop-out customers for whether they received a rebate yet in the survey to cross-check with program records. Figure 6 shows the outcome of this survey in terms of participation status; 53% of them say they received a home assessment and 22% have already initiated a whole-house program project. We combine the true drop-outs from this survey with the BIG drop-outs to explore participation barriers and ways to overcome them in Section 3.4



“Don’t know” responses are not shown in figure

Figure 6: Website Visitor Program Participation Status

3.2.1. How Customers Learned About the Program and What Motivated Them to Investigate

Table 22 shows how respondents first learned about the program. Nearly one-quarter said that they found out about the program from PG&E’s website.

Table 22: How Web Respondents First Learned About the Whole House Program

Way heard about the program	% of respondents (n=100)
PG&E website	24%
Internet ad	12%
Direct mailing to your home, by mail, or a door hanger	9%
Mentioned by family member, friend, co-worker or neighbor	7%
Newspaper ad	6%
Farmer's market or community event	5%
Television ad	5%
Work/employer	5%
Online/search engine general – not ad specific	5%
Radio ad	3%
Local government organization, meeting, website, etc.	3%
Whole House Program website	2%
A contractor	1%
Billboard or transit ad	1%
Called into the PG&E call center and they mentioned the program	1%
Retailer (e.g. Home Depot)	1%
Have not heard of them	1%
Email	0%
Home Energy Reports	0%
Other	4%
Don't know	5%

Table 23 shows respondents’ reasons for visiting the Whole House website. While nearly one-fifth (18%) said that they visited the website to find ways to save energy and/or lower their bills, about the same amount (19%) said that they were generally curious about the program and were not looking for something specific.

Table 23: Web Respondents Reasons for Visiting the Whole House Website (Multiple Response)

Reason for visiting website	% of respondents (n=100)
Curiosity/research in general	19%
Wanted to find ways save energy/lower bill	18%
Saw an ad/flyer/mailling/email (general)	15%
Looking to replace specific equipment in home	14%
Through PG&E (email, ad, phone call, main website)	9%
Word of mouth/heard through work	7%
Referred by a contractor/program ally	4%
Looking for more information/details about the program	4%
Presentation/seminar/webinar	3%
Other	1%
Don't know	11%

3.2.2. Website Feedback

Table 24 shows respondents’ ratings for the website. Most respondents (80%) said that they found the information they needed on the website, and most (77%) also rated the website as “helpful” (rating 4 or 5 on a 1-5 scale) in providing them the information they needed.

Table 24: Web Respondents Ratings of Whole House Website

	n	%	Mean
Found information needed on Whole House website (% Yes)	100	80%	N/A
Rating information on website “helpful” (Rating 4-5) in providing you with the information you needed to learn about the rebate program*	100	77%	3.5

* Question: On a scale from 1 to 5, with 1 meaning “not at all helpful” and 5 meaning “very helpful,” how helpful was the Whole House Program website in providing you with the information you needed to learn about the rebate program?

Table 25 shows information that customers could not find on the Whole House website. Customers’ responses to this question varied but mainly they wanted information on how to find contractors, and specific rebate and project cost information.

The quotes below are examples of typical responses:

“I wanted someone to come out for an inspection, but couldn't find out enough contact information for an assessment.”

“Specifics of how the program works... it was not clear when or how that would happen. There was also no phone number available on the website, which I found annoying.”

Table 25: Information That Web Respondents Could Not Find on the Whole House Website

Information that they could not find	% of respondents (n=16)*
How to find contractors	31%
Rebate info/cost info	25%
Information on specific equipment or upgrades	19%
Specifics about how the program works	19%
Other	6%
Don't know	6%

* Base: Customers who could not find the information they needed on the Whole House website (16% of all respondents). Respondents who were not sure if they found the information they needed were excluded (4% of all respondents).

3.2.3. Home Assessment Feedback

Not surprisingly among this sub-population, most of them found their home assessment contractor through the website.

Table 26: How Website Users Found Home Assessment Contractors

How found Home Assessment Contractors	% of respondents (n=91)*
Whole House program website	87%
Mailing or email (general)	2%
A referral from a friend/neighbor	1%
A workshop/meeting I attended about the program	1%
I was contacted by the Energy Rater a	1%
PG&E website	1%
Utility communication (general)	1%
Community outreach organization/event/local government	1%
Other	1%
Don't know	4%

* Base: Respondents who contacted an Energy Rater.
a Contacted via face-to-face discussion

Table 27 shows how respondents rated the difficulty of finding their energy raters, among those who contacted one, as well as their ratings for the information they received in the energy assessment reports. Most respondents (73%) rated the process of finding a Home Assessment Contractor as “easy” (rating 4 or 5 on a 1-5 scale). Only 58% of respondents felt the Contractor’s information met their expectations, this is mainly because some respondents did not think the Contractor gave them enough information to help them make a decision about installing recommended measures

Table 27: Energy Rater Feedback from Web Respondents

Metric	n	%	Mean
How easy was it to find an Energy Rater to conduct an assessment? (Rating 4-5)*	90	73%	4.1
Did the amount of information you received from the Energy Rater meet your expectations? (Rating 4-5)**	48	58%	3.6

* Question: On a scale of 1 to 5 where 1 means “not at all easy” and 5 means “very easy,”...

Base: Respondents who recalled contacting an Energy Rater (removes respondents who were contacted by the Energy Rater).

**Question: Please rate on a scale of 1 to 5 where 1 is ‘fell short of expectations’ and 5 is ‘exceeded expectations.’

Base: Respondents who recalled receiving a report after the assessment.

Table 28 shows respondents’ levels of satisfaction with the assessment. Overall, ratings were generally high for the assessments, however some respondents did not think the report helped them understand their home’s energy usage.

Table 28: Web Respondent Satisfaction with Assessment

Agreement with...	n	Agree (Rating 4-5)	Mean Rating
The Energy Rater gave me a better understanding of where energy improvements can be made in my home	41	80%	4.3
The home energy report was easy to understand	48	79%	4.1
The Energy Rater provided enough information to help me make a decision about installing recommended measures	41	76%	4.1
The home energy report was valuable	48	65%	4.1
The Energy Rater helped me better understand my home's energy usage	48	65%	3.9

Question: On a scale from 1 to 5 where 1 is “strongly disagree” and 5 is “strongly agree”, please indicate how much you agree with the following statements...

3.2.4. Demographics

Looking at the demographics of those who request a contractor through the EUC website, it appears that most of these customers fit the target market well for the program.

- 82% have central heating and/or air conditioning
- 88% live in single-family homes
- 89% live in homes built before 1990
- 74% have household incomes over \$50,000

Table 29: Web Drop-Out Survey Respondent Demographics

	% of respondents (n=100)
Have central AC and/or central heat	
Yes - central heating	75%
Yes - central air conditioning	47%
No - neither	17%
Don't know/Refused	1%
Housing unit type	
Single-family detached home	88%
Single-family attached house (townhouse, row house, excluding duplex)	9%
Duplex	2%
Apartment building or condominium with 2-4 units	1%
Number of people in the home year-round	
1	8%
2	25%
3	19%
4	29%
5	10%
6	6%
7	2%
10	1%
Number of children 18 and younger in home year-round	
0	34%
1	27%
2	26%
3	11%
4	1%
5	1%
When purchased home	
Within the last year	8%
One to two years ago	18%
Three to five years ago	14%
More than 5 years ago	60%
Year home was built	
2008 to 2012	1%
2001 to 2007	1%

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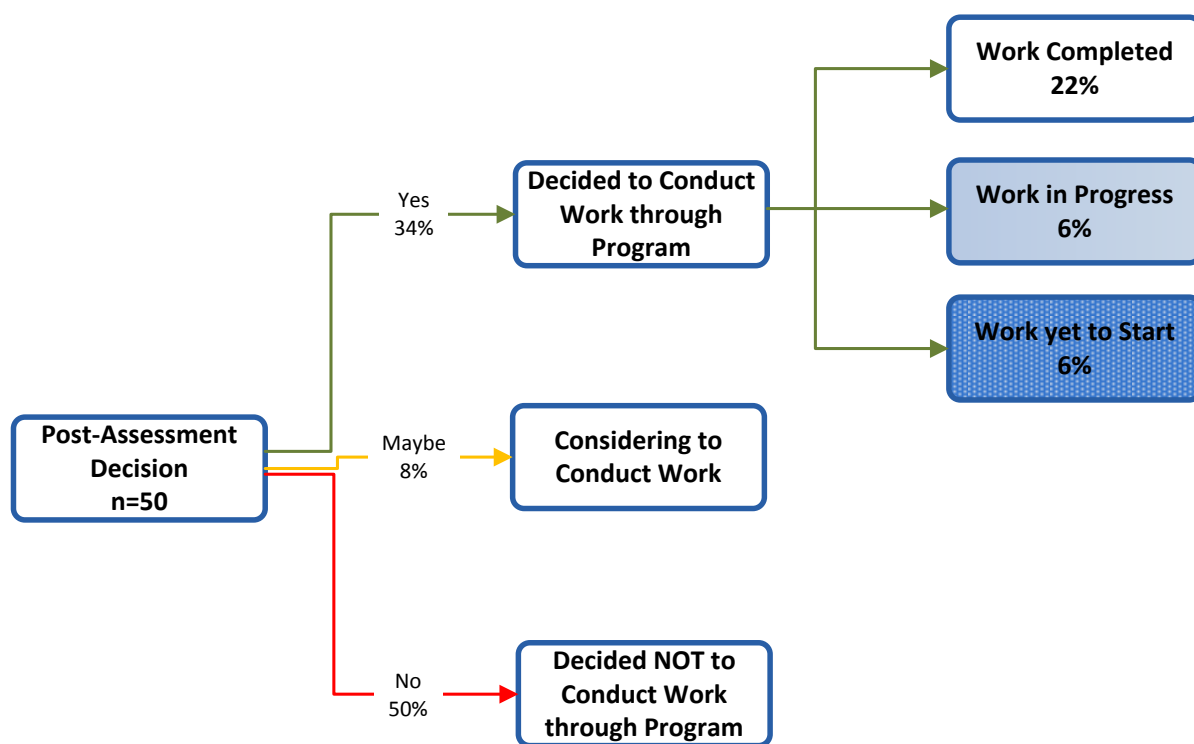
1991 to 2000	6%
1981 to 1990	16%
1971 to 1980	24%
1961 to 1970	11%
1951 to 1960	14%
1941 to 1950	9%
1940 or earlier	15%
Don't know/Refused	3%
Home square footage	
Less than 1000 feet	4%
1000 to 1499 square feet	29%
1500 to 1999 square feet	29%
2000 to 2499 square feet	12%
2500 to 2999 square feet	18%
3000 to 3499 square feet	4%
3500 or more square feet	2%
Don't know/Refused	2%
How long lived in home	
Less than 2 years	22%
3 to 5 years	26%
6 to 10 years	13%
11 to 20 years	25%
21-plus years	14%
Education	
Less than high school	0%
High school graduate	1%
Some college/Vocational or technical school	19%
College graduate	49%
Post graduate education	30%
Don't know/Refused	1%
Age	
18 to 24	0%
25 to 34	10%
35 to 44	29%
45 to 54	31%
55 to 64	16%

65 to 74	5%
75 and older	1%
Don't know/Refused	8%
Race or ethnicity	
White or Caucasian	55%
Other Asian or Pacific Islander	11%
Hispanic, Mexican, Latino, Puerto Rican, or other Hispanic	8%
Indian or South Asian	7%
Mixed or multi-racial	4%
Black or African American	2%
American Indian or Alaska Native	2%
Chinese	1%
Other	4%
Don't know	2%
Refused	5%
Current employment status	
Employed full time	77%
Retired	11%
Employed Part time	7%
Not employed, not seeking employment	3%
Don't Know/Refused	2%
Annual income in 2012	
Under \$25,000	1%
\$25,000 to under \$35,000	6%
\$35,000 to under \$50,000	6%
\$50,000 to under \$75,000	16%
\$75,000 to under \$100,000	15%
\$100,000 to under \$125,000	17%
\$125,000 to under \$150,000	6%
\$150,000 or more	20%
Refused	13%

3.3. Build It Green Drop-Out Survey

Below we present the detailed findings from the survey of customers who received a home assessment according to program records but had yet to complete a job according to the “job

status” variable in program records. While these customers classified as not completing a job, we found that many of them self-reported that they indeed completed a job through the program. There are several possible reasons for the discrepancy between survey results and program records including: (1) quality control issues within program data records; (2) a delay in contractors submitting paperwork to the program and program records getting updated; (3) the customer’s perception of when a job is complete may differ from the program’s definition, i.e. they could have not received/been approved for a rebate yet; and (4) we did not ask drop-out customers for whether they received a rebate yet in the survey to cross-check with program records. Figure 7 shows the outcome of this survey in terms of participation status; 34% have already initiated a whole-house program project. We combine the true drop-outs from this survey with the website drop-outs to explore participation barriers and ways to overcome them in Section 3.4.



Don't know responses are not shown in figure.

Figure 7. BIG Records Home Assessment Only Participation Status

3.3.1. How Customers Learned About the Program and What Motivated Them to Investigate

Table 30 shows how respondents first learned about the Whole House program. Twenty percent said that they heard about the program from their contractor.

Table 30: How BIG Respondents First Learned About the Whole House Program

Way heard about the program	% of respondents (n=50)
A contractor	20%
Direct mailing to your home, by mail, or a door hanger	16%
Mentioned by family member, friend, co-worker or neighbor	16%
Farmer's market or community event	10%
Newspaper ad	6%
Work/employer	6%
Email	4%
Television ad	4%
Retailer i.e. Home Depot	4%
Billboard or transit ad	2%
Whole House Program website	2%
Other	4%
Don't know	6%

Half of respondents visited the whole house website. Table 31 shows respondents' reasons for visiting the Whole House website. About one-third of respondents (33%) said that they saw an ad, flyer, mailing, or email that referred them to the site.

Table 31: BIG Respondents Reasons for Visiting the Whole House Website (Multiple Response)

Reason for visiting website	% of respondents (n=24)*
Saw an ad/flyer/mailling/email (general)	33%
Through PG&E (email, ad, phone call, main website)	17%
Looking to replace specific equipment in home	13%
Referred by a contractor/program ally	13%
Looking for financing/loans/rebates (general)	13%
Curiosity/research in general	8%
Wanted to find ways save energy/lower bill	8%
Looking for more information/details about the program	8%

* Base: Respondents who have visited the Whole House website.

Almost half of home assessment participants also visited the whole house website. Table 32 shows respondents’ ratings for the website. About two-third of respondents rated the website as “helpful” (rating 4 or 5 on a 1-5 scale) in providing the information they needed.

Table 32: BIG Respondents Ratings of Whole House Website

	n	%	Mean
Rating information on website “helpful” (Rating 4-5)*	24	67%	3.8

* Question: On a scale from 1 to 5, with 1 meaning “not at all helpful” and 5 meaning “very helpful,” how helpful was the Whole House Program website in providing you with the information you needed to learn about the rebate program?

Base: Respondents who have visited the Whole House website.

3.3.2. Home Assessment Feedback

Table 33 shows that the channels through which BIG survey respondents found their Home Assessment Contractor varies widely compared to respondents of the Website user survey (Table 26). The most cited channel is through the Whole House Program Website, followed by a referral from a friend or neighbor, as well as having attended a meeting or workshop.

Table 33: How BIG Drop-Out Respondents Found Home Assessment Contractors

How heard about Home Assessment Contractors	% of respondents (n=50)
I found the Energy Rater from the Whole House Program website	18%
It was a referral from a friend/neighbor	14%
A workshop/meeting I attended about the program	14%
I was contacted by the Energy Rater ^a	12%
Online general	12%
Community outreach organization/event/local government	10%
Mailing or email general	7%
I found the Energy Rater from the PG&E website	5%
Utility communication general	2%
Other	10%
Don't know	14%

^a The Energy Raters contacted the respondents either through face-to-face discussion (2 respondents) or by telephone (1 respondent).

Table 34 shows how respondents rated the difficulty of finding their energy raters as well as their ratings for the information they received in the energy assessment reports. Most respondents (74%) rated the process of finding an energy rater as “easy” (rating 4 or 5 on a 1-5 scale). Only 64% said that the information exceeded their expectations. One customer who did

not get enough information said, “The contractor was not very responsive to my questions and I do not feel that he gave me a full understanding of the programs available to me.”

Table 34: Energy Rater Feedback from BIG Respondents

Metric	n	%	Mean
How easy was it to find an Energy Rater to conduct an assessment? (Rating 4-5)*	47	74%	4.3
Did the amount of information you received from the Energy Rater meet your expectations? (Rating 4-5) **	50	64%	3.8

* Question: On a scale of 1 to 5 where 1 means “not at all easy” and 5 means “very easy,”...

Base: Respondents who recalled contacting an Energy Rater (removes respondents who were contacted by the Energy Rater).

**Question: Please rate on a scale of 1 to 5 where 1 is ‘fell short of expectations’ and 5 is ‘exceeded expectations.’

Table 35 shows respondents’ levels of satisfaction with the assessment. Overall, ratings were generally high; however some respondents did not think that the home energy report was valuable.

Table 35: BIG Respondent Satisfaction with Assessment

Agreement with...	n	Agree (Rating 4-5)	Mean Rating
The home energy report was easy to understand	50	80%	4.1
The Energy Rater gave me a better understanding of where energy improvements can be made in my home	44	79%	4.2
The Energy Rater helped me better understand my home's energy usage	50	76%	4.1
The Energy Rater provided enough information to help me make a decision about installing recommended measures	44	71%	4.0
The home energy report was valuable	50	66%	3.9

Question: On a scale from 1 to 5 where 1 is “strongly disagree” and 5 is “strongly agree”, please indicate how much you agree with the following statements.

* Based on valid responses.

3.3.3. Demographics

Looking at the demographics of those who receive a home assessment through the program, it appears that most of these customers also fit the target market well for the program.

- 94% have central heating and/or air conditioning
- 92% live in single-family homes
- 88% live in homes built before 1990
- 68% have household incomes over \$50,000

Table 36: BIG Drop-Out Survey Respondent Demographics

	% of respondents (n=50)
Have central AC and/or central heat	
Yes - central heating	92%
Yes - central air conditioning	64%
No – neither	4%
Don't know/Refused	2%
Housing unit type	
Single-family detached home	92%
Single-family attached house (townhouse, row house, excluding duplex)	8%
Number of people in the home year-round	
1	8%
2	48%
3	18%
4	14%
5	6%
6	6%
Number of children 18 and younger in home year-round	
0	65%
1	15%
2	13%
3	4%
Refused	2%
When purchased home	
Within the last year	2%
One to two years ago	6%
Three to five years ago	14%
More than 5 years ago	76%
Don't know/Refused	2%
Year home was built	
2008 to 2012	0%
2001 to 2007	2%
1991 to 2000	8%
1981 to 1990	14%
1971 to 1980	12%
1961 to 1970	16%

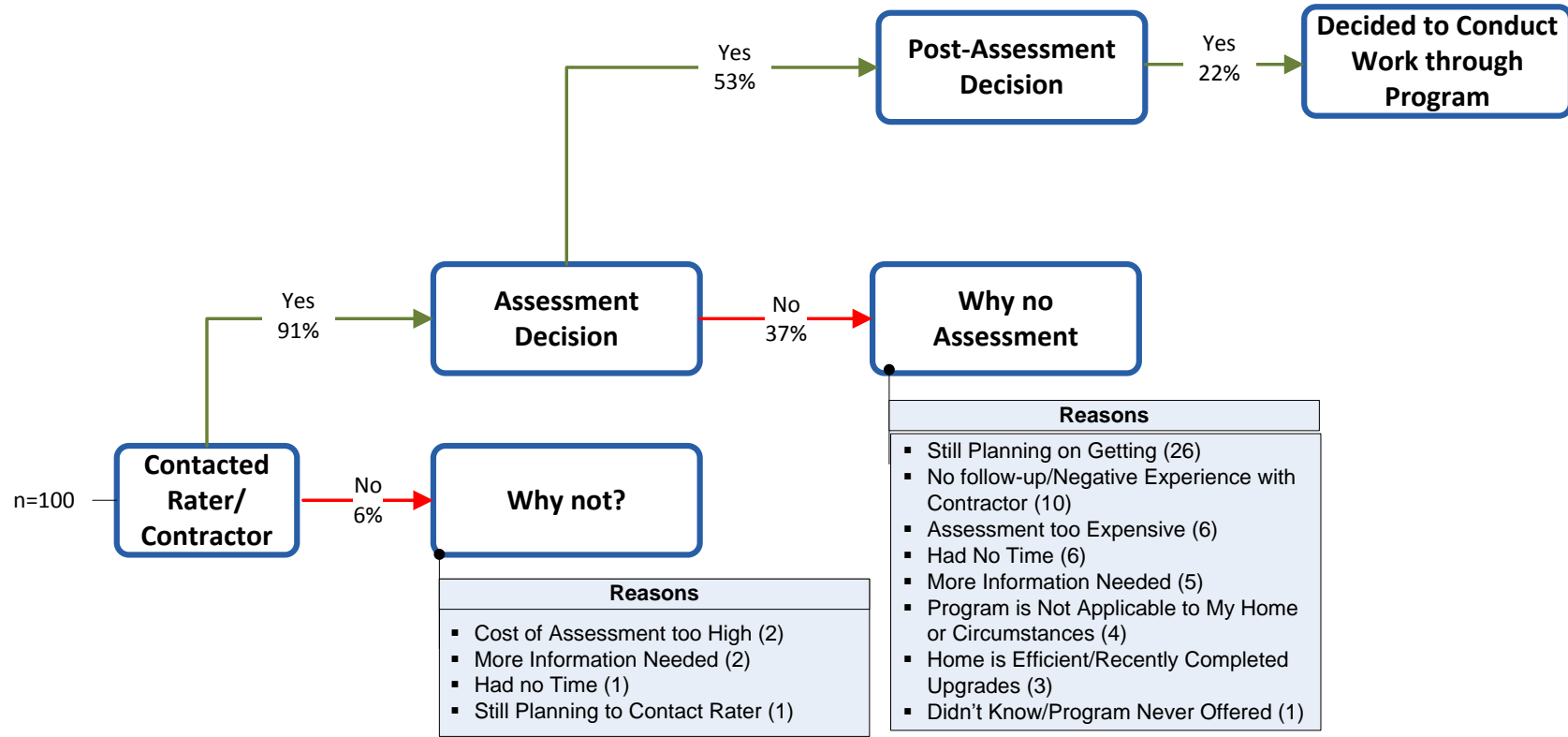
2010–2012 PG&E Whole House Retrofit Program Phase II Process Evaluation Study– Methods and Findings – PGE0302.06

1951 to 1960	26%
1941 to 1950	10%
1940 or earlier	10%
Don't know/Refused	2%
Home square footage	
Less than 1000 feet	4%
1000 to 1499 square feet	20%
1500 to 1999 square feet	36%
2000 to 2499 square feet	22%
2500 to 2999 square feet	6%
3000 to 3499 square feet	4%
3500 or more square feet	6%
Don't know/Refused	2%
Education	
Less than high school	0%
High school graduate	6%
Some college/Vocational or technical school	16%
College graduate	40%
Post graduate education	36%
Don't know/Refused	2%
Age	
18 to 24	0%
25 to 34	6%
35 to 44	14%
45 to 54	20%
55 to 64	24%
65 to 74	26%
75 and older	6%
Refused	4%
Race or ethnicity	
White or Caucasian	72%
Hispanic, Mexican, Latino, Puerto Rican, or other Hispanic	4%
Mixed or multi-racial	2%
Black or African-American	2%
Chinese	2%
Other Asian or Pacific Islander	2%

Other	4%
Refused	12%
Current employment status	
Employed full time	54%
Retired	32%
Employed Part time	6%
Not employed, not seeking employment	4%
Not employed, currently seeking employment	2%
Refused	2%
Annual income in 2012	
Under \$25,000	6%
\$25,000 to under \$35,000	6%
\$35,000 to under \$50,000	6%
\$50,000 to under \$75,000	10%
\$75,000 to under \$100,000	26%
\$100,000 to under \$125,000	14%
\$125,000 to under \$150,000	4%
\$150,000 or more	14%
Refused	14%

3.4. Combined Drop-Out Survey Findings

We combined the true drop-outs from the website and BIG surveys to better understand the barriers at each participation stage. Figure 8 below shows the flow of participants who show initial interest in the program by signing up on the EUC website and the barriers to taking the first program step by getting a home assessment. Given that this survey was fielded to a subset of website visitors (i.e. those that did not match with BIG program records at the time), the percentage of website visitors who conduct an assessment or decide to complete a job show in this figure are not extractable to the website visitor population.



*All percentages based on 100 respondents. Note that percentages in this figure do not add to 100% as it does not include 3% respondents who responded "don't know".

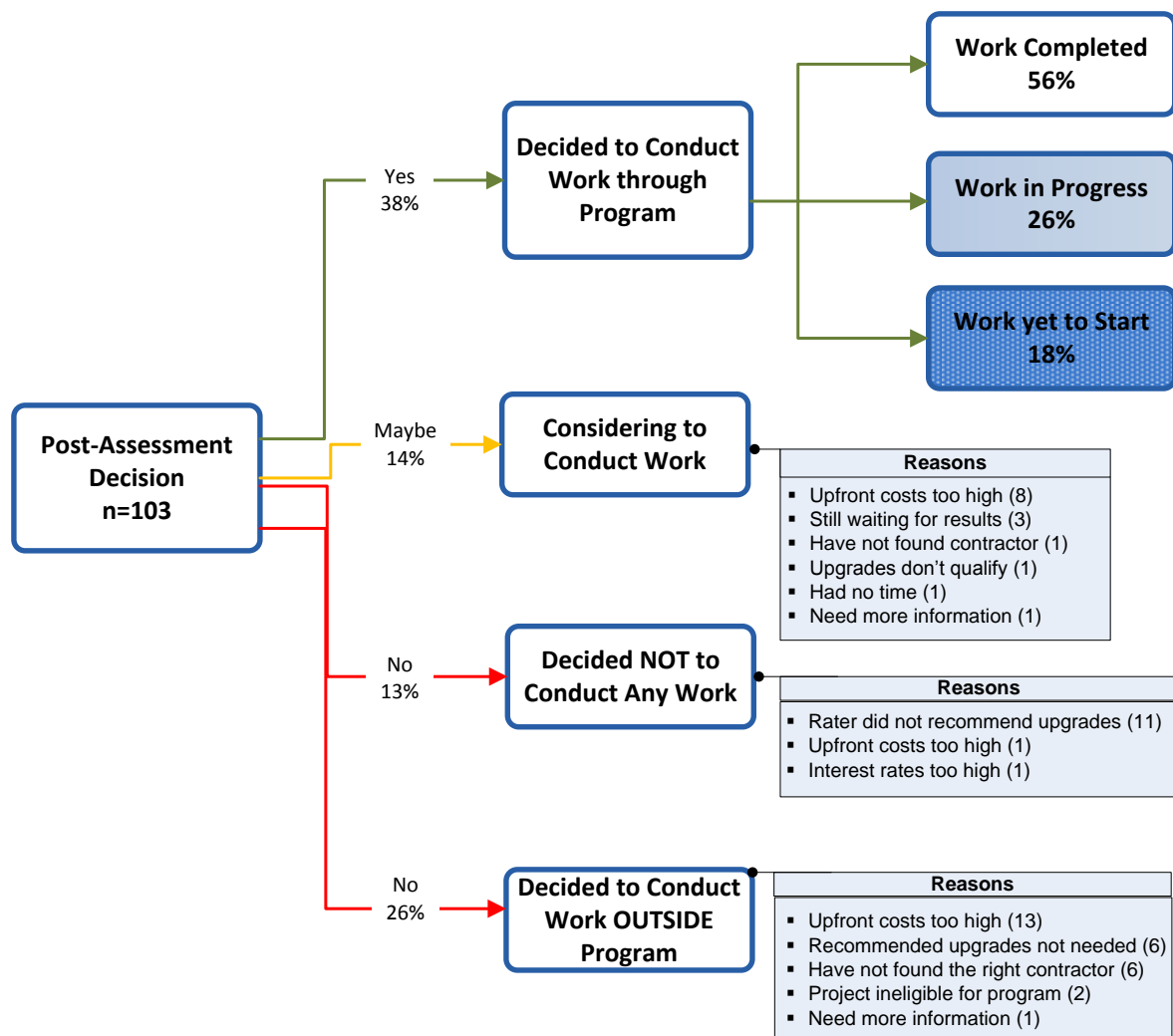
Figure 8. Barriers to Getting a Home Assessment

Table 37 further explains the top barriers to getting a home assessment.

Table 37: Barriers to Getting a Home Assessment

n	Reason	Example Quote
26	Still planning on getting assessment	n/a
10	No Follow up / Negative Experience with Contractor	"I submitted a request and they didn't follow up."
6	Assessment too expensive	"They wanted to charge 500 bucks". "I can't afford to invest any funds for upgrades at this time."
6	Had no time	"I had a baby at home and didn't have time then"
5	More information needed	n/a
4	Program is not applicable to my home or circumstances	"I don't use a lot of energy." "Propane was not included in any incentives. I didn't have enough sun to get solar."
3	Home is efficient / recently completed upgrades.	"It didn't seem like I would qualify because of the recommendation. I have already installed new windows and insulation." "We didn't need to because we already had the upgrades."
1	Didn't know / the program was never offered	"Didn't know that it was available." "I wasn't aware that I could use it just for financing."

Figure 9 below shows the barriers to turning assessments into program jobs. Given that the drop-out surveys were fielded to a sub-set of the program population, the percentage of customers who decided to complete a program job is not extractable to full home assessment population.



*Note that percentages in this figure do not add to 100% as it does not include 10% respondents who responded "don't know" to questions regarding their post-assessment decision

Figure 9. Post-Assessment Participation Barriers

Table 38 further explains the top barriers post-assessment.

Table 38: Barriers to Program Participation Post Assessment

n	Reason	Example Quotes
22	Upfront costs too high	“The rebates weren't significant enough.” “The rebates are not guaranteed unless I put in a certain amount of upgrades.”
11	Rater did not recommend any upgrades	“No upgrades were recommended.”
6	Recommended upgrades not needed	“To my knowledge, it wouldn't save us any money.”
7	Have not found the right contractor	“I could not contact them. I didn't feel like I was being helped. I felt liked they were trying to sell me something.” “The contractor never followed up with me.”
3	Project ineligible for program	“The program does not give rebates for my furnace.” “Too much red tape to qualify.”
3	Still awaiting results	n/a
2	Need more information	“The contractor was not very responsive to my questions and I do not feel that he gave me a full understanding of the programs available to me.” “It is too complicated.”
1	Interest rates too high	“The interest rates are too high.”
1	Had no time	n/a

Table 39 shows the importance of different financing tools amongst the respondents who said cost was a barrier to completing work through the program.

Table 39: Web and BIG Respondents with Interest in Financing Support

	% of respondents 4-5 Rating (n=20)	Mean (n=20)
Lower interest rate for loans for energy efficiency upgrades	35%	3.7
Non-mortgage loans through local bank or financial institution	20%	2.1
On-bill financing	15%	2.4
A payment plan or financing through your contractor	10%	1.9
Mortgage through a bank or financial institution for energy efficiency upgrades	10%	2.1
Any of the above (rating 4-5)	55%	

Question: Using a scale from 1 to 5 where “1” means “does not increase at all” and “5” means “increases a great deal”, please indicate whether these would increase your likelihood to install the recommended equipment from you Home Performance Audit.

Table 40 shows all drop-out survey respondents’ suggestions for how the program can better support the installation of energy upgrades.

Table 40: Suggested Program Support of Energy Upgrades

How program can support installing upgrades	% of respondents (n=150)
More incentives/higher rebates/lower up-front costs	23%
Tax incentives/financing options/low interest rate loans	14%
No restrictions on contractor/better access to contractors	11%
Provide incentives for more/different measures/areas of the home	9%
More information (general)	9%
Faster/easier incentive process	5%
More/better communication with program staff or contractors	3%
Free/replace measures	3%
Guarantee rebates or funding/continue defunded or expired programs	3%
Guarantee energy/bill savings	1%
Nothing	19%
Don't know	9%
Other	5%

One-quarter (26%) of the respondents conducted energy upgrades outside of the program after receiving the assessment. Table 41 provides an overview of the type and quantity of measures they installed.

Table 41: Energy Upgrades Outside of Program

Measures Installed Outside of Program (multiple response) n=27	
ENERGY STAR appliances	70%
Windows/Doors	48%
Air sealing	41%
ENERGY STAR Heating/Cooling	37%
Attic/Wall/Floor insulation	37%
Duct Sealing	33%
Solar Panels	11%

Number of Measures Installed Outside of Program	
7	4%
5	19%
4	19%
3	26%
2	22%
1	11%

3.5. Energy Rater Interviews

This section provides insights to the role of Energy Raters in the program and their approach to business, and presents findings from in-depth interviews with six Raters. We examined Raters overall satisfaction with the Whole-House Program, and the effectiveness of program components including training, the EnergyPro software, marketing, quality control, and program management.

3.5.1. The Energy Rater History and Role in the Program

PG&E launched the Energy Rater pathway in September 2012. Before 2012, the Energy Rater was hired as part of the contracting process for conducting upgrades through the program. The goal of creating the new Rater-only pathway, in which customers hire a Rater separately from the contractor, is to bring Raters into an additional customer-support role, and to be the point of contact that helps customers understand the program and encourage them to join. In some cases, Raters have the responsibility of being the main point of contact for the customer.

Energy Raters are HERS II-certified raters who conduct the test-in (pre-installation testing), test-out (post-installation testing), and energy modeling to identify upgrades in customers' homes and estimate savings.

Their role within the current program design can vary considerably, but is likely to take one of the following forms:

- The Rater could generate a customer lead and provide the rating services before handing off the project to the contractor. In this case, the Rater will likely recommend contractors to complete the upgrade, but is generally paid by the customer.
- The Rater generates a customer lead, provide the rating services, and coordinate contractors who complete the home upgrade. Here, the Rater's scope of work includes administrative work necessary for the program. Again, the Rater is paid by the customer.
- Contractors have generated the customer lead and decide to subcontract the rating process to a Rater. This becomes necessary when contractors' staff is only BPI-certified, which is sufficient for many energy upgrades, but not under the current program. In this case, Raters are most likely paid by the contractor.

- Raters are typically responsible for completing a job submission form—a one-page document that describes the scope of the job and shows who owns the project. This document needs to be submitted by the Rater in cases where the Rater is the first point of contact for the customers. Once a contractor is selected, the Rater and contractor complete a joint-collaboration agreement, which is submitted before the work is done.

The program implementers did not mention significant marketing efforts for Raters as part of the program design; instead they believed that it was up to the Raters to serve as a marketing channel on their own.

3.5.2. Rater Business Overview

The characteristics of the six Raters companies varied. One Rater said that they were the only Rater that served PG&E territory at their company of 70 employees. Two said they work at companies where four people served the PG&E territory, and the remaining three work at one-person firms. Table 42 shows that the length of time that a Rater had been with the program varied.

Table 42: Length of Rater Participation in the Program

Length of program participation	Raters (n=6)
Less than one year (April 2012 or later)	2
One to two years (April 2011-March 2012)	1
Two or more years (March 2011 or earlier)	3
Mean length of participation	2 years

Due to the variations in company size and history with the program, the number of Whole House jobs the Raters conducted in the past year also varied. None was able to provide the exact number of assessments they had conducted, but two of the six said that they conducted about 20, one estimated 20 to 25 assessments, and one estimated less than 20. The remaining two Raters said they conducted fewer assessments in the past year. One estimated 8 to 10 and the other said “just a couple.” The approximate mean number of jobs per Rater was 13.5.

All six Raters, however, said that they conducted jobs both inside and outside the program. The mean number of jobs they had covered outside the program since joining the program was about 16.8. All six Raters said that they also use HERS II protocol on assessments conducted outside the program. Four said that they also use BPI testing on homes outside the program, and two said that they used customized protocols that used elements of both HERS II and BPI but was not exactly like either.

3.5.3. Raters’ Overall Feedback

3.5.3.1. Program Satisfaction

The overall attitude of the Energy Raters toward the program—with a satisfaction score of 5.6 out of 10—was neutral and could stand to be improved. (See Table 43.) Four of the six Raters noted a lack of support from the utility, notably in the area of marketing with respect to referrals. For example, one respondent suggested creating marketing-support tools, such as a database for referrals, and emphasize marketing rather than training efforts in the future. Three of the respondents suggested improving program targeting and rebates by easing program requirements, incentivizing the assessment, and increasing program rebates “to make it worth their while.”

Table 43: Overall Program Satisfaction Ratings

Rating	Raters (n=6)
Lowest ratings (1 to 3)	0
Middle ratings (4 to 7)	5
Highest ratings (8 to 10)	1
Mean rating	5.6

Raters’ satisfaction ratings for the program components varied, as shown in Figure 10. Raters gave the highest ratings to the training from the Pacific Energy Center (mean rating of 7.5), and the lowest rating to marketing support (3.6) and referrals from the PG&E Gas Service Representatives (2.3). We discuss Rater satisfaction with these program components in more detail in section 3.5.4.

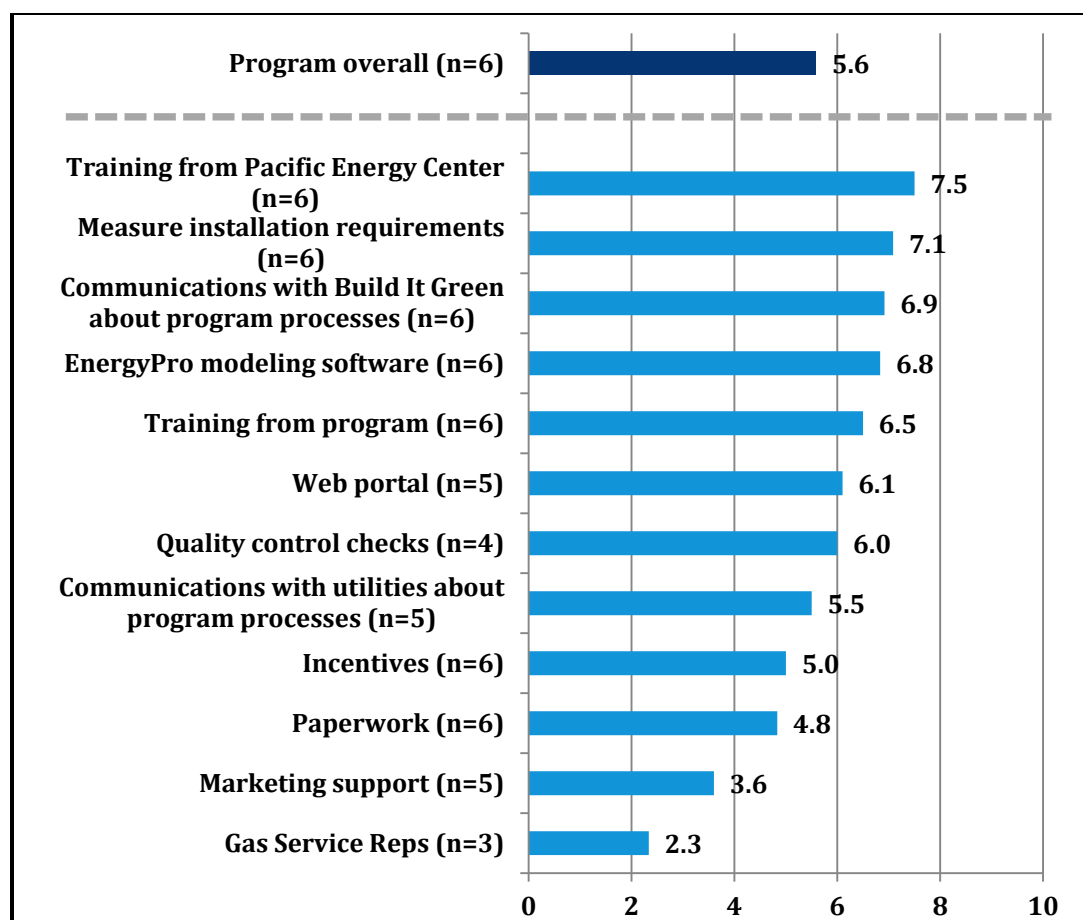


Figure 10: Summary of Mean Ratings for Program Component (0–10 scale)

3.5.3.2. Program Strengths

Raters mentioned several key strengths of the program, as shown in Table 44. Two Raters mentioned that the program promotes community awareness of improvements that can be made to the home. Two additional Raters said that the program helped improve building practices. One Rater said that the main benefit was the incentives.

Table 44: Program Strengths Mentioned by Raters (Multiple Response)

Program strength mentioned	n of Raters mentioning (n=6)
Promotes improved building practices	2
Improves home performance	1
Improves construction quality	1
Improve community awareness	2
Improve awareness of health and air quality issues	1
Improve awareness of efficiency	1
Good/better than having nothing (general)	1

Program strength mentioned	n of Raters mentioning (n=6)
Incentives for improvements	1

One program Rater said that the program benefits builders by changing their mentality and promoting higher quality of energy upgrades:

“The most positive feature [of the program] is the change in construction mentality. ... When us as auditors, we come out, we look at a building as a whole. And you can create a, for a client, you can create a, how would I say, unproductive upgrade based on their house’s condition. ... In construction today, there are non-participants in your program, they don’t look at that. For example, there was a lady who got her windows replaced ... probably about a year ago. But she had problems with water at the bottom of her crawlspace, there’s moisture coming from the floors. And when they replaced those windows, they blocked out ventilation for that house, where they should have focused on the floors because it was a moisture problem. ... So construction never looked at the house like that. All I’m saying is, when we come in we look at the house before we make an approach of an upgrade for the client that matches.”

– Participating Rater

The primary success of the program has been in training Raters and providing a standardized metric for energy efficiency statewide. All participating Raters said that they use EnergyPro, and are HERS II and BPI-certified.

3.5.3.3. Program Areas of Improvement

Raters described several key weaknesses of the program, particularly related to administration and customer support, as shown in Table 45.

Table 45: Program Weaknesses Mentioned by Raters (Multiple Response)

Program weakness mentioned	Raters (n=6)
Program administration	3
Mass targeting/bureaucracy	2
Unclear/too complicated guidelines	2
Lack of customer support	2
Need to improve customer understanding of rebate requirements and timing	1
Need to improve customer understanding of program generally	1
Improved marketing support	2
Incentives are not high enough	1

One Rater suggested that the program was marketed and implemented too broadly when it only applies to a certain market segment, and at a time when the program was still learning about the program-participation processes:

“They tried to do this mass targeting across the whole entire state; they had an important program. So I think they should have built one small program in one small community that really worked...figured it out, and then threw it out there like buckshot. Throwing it all out there with nothing really uniform and dialed in.”

– Participating Rater

Raters mentioned several possible improvements to the program, some of which address the key weaknesses they identified, and others to enhance other program offerings, as shown in Table 46.

Table 46: Program Improvements Mentioned by Raters (Multiple Response)*

Area of program improvement	Raters (n=6)
Increase incentive/offer additional incentives	2
Improve marketing	4
Smaller target audience/ manage participation expectations	3
Create database of referrals/ increase marketing support	2
Include health and safety messaging	1
Cover additional measures (renewables, non-EE)	2
Increase incentive/offer additional incentives	2
Simplify requirements	2
Improve relationships with contractors	1
Address customer behavior change	1

* This data was captured in several questions.

One Rater said that the program needed both to improve its marketing support and to manage expectations for recruiting participants going forward:

“I think if they put more marketing dollars into getting referrals instead of training and a lot of other things ... it would help, because they’ve got this report that they’ve done that they’re going to do 4.8 million houses by 2020, and what? They did 1,500 houses last year... they do 20,000 houses through 2018 and then they do a million and a half houses a year the next year, and then 2 million houses the last year. They say they’re ramping up but it’s an unrealistic expectation.”

– Participating Rater

3.5.4. Feedback on Specific Program Areas

We also investigated Raters’ attitudes and recommendations related to training efforts, EnergyPro software, marketing, quality-control processes, and program design.

3.5.4.1. Program Training Effectiveness

The training for Energy Raters for the Whole-House Program is the same as for participating contractors. All Raters are required to take the Advanced Upgrade Package Technical Training course described in section 3.7.3.3. This course is a one-day course, and the attendee must be BPI-certified. Raters may also take the Basic Package training course but are not required to do so.

None of the interviewed Raters took the basic class, but all six said that they attended the advanced training course. Only four said that they felt that the program gave them sufficient training to prepare them for the program. The other two Raters said that the training did not cover enough of the situations that they encounter in the field.

Table 47 lists additional training that the Raters want included in future sessions.

Table 47: Additional Training Topics Mentioned by Raters (Multiple Response)

Training topic wanted	n of Raters mentioning (n=6)
Technical training topics	4
Combustion testing/safety	3
Detailed follow-up on modeling with EnergyPro/ Explanation of why models pass or fail	3
Explanation of prescriptive packages	1
Program administration topics *	3
Paperwork requirements and processes	2
How rebates are calculated	1
QA processes	1
Sales training	1

* Two Raters mentioned wanting training on both technical and program administrative topics.

One Rater described the need for ongoing training in EnergyPro:

“I would say energy modeling—more of it, more often—would be great. You know, Build It Green, who administers the program now, has an ‘Ask the Expert’ for [another local] program, and it would be useful to have, like, an ‘Ask the Expert’ on the EnergyPro modeling side. Without feeling like, you know, you’re exposing some weakness in what you know, just to be able to talk through a situation that you’re modeling.”

– Participating Rater

All six interviewed Raters said that they and their rating staff (if applicable) are BPI-certified, and all also have received HERS II training. One Rater said that they attended BPI certification courses sponsored by PG&E, while another said that they attended PG&E BPI training specifically for multifamily buildings. The number of days the Raters spent on BPI training varied. One said they trained for five days, two said they trained for eight days, one said that

the training was three weeks, and one said that they trained for four weeks. Five of the six Raters said that they paid for their own BPI training.

3.5.4.2. EnergyPro Software Feedback

The interviewed Raters provided in-depth feedback about the EnergyPro software, which is used to model the home to help identify potential upgrades. All six Raters said that the software was adequate for the program’s current needs. However, all six also said that there was room for improvement, giving the EnergyPro software a mean rating of 6.8 out of 10 (and 33% giving the software a rating of 8 to 10).

Five of the six Raters said that EnergyPro captured all of the possible energy savings opportunities. Two Raters, however, qualified their answer by saying that it captured all of the possible energy savings for the Whole-House Program, but they felt the program is missing energy savings opportunities, and these opportunities are not captured by the model. Three Raters said that they wanted EnergyPro to model renewable energy measures. Four Raters said that EnergyPro is not completely accurate, but all say that it is accurate enough to identify upgrades. Two said that EnergyPro lacks accuracy due to calibration and technical issues, while two others said it is not sensitive enough and excludes potential savings opportunities, such as water crawlspace sealing, pipe insulation, air sealing, and lighting.

Two Raters said that finding all the energy saving opportunities with EnergyPro depends on how well the Rater knows how to use the software, noting that its level of accuracy depends on whether “you know how to use it” and “take the time to do it properly.”

All Raters said that they have been trained in using EnergyPro. In fact, five of the six interviewed Raters said they used it before participating in the program. The sixth Rater said that they were trained on EnergyPro through PG&E. The other five Raters said that they received multiple types of training, some from PG&E and some from other organizations. Raters gave mixed ratings to the training for EnergyPro. Because many of these Raters trained on EnergyPro through multiple courses, they rated some courses more highly than others.

“One of the problems with EnergyPro, and it’s a serious problem with EnergyPro ... is that even though the California Energy Code and the ACM, the Alternative Compliance Manual, requires EnergyPro to properly model the energy savings from converting a crawlspace from a vented crawlspace to an unvented crawlspace, it doesn’t have built into it any way to do that. ... So there’s a big hole right there, because we’re constantly getting our clients to seal up their crawlspaces and convert them to unvented crawlspaces, and we can’t properly model that savings.”

– Participating Rater

“You can insulate hot water pipes, or not, and there is, sometimes you see absolutely zero impact on the energy model. ... If EnergyPro is accurate, and there is no benefit to insulating hot water pipes, then we should stop suggesting it, requiring it, modeling it; we should just take the button out. ... The other issue is air sealing ... whether the house is X% of leakiness or 20% less, it’s not sensitive enough to show as another outcome in the energy model. So you’re spending time and energy doing air sealing, but you can’t demonstrate to the customer what that extra \$1000 they

spent on air sealing is doing for them. So I don't want to say [EnergyPros] is not accurate, it is a model of energy use ... but it's certainly not sensitive enough to be recording differences in energy leakage at the level that we seem to be able to improve existing buildings. ... I have buildings where I have improved the lighting, and it really is change in all the fixture, and it's a leap of faith when people wanna spend \$30 and \$40 for a light bulb when they had been spending more like \$1 for a light bulb, and it doesn't show up in the energy model as any kind of real improvement."

– Participating Rater

However, the Raters believed strongly in using energy modeling software in general, and said that the EnergyPro software had several key advantages. Four noted that the model helped increase compliance with standards; two Raters described the benefit of having a standard for comparing all tested homes. One said the software increases their credibility with clients, that they would not participate in the Whole-House Program without the standardization that the software provides.

"I believe that in order to communicate to our clients, we need to have a credible software that has a good reputation, that we can tell the clients, 'Hey, this is what your report is.' The other thing that I think is important is the fact that we base everything on the HERS II energy analysis that the state of California has, and that's an important feature, because it gives everybody a common benchmark, so that when I do a report, or somebody else does a report, we're at least attempting to be compatible, our reports. ... It's just, the HERS II program that the California Energy Commission set up, I think, is the most valuable and important part of this program. And if Energy Upgrade California were to move away from that, I would drop them in a flash."

– Participating Rater

One Rater added that they appreciated being able to use one software product for multiple energy-efficiency programs (such as local programs) in addition to the statewide Whole-House Program, as well as code compliance.

Raters said that they wanted EnergyPro to provide more information than it currently does. Recommendations to capture more saving opportunities include air sealing, crawlspace sealing, and renewables. One Rater, who gave the highest ratings to EnergyPro overall, stressed that the program should strive to be more accurate, but also said that EnergyPro can be more accurate if Raters understand it better.

3.5.4.3. Marketing Effectiveness

Only half of the Raters said they are actively trying to promote the program to customers. Two said that they did some marketing but did not emphasize the program much, and two said they did not do any marketing for the program. Of these four Raters, one said that they were still ramping up their role in the program as a new Rater, while the other three said that they chose not to market the program. One said that they do not conduct marketing generally and that their company is focusing on promoting other programs that are more lucrative to them than the Whole-House Program. Another said that their company has not made money with the Whole-House Program so they do not promote it. The third said that they rely on Build It Green and the website to generate clients for them. This indicates that the program design changes in

the Rater pathway may not be clear to Raters, as some of these Raters do not think that marketing the program is a role that they should play. They also may not know that they are expected to play this role. One Rater said, “It’s hard to market the program when they’re not marketing themselves.”

“The Energy Upgrade California program, I will say, what’s interesting about it is they pitch the rebate as an energy efficiency—a rebate for improvement of energy efficiency. But in most of the material they talk about ‘Home Performance.’ And ‘Home Performance’ is more than energy efficiency. It also correlates to comfort, and safety, and health, and longevity and durability of your home. So even the Energy Upgrade California program content or messages are a little bit confusing.”

– Participating Rater

Five of the six Raters said that they have customers coming to them asking about the program, and three said that they get referrals from the Whole-House Program website.

Overall, Raters were generally critical of the program marketing efforts, giving low mean ratings to both the program marketing support (3.6) and referrals from the PG&E Gas Service Representatives (2.5). Two Raters mentioned that they wanted the program to focus on increasing referrals. One Rater said that they had not been added to the EUC website.² The percentage of jobs that are referrals from the website varied from Rater to Rater. One Rater said that only “half a percent” of jobs came from the website, while another said that “about half” of all his jobs are website referrals. The mean percentage of jobs from the EUC website was 17.1%. Table 48 shows the Raters’ self-reported estimates of percentage of referrals from the website.

Table 48: Estimated Percentage of Rater Jobs Referred from the Energy Upgrade California Website

Percent of jobs referred from EUC website	Raters (n=6)
None	1
Less than 1%	1
Less than 10%	1
25%	1
50%	1
Don’t know	1

Five of the six interviewed Raters said that they are interested in marketing training. One of these six, however, said that their interest was conditional based on “personalized” training rather than “motivational speakers,” adding that they would prefer to receive more leads from

² We reviewed the EUC website and found that six of the nine Raters were on the site’s Rater directory as of May 2013. The site also listed several additional Raters statewide. However, the website may be more up-to-date than the list of approved Raters, which was compiled in February 2013, so we do not have any detailed analysis comparing the two lists of Raters.

the program rather than marketing training. The one Rater who was not interested said, “I don’t have confidence it would be time well spent” because they are already experienced in marketing and therefore already have enough jobs.

Overall, the Raters do not appear to be generating customers for the program, but instead are waiting for leads from the program website, contractors in their network or from Build It Green. The program would have to make some changes if they want the Raters proactively market the program:

- Update the website to educate customers about the benefits of choosing a Rater on the website and to refer them to a list of active Raters. (This list would have to be randomly ordered each time for a customer to make it fair to all participating Raters since most customers pick the first and second Rater listed).
- Update other marketing materials similarly, conduct marketing training with turn-key resources for Raters to use on their own, and potentially provide some Rater incentives tied to marketing (such as offering them incentives to buy down the assessment cost if they successfully meet a certain marketing goal).

3.5.4.4. Quality Control Feedback

The Raters had relatively little feedback on the quality-control strategies of the program, giving it a mean rating of 6.0 out of 10. One Rater gave quality control a low score (1 out of 10), saying that the program has too many requirements. One Rater, however, was concerned that the program’s protocols actually harmed the program by oversimplifying the EnergyPro modeling:

“You learn how to use [EnergyPro] right, and then you gotta use it wrong to make the energy companies happy. And then they complain that it’s not accurate, but it’s not accurate because they don’t use it correctly. We have to do a HERS II rating, then we do all these details, and then we take all our details out because it’s too hard for the energy companies’ people. ... They need to check your work, but they’re trying to make it easier for the other people [QA] by not requiring all the details. Which de-tune it, like putting a throttle on a Ferrari to only go 12 miles an hour. ... I have a bad feeling that they’re going to introduce this new software that is easy to use, and not very accurate, just because it’s gonna be easier for them to check.”

– Participating Rater

3.5.4.5. Program Management Effectiveness

Two Raters mentioned that their main issues with program management was the variability from utility to utility. One noted that the EnergyPro requirements differed from utility to utility, meaning that qualification and savings levels are not always the same. The other Rater said that paperwork was more complex for one utility than another utility, and that the rebates were not consistent for the similar levels of work across the two territories.

Another Rater noted that they felt they did not understand the reasoning behind program requirements.

"I have modeled 60 homes by now, and I still get tripped up by a situation, didn't think I was tripped up by a situation because I modeled it X, Y, Z before, and it's been approved by some rebate or other, but yet under Energy Upgrade California they want me to change it, and I really am not understanding why. Is it the program, is it the requirements under Whole House? Is it there a change in how the software is treating something? You know, it's some kind of update, that you get an update, you download the new version but you don't really know what's really changed behind the scenes. ... and it's not helping us think through kind of the science on the ground. It's completely disjointed from what we're seeing on the ground. So we're not really being taught to model, or how to think about what we model; we're being taught how to fill in the blanks sometimes, and it's not the kind of learning that is as useful for me."

– Participating Rater

3.5.4.6. Program Design Feedback

The current program design allows Raters to provide anything from a light touch to full customer service. Our interviews found that Raters prefer this flexible design.

None of the Raters interviewed said that they conduct jobs for the Basic Upgrade Package; citing reasons such as the basic package does not replace old ducts or equipment and therefore lacks real impact on energy or air quality, or that the paperwork involved is only worth doing for larger home upgrades that qualify under the Advanced Upgrade Package.

Most Raters did not think the Basic Upgrade Package could be improved and should be eliminated from the program. Raters are satisfied overall with the Advanced Upgrade Package and see many benefits of this package (see Table 49). Four Raters mentioned ways that the Advanced Upgrade Package could be improved; including increasing incentives, educating the program implementers so they better understand program requirements, and expanding the package to include solar or other distributed-generation technologies.

Table 49: Advanced Upgrade Package Strengths Mentioned by Raters (Multiple Response)

Benefit Mentioned	Raters (n=6)
Level of savings	3
Get more money	2
Return on investment	1
Matches projected savings	1
Matches EnergyPro modeling	3
Like measures covered	2
Whole House approach	1
Building shell	1

3.5.5. Customer and Contractor Interactions

Our interviews found that nearly all homes that Raters assessed were eligible for rebates through the Whole-House Program: All six said that more than 90% were eligible, and four said that all homes they assessed were eligible.

“The upfront work it takes to do an assessment isn’t really paid for by what you can charge a client. So it only makes sense to do them if you have that instinct that ‘this is going to go somewhere.’ ... It is a market problem of how much you can charge for the work, and what’s expected of us at assessment.”

– Participating Rater

“More often than not people are surprised by how much it costs, and how many things there are [on the list of upgrades] ... People don’t easily understand -- PG&E’s term “Whole House Rebate Program,” right? That term “Whole House,” for those of us that are in the business, we know what that means, but 95 percent or 99 percent of customers don’t know what that means. ... That concept is new to people and it’s overwhelming. ... Energy efficiency is a new world. ... The concept of energy efficiency is very nebulous to people, and ‘Whole House’ being related to energy efficiency is nebulous to people, so that’s the hardest part, everything to explain, how everything fits together.”

– Participating Rater

3.5.5.1. Customer Participation Barriers

Four of the six Raters discussed the barriers that customers face when decided to move forward with recommended upgrades after the assessment (see Table 50).

Table 50: Barriers to Jobs Mentioned by Raters (Multiple Response)

Barriers to jobs	Raters (n=4)
Issues with incentives	3
Incentive levels are too low	2
Incentives do not arrive quickly	1
Issues with contractors	3
Contractors do not have time	1
Cost is too high for contractor	1
Contractors do not like the program	1
Customers lack genuine interest in retrofits	2
Customers only want assessment	1
Customers prefer to install solar	1

One key barrier that Raters mentioned was the contractors themselves. Two Raters said that some contractors have overall negative opinions of the Whole-House Program and do not believe that it is in their interest to participate. One Rater said:

“I haven’t found a contractor yet that likes the program. ... For the most part they feel like, from their self-interest, that their client is now spending money to do [an assessment], and therefore there’s less money for them to do improvements.”

– Participating Rater

This may limit program participation because contractors may guide customers away from program participation.

Another key barrier that several Raters identified was the program incentive levels. Raters gave moderate to low ratings to the incentives overall, with a mean rating of 5.0 out of 10.

Two Raters said that the low incentives make the program not worthwhile for customers, while another said it was not worthwhile for contractors to participate at current incentive levels. One Rater suggested that higher incentive levels may help push customers to take on more advanced energy upgrades:

“So if the energy model says they can claim 70% reduction in energy use, then why not give them \$7,000? Make it challenging, make it worth their while. Don’t just settle for \$4500. Because in order to have to do them right they’re going to have to take twenty-five, thirty grand ... in order to spend thirty grand, is \$4000 really going to make you jump on board if you’re kind of okay with the idea, or would \$7,000 make you more likely?”

– Participating Rater

Raters with longer program history said they were able to complete more projects when the program provided incentives to Raters for conducting assessments regardless of whether the customer went on to complete upgrades. One Rater mentioned that he screens participants for real interest in conducting home improvements now that there are no incentives available just for the assessment.

“I get ... calls that I’m turning away. ... They have a general interest in getting an assessment; they don’t often sound like they’re ready to undertake an improvement. They just want to see what the assessment is. And that’s fine, but I can’t charge enough just to do an assessment. ... When there were rebates for HERS II assessments, I took those clients all the time.”

– Participating Rater

The lack of a standalone assessment incentive is a double-edged sword in the market. On one hand it helps weed out customers who are not serious about conducting a retrofit after the assessment and helps the conversion rate. However, it may also reduce overall customer participation in the program, as well as discourage Raters from promoting these assessments to customers who are not already interested in home improvements.

3.5.5.2. Interaction with Contractors

While all six interviewed Raters said they interact with contractors, only one said that they have a partner contractor that they work with regularly. All Raters had suggestions for improving the contractor/Rater relationship, but their exact suggestions varied, as shown in Table 51.

Table 51: Ways to Improve Contractor/Rater Relationship Mentioned by Raters (Multiple Response)

Improvement mentioned	Raters (n=6)
Increase administrative cooperation with contractors	4
More knowledgeable Raters/increase contractor trust of Raters	2
Cooperative oversight of Raters and contractors	1
Contractors help support Raters in training and finding jobs	1
Additional rebates to contractor	1
Increase transparency of HERS ratings	1

One contractor described a need for contractors and Raters to have a common cooperative administrator for projects:

“I completely disagree with us working for each other. I think in existing homes, especially where you do not have a separate architect, there is no one who is—as opposed to a new construction project, where you have the architect doing project management and your contractor comes out with something and they don’t know how to do it, and then they have to argue with the architect, the architect or engineer, and they work it out. There’s no one here doing that. And so for most existing homes, unless they’re going through a major rehab in which they have some architect and designer. But I think the HERS Rater or the BPI person is really in an ideal position to be working for the owner, just like the contractor, and helping resolve problems.”

– Participating Rater

The type of administrator this Rater describes, however, seems to resemble the type of role that utilities and implementers said that Raters should already be taking on. This indicates that while program design may intend for Raters to take on an administrative and guidance role in project management, customer and contractor preferences may impede this from happening in all cases.

Two Raters reported that Raters and contractors do not sufficiently trust each other, but said that this happened for different reasons. One said that contractors do not trust “outside forces”:

“I think contractors are suspicious of Raters. Some are, not all of them. ... I think the conceptual benefits, there are conceptual benefits, but I think that some contractors have trouble opening up or really, it really, a lot of people just want to get the business on their own, and do the business, and they don’t want any outside forces mucking it up – in their mind, mucking it up. And I don’t know if there’s anything you can do about that.”

– Participating Rater

The other Rater said that many Raters were not sufficiently trained to evaluate the contractors’ work properly, and instead made the work for contractors more difficult:

“I think that BPI [training] is a joke. I mean, you’re pushing people through the classes, at one point you were giving \$1000 scholarships, beyond the free class, I mean, so they had lots of people with no interest whatsoever taking the class to get the \$1000 scholarship because they were unemployed. ... So, it was, you’re getting a lot of people who don’t really care, but since they still don’t have a job, they’re doing it ... and the contractor goes in and does the work, and the person doesn’t pass, or they want to look knowledgeable, you know, for all sorts of different reasons, they make it very difficult for the contractor, and [the contractor] say[s], ‘[Forget] it, I don’t want to do any more of these. I don’t want someone who has no idea what they’re doing bad mouthing my work and telling people it’s not done right.’”

– Participating Rater

3.6. Contractor Interviews

In this section, we present detailed findings from the contractor interviews.

3.6.1. Contractor Background and Behaviors

We spoke to contractors with many different backgrounds and areas of expertise, and found that there does not appear to be any one type of contractor most suited for the EUC Whole-House Program. While the findings below are typical, there were exceptions to almost every finding.

- Contractors who completed only one job through the program tended to be smaller firms, either specialists doing deep retrofit work that often went beyond the requirements of the program, or home-remodeling/HVAC firms.
- Low-volume contractors were a mix of firms focused entirely on the program and firms branching out into other work. In at least two cases, firms had a special division that handled only Whole-House projects, while most of the firm focused on general contracting or another specialty.
- High-volume contractors were typically larger firms with staff dedicated to EnergyPro modeling, rebate processing, and other program processes. These firms had more staff and a higher ratio of administrative/sales employees to field staff. This stands in contrast to smaller firms where employees are often required to juggle all components of the program. These firms typically had several field staff and two or fewer dedicated administrative/sales staff.

- Notably, one of the high-volume firms was a very small operation, with only two full-time employees. This contractor attributed his success in the program to offering assessments free of charge, and sacrificing his close rate in order to reach as many customers as possible.
- Most contractors did all or most of retrofit work through the program themselves. Contractors would often report subcontracting one or two components of retrofit work—typically HVAC installations. Several contractors mentioned forming “alliances” with specific HVAC contractors to expedite this process. Almost all contractors reported doing the energy assessments in-house. One very small contractor reported outsourcing assessments and some of the job-processing work to Raters, but conducts the retrofit work in-house.
- Almost all contractors reported having only one or two BPI-certified employees. Two of the largest firms had as many as four BPI-certified employees.
- Contractors based in more urban areas reported doing most of their work in a relatively small area (typically one or two counties). Firms located in rural areas, and some who were more specialized reported doing jobs in a much wider region.
- Most contractors have been involved with the program since its inception or shortly thereafter. Only a small number recently participated.

3.6.2. Marketing

Contractors’ observations about marketing strategies include:

- Program marketing efforts have a noticeable effect on contractors’ job leads. Contractors are generally somewhat displeased with program marketing. Many contractors mentioned inconsistency of marketing—heavy marketing at times and very light marketing at others. Contractors said that, during periods of heavy marketing, they would get large numbers of leads, and when marketing was light, they would get very few.
- The EUC website can greatly affect the number of leads. But the ordinal position of a contractor in the list influences how many leads that contractor gets. Therefore, the EUC website has only been an effective lead generator for contractors who appear near the top of the list. Some contractors rely heavily on the website to generate leads, while some indicate that they have not received any leads from the website.
 - At least one contractor, who indicated a substantial percentage of his leads came from the website, expressed concern with how the website presents contractors to the customer. This contractor indicated that he had been the “top hit” on the website when searching in his city for a long time. This produced an enormous number of leads—but recently, the website had apparently reordered him on the list, and his business has dramatically dropped.
- Many contractors, both low- and high-volume, indicated that the most effective styles of marketing that they could personally do involved meeting customers and prospective leads face-to-face. Events such as home-energy expos, neighborhood fairs, and speaking

opportunities were mentioned in addition to referrals (also cited as a highly effective way to get leads) and typical mass-media advertising channels.

- Some contractors, both low- and high-volume, expressed interest in more marketing training. These typically were younger firms with fewer employees. Contractors who have been in the business for many years typically indicated that they felt they knew enough about marketing to execute what they wanted to do. Larger firms also indicated that they already do a relatively large amount of marketing.

Contractors' feedback about the effectiveness of messaging were relatively consistent.

- Contractors typically indicated that the initial effective messaging is the idea of saving money and/or receiving a rebate. However, after an assessment and discussion with the customer, contractors reported that customers still wanted to complete jobs through the program, even though it was evident that the upfront cost would not pay itself back in a short period of time. Contractors cited the perceived comfort and health benefits as being much larger drivers for prospective customers, once they received information on these benefits.
 - Some contractors indicated that for their clientele, health reasons were the primary motivator.
- Some contractors reported that customers were motivated by a desire to be “green,” but contractors typically said that this motivation was more prevalent among affluent customers.

Table 52: Contractors' Quotes Regarding Effective Marketing & Messaging

Contractor Type	Quote
Low Volume	“One of the things about our business is there’s seldom one thing that pushes people from interest to commitment—it’s really the overall package...When you do energy efficiency retrofit work, there’s almost always a comfort bonus that goes with it.”
High Volume	“Most of [their employees] are great people, but I’ve had a few that are basically saying the program is not worth doing, and what happens is now, especially in our area, PG&E’s word is gold, so that technician’s out in someone’s home and they’re telling them the program is not worth doing – it takes a lot of energy to change those people’s minds.”
High Volume	“People initially think about saving money... but overall, after you do all the presentation, and you do the ROI, saving money is not what’s going to sell it, it would probably more be along the lines of how comfortable you can make their house, how clean the air would be... So I think it’s a combination. I think we like to sell more for the comfort, indoor air quality, than the ROI.”

3.6.3. Satisfaction and Barriers to Participation

Contractors are moderately satisfied with the program so far. Table 53 shows the mean satisfaction scores for the program itself and with the paperwork involved. The table shows data from the 2012 and 2011 evaluations. Due to small sample sizes, these differences are not statistically significant. Contractors rated the program slightly lower compared to last year. However, contractors rated the paperwork slightly higher than last year, although the mean rating is still quite low.

Table 53: Contractor Program Satisfaction Ratings

Program Satisfaction Mean Scores (0–10 scale)	2012		2011	
	n	mean	n	mean
One Job	5	6.1	—	—
Low Volume	8	6.7	—	—
High Volume	5	8.0	—	—
Total	18	6.9	14	7.2
Paperwork Satisfaction Mean Scores (0–10 scale)				
One Job	5	3.5	—	—
Low Volume	8	4.1	—	—
High Volume	5	6.4	—	—
Total	18	4.6	14	3.6

Contractors discussed several issues affecting their satisfaction levels.

- A significant majority of contractors said that the paperwork required and the back-and-forth with the program while completing an application delays their work and the rebate disbursement. It also raises the overhead for contractors. This investment also causes mid-sized and smaller contractors who do not have a robust administrative staff to spend less time in the field completing retrofits.
 - ▣ Specific complaints about processing job applications through the Green Energy Compass online portal were common. Several contractors mentioned that the staff responsible for processing appeared to be outsourced and were not as familiar with the program as they would like.
 - ▣ Contractors also mentioned that processing was inconsistent. Applications were often rejected for “very minor” issues (for example, names being spelled wrong) that contractors felt should not have held up the process, but that these errors were sometimes allowed to slide.
 - ▣ Large firms with multiple dedicated administrative employees were the exception. Complaints about paperwork and processing were not as common from them.

- Contractors who had participated in the program in previous years indicated that the paperwork and processing is moving in the right direction. One contractor mentioned that paperwork was “better, but still torturous.”
- In contrast to our evaluation last year, very few contractors reported any major issues with the time it takes to receive rebates after the job is processed. Most contractors who participated in the program in previous years reported that the rebate-processing time had improved and, while room for improvement remains, they were now mostly satisfied with the rebate payment timeframe.

Participation Barriers

- A major barrier mentioned by a significant number of contractors was that the program does not match the needs of customers. The primary example was the program’s inability to cover rural customers using propane for fuel. One contractor who completed only one job through the program mentioned that all other jobs he had completed in 2012 were for propane customers and therefore ineligible for the program.
- Many contractors who participated in previous years mentioned a sharp decline in the amount of work they had, and attributed this to the expiration of regional and other incentives funded through ARRA. While program incentives have not declined, the additional incentives have, and they are not high enough to attract some customers.
 - A few contractors mentioned that they had shifted away from promoting retrofit work through the program toward pursuing a previously existing specialty (HVAC/insulation/general remodeling) because of the lack of these funds.
- About 25% of contractors reported completing one or more qualifying jobs for which they did not file a rebate application. This is a substantial decline from 2011, when approximately 50% of contractors reported doing this. Contractors typically cited these jobs as being very small, and the rebate payments were not worth the paperwork required.
 - These contractors sometimes mentioned that the time spent to put the job through the program would cost more than the rebate itself, and that the program would not help their customers meet their needs at all.
- Less than one-third of contractors cited the sales and marketing required of them to sell jobs through the program as a barrier to submitting more jobs.
 - However, many contractors did cite the lack of consistent and developed *program* marketing as the primary barrier to enhancing program participation.

Table 54: Contractor Barriers to Submitting More Jobs to the Program

Barriers Tested	One Job (n=4)	Low Volume (n=7)	2012 Total (n=11)	2011 Total (n=12)
Program offerings not matching the needs of customers	75%	43%	55%	N/A3
The incentives are not high enough	75%	14%	36%	50%
The paperwork required	50%	29%	36%	50%
Rebate processing time	50%	29%	36%	42%
Not sure if the program will be around for a long time	50%	14%	27%	33%
The sales and marketing required	50%	14%	27%	50%
The training required	0%	14%	9%	42%
The availability of local trainings	25%	0%	9%	33%
The necessary tools needed to do the assessment and upgrade work	25%	0%	9%	13%

3.6.4. Contractor Training

In this section we present contractors’ feedback on the training they received.

3.6.4.1. Program Training

We asked contractors questions about several types of program-related training: the Participation Workshop, the Basic Upgrade Package Training, and the Advanced Upgrade Package Training.

- Most contractors recall attending the Participation Workshop.
 - ▣ Those who did not recall this workshop reported having been involved with the program since the very beginning or pilot phase of the program, and were unsure of the exact workshop being discussed.
- Most contractors reported not having attended the Basic Upgrade Package Training, and cited “not being interested in the Basic Path” as their reason.
 - ▣ Those contractors reported that they were “underwhelmed” and that the training was “more trouble than it was worth.”
 - ▣ This appears to be an issue, as the Basic Upgrade Package Training is not Basic-Path-specific, but rather the basic step in the training for the program, and applicable to both Basic and Advanced paths.

³ This question was not asked in the 2011 evaluation.

- All but two contractors reported having participated in the Advance Upgrade Package Training
 - Contractors generally reported being satisfied with this training and scored the training consistent with last year.
 - One contractor mentioned that he had sent a large number of his field staff to this training, but that it was too complex for them, and does not make sense if you are not experienced with the program already.

Table 55: Contractor Satisfaction with Program Training

Contractor Type	2012		2011	
	N	Mean	n	Mean
One Job	4	7.5	-	-
Low Volume	7	6.7	-	-
High Volume	5	7.6	-	-
Total	16	7.2	14	7.1

3.6.4.2. Energy Center Training

We asked participating contractors about whether they or company staff had attended Home Performance classes at the PG&E Energy Center.

- More than two-thirds of contractors reported having attended Home Performance classes at the PG&E Energy Center.
- Contractors were generally thrilled with the quality of this training and found it exceptionally useful.
- One contractor said “I’m doing what I’m doing because of PG&E classes... I wouldn’t be doing this if PG&E hadn’t had those classes,” and specifically mentioned the high quality of the instructors at the PG&E Energy Center.
- One contractor mentioned that, often, an experienced contractor knows a lot of the general concepts being discussed and that perhaps only one or two hours of an eight hour class is useful.
- Many contractors reported sending less-experienced field staff to these classes on an ongoing basis, and using these classes as one of the major education sources for their non-BPI-certified staffers.
- Contractors mentioned having attended air sealing, HVAC, ventilation, insulation, and other classes.

Table 56: Contractor Satisfaction with Energy Center Training

Contractor Type	2012	
	n	Mean
One Job	3	9.3
Low Volume	6	8.7
High Volume	4	8.5
Total	13	8.8

3.6.5. EnergyPro Training

All but two contractors received some type of training on using the EnergyPro software. Contractors primarily received training through a webinar and were generally satisfied with this training.

Some contractors received EnergyPro training through an alternate source—either CalCERTS or through local chapters of trade organizations. One contractor reported having to hire someone to train them on EnergyPro. Generally, contractors said Build It Green, trade organizations, and others were very helpful in answering EnergyPro questions.

Table 57: Contractor Satisfaction with EnergyPro Training

Contractor Type	2012	
	n	Mean
One Job	3	7.0
Low Volume	7	7.0
High Volume	4	7.5
Total	14	7.1

3.6.6. Program Design

3.6.6.1. Basic Upgrade Path versus Advanced Upgrade Path

Most contractors mostly perform Advanced Path jobs. As with last year, contractors said that the small size of Basic Path jobs and potential rebates is not worth the paperwork or testing required. So contractors either try to upsell customers to the Advanced Path or end up conducting work outside the program. Many contractors are “home-performance” contractors that prefer Advanced Path jobs because they better align with their business model. Contractors also prefer Advanced Path jobs because of larger rebates. Some contractors said they prefer the Advanced Package because of the “safety benefits” of the combustion-safety

testing required as part of test-in. However, this appears to be a contractor misunderstanding, because the Basic Package requires the same test-in.

About half of the contractors were familiar with the proposed changes to the Basic Path of the program, known as the “flex” package. About half of those viewed the proposed changes positively, citing that it was easier to understand, required less overhead time, and included additional options. Most of the remaining contractors did not believe that the proposed changes would have an effect. Contractors cited test-in and test-out requirements and high levels of administrative/overhead costs as issues with the Basic Path that are not addressed by the proposed changes.

3.6.6.2. Financing

The attitudes of most contractors about financing were mixed. Most contractors reported knowing at least one source of financing to which they could refer customers. Commonly mentioned financing sources were CHF loans, PowerSaver, SCEIP (Sonoma County Energy Independence Program), PACE loans, and local banks/credit unions.

Contractors generally said that the interest rates offered by CHF and PowerSaver were too high to be attractive to customers, so they did not typically refer customers to them. A few contractors mentioned using CHF financing often. One contractor mentioned experience with the PACE loan program, which he said was superior to other options, and accounted for more than 50% of his jobs.

About 50% of contractors mentioned that their customers were not looking to finance projects. Most of these indicated that they target higher income customers who usually pay cash for jobs. One contractor mentioned that he did not want to “put people in debt,” and did not typically “push” financing to his customers.

A few contractors also indicated that they wanted tax credits instead of, or in addition to, financing.

Table 58: Contractor’s Financing Quotes

Contractor Type	Quote
Low Volume	“CHF has a 6% interest rate, so it’s really not that attractive. PowerSaver is also at around 6%.”
Low Volume	“If the customer wants to have something done, I do all the paperwork.”
Low Volume	“I have it available, I know that it’s there, but generally people are paying for the improvements in cash.”
High Volume	“It’s hard to get people to initiate [financing]. It’s less than 10% that actually use it.”
High Volume	“There was a low interest energy financing program that was phenomenal. It was 0% to 3% interest... It was a great program. We would probably double or triple our production with that program.”

3.6.6.3. EnergyPro Modeling Software

Contractors generally accept EnergyPro despite its shortcomings.

- Twenty-five percent of contractors outsource EnergyPro modeling to other firms. Two contractors said they occasionally outsource modeling when their own resources are constrained.
- Most contractors indicated that they prefer EnergyPro over other options and that now that they know how to use it, they would rather continue than learn another program.
- Generally, contractors think EnergyPro does an acceptable job of covering the major energy-saving opportunities in homes. While not perfect, the software is considered “good enough” for the program. Most contractors indicated that EnergyPro was useful in successfully completing a retrofit. High-volume contractors cited EnergyPro as a timesaver in the long run.
- A significant number of contractors cited problems with EnergyPro, including:
 - Poor modeling of insulation savings
 - Inability to model customer behavioral data (occupancy patterns, setpoints, etc.)
 - Incomplete libraries of equipment types, making contractors identify the most similar equipment as a “best guess” (though one contractor recognized that the program is constantly updating the equipment library and this is helping)
 - Absence of solar measures
 - No credit or guidance given for proper or improper sizing of HVAC units
 - Poor modeling of air sealing
 - Unrealistic dollar savings amounts
- Many contractors were displeased with the EnergyPro output reports. Contractors indicated that the reports were too technical and unusable, without modification, by customers. Several contractors indicated that they built their own software tools that simplify the EnergyPro report for customers.
- Finally, most contractors indicated that learning to use EnergyPro was very difficult. Many of these comments were presented in the past tense; though the contractors had difficulty getting started with EnergyPro, but they are now relatively comfortable using it.
- When presented with the hypothetical option of not using any software at all for the Whole-House Program, contractors were evenly split. Contractors who did want to use modeling software generally cited the increase in customer confidence it provides. Those who wanted to eliminate software altogether generally indicated that the increased overhead and time required to use the software was not worth the benefits.
- Almost all contractors indicated that they do not use other software to model estimated energy usage outside of the program. Some contractors indicated that they had experimented in the past, and/or on an ongoing basis, but that nothing had worked well.

- Larger, high-volume contractors typically report fewer problems with EnergyPro’s complexity and quirks. These contractors appear to typically have dedicated staff who primarily perform EnergyPro modeling, and are more familiar with the ins and outs of the software.

Table 59: Contractor Quotes on EnergyPro

Contractor Type	Quote
Low Volume	“We’ve fallen into a groove that works.”
One Job	“I’m an owner operator... I’m not only marketing, I’m doing the admin, I’m doing the work as well. The EnergyPro program is made for someone to be sitting in an office and that’s all they do full time is they work on EnergyPro. If that’s the case, it’s simple, and it’s – probably exactly what it needs to be, I don’t know, but I don’t have that luxury.”
One Job	“[The EnergyPro report was the] most complicated, confusing document I’ve ever had the displeasure of deciphering.”
High Volume	“Would I want to learn new software? I don’t want to go through that hassle again.”

3.6.6.4. Floating Rebates

Contractors typically do not float the rebate for participants (that is, pay participants the rebate amount, out-of-pocket, while the program processes the rebate). Many contractors believe that doing so would increase participation, but not significantly.

Contractors generally believed in the theory of floating the rebate, but said they did not or could not implement this practice because of cash-flow limitations. One contractor said “we’re not a bank.” Some contractors indicated that if the program paid rebates quicker, they would consider floating the rebate. However, a few contractors mentioned the possibility that the estimated rebate could change at test-out, and that the possibility that the customer’s final invoiced amount could change would be unacceptable.

3.6.6.5. Energy Audit Subsidies

In general, contractors strongly support subsidized energy audits. Contractors believe that the high up-front cost of energy audits is a significant barrier to consumers. In areas where subsidies are or were available, contractors have received an increased number of leads. However, some contractors were skeptical of free audits because they believed it might lower the conversion to project rate; when free audits are available, contractors believe that many customers will pursue them with no intention of completing the retrofit.

Generally, contractors indicate that partial subsidies on energy audits would be an excellent offering, and would increase business and the number of jobs completed through the program. However, subsidies would need to cover only part of the audit cost to keep the customer with “skin in the game.” Some contractors also suggested a full rebate for energy audits if a

customer went on to complete a job. One contractor mentioned that they currently rebate the cost of the audit out of their own pocket if a job is completed.

Table 60: Contractor Quotes about the Impact of Audit Subsidies

Contractor Type	Quote
Low Volume	"[I think they could] pay up front and it comes off on the back end or something if they do the work... I do think that getting over that assessment hump is a crucial thing."
High Volume	"What happens [in response to a fully subsidized audit] is people take advantage of the energy assessment... and then the conversion rate will be really low."

3.7. Contractor Training Assessment

This section presents the findings of the contractor training assessment, which focused on the training provided by Build It Green on behalf of PG&E to its Energy Upgrade California (EUC) contractors and Raters.

Earlier, we assessed the training used by the Whole-House Program as it was conducted in the SCE territory. In that process evaluation, we applied essentially the same methodology and assessment criteria. Some of the findings are similar, but because the training presented by SCE and by PG&E is different, so too are some of the findings and recommendations.

3.7.1. Training-Relevant Characteristics – Contractors

From the surveys of EUC contractors described in **2.5 Contractor Interviews**, we learn that members of this group have diverse backgrounds, fields of expertise, skill levels, and experience. The contractors in the Whole-House Program perform audits, repair and install HVAC equipment, and work with lighting, windows and doors, insulation, and in other trades. Some also install solar equipment and provide plumbing, remodeling, and new-construction services.

The survey of contractors revealed the following:

- Contractors have an average of 11 employees, with a minimum of 2 and a maximum of 50.
- Of these, the number of employees who performed field work averaged about 8, and ranged from 2 to 35.
- The contractors surveyed had between 1 and 4 BPI-certified Building Analysts on staff, with an average of 1.5.
- An average of 3 staff members attended the Participation Workshop.
- After attending the Basic Upgrade training, 80% felt sufficiently prepared to participate in the program.

- After attending the Advanced Package Training, qualitative evidence indicates that of those who were asked (not all were), more than 90% were satisfied with the training.

3.7.2. Training-Relevant Characteristics – HERS Energy Raters

From the interviews with EUC HERS Whole House Energy Raters, described in 2.4 Energy Rater Interviews, we found that members of this group, like the contractors, have diverse backgrounds, fields of expertise, skill levels, and experience. Our research into the characteristics of Raters has revealed several key issues that might be addressed and mitigated through training.

To qualify for the Whole-House Program, Raters must have a valid HERS Whole House (HERS II) certification and other credentials. HERS II Raters are certified to perform field assessment and energy modeling of residences, using software approved by the California Energy Commission, to determine a residence’s relative energy efficiency, to recommend energy upgrades, and to assess whether the recommendations are cost-effective.

All of the Raters that were interviewed had BPI certification and received the training through different California providers. As with the contractors, the amount of time and degree of rigor of the BPI training varied widely—some attended five days of training, two people seven to eight days, one person mentioned three weeks, and another four weeks of training.

In the Whole-House Program for PG&E, Raters interface with potential program participants early in the process as homeowners learn about the program and what it encompasses, and as they consult with Raters to conduct energy audits in their homes.

Raters are responsible for doing a test-in assessment, identifying and compiling an ideal combination of energy-efficiency measures, and consulting with a participating contractor and the homeowner to develop a scope of work. Then the contractor determines the feasibility of the final project scope of work. If all seems reasonable, a contract that defines the scope of work is drawn up and signed by the customer. The Rater schedules the contractor to do the work. When the work is complete, the Rater performs the test-out and combustion-safety testing, submits all applications, and provides customer service.

Essentially, the Raters do all of the program and project tasks, including field-data collection, EnergyPro calculations, job processing, and QC inspections; everything except the energy upgrade work itself.

From a list of nine Raters approved through the Whole-House Program, we interviewed. (Interviews continued only with those Raters who have actually done assessments through the program.) Half of the businesses had a single Rater as the sole employee; one business with a Rater had a staff of 70. One-third of the businesses have four employees. On average there are two Raters in each company, and some have as many as four. Two of the Raters interviewed have additional employees (from two to four individuals) and all of the employees that do EUC ratings are BPI-certified). Others Raters work independently.

Raters have the same requirements as contractors for attending training, and all of the interviewed Raters stated they completed the required training.

For more details about the training-relevant characteristics of HERS Energy Raters and a summary of recommendations specifically for these Whole-House Program participants, see 3.7.10. About HERS Energy Raters and the Required Training.

3.7.3. Required Program Training

To participate in the Whole-House Program for PG&E, contractors must attend certain training.

- For the Basic Upgrade Package, contractors must attend the Participation Workshop, and the Basic Package Training. BPI-certified professionals must attend the Advanced Package Training.
- For the Advanced Upgrade Package, contractors must attend the Participation Workshop, and the Advanced Package Training. Basic Package Training is optional but recommended.
- Energy Raters, for both the Basic and Advanced Upgrade Packages, must also attend the Participation Workshop, and the Advanced Package Training. Basic Package Training is optional but recommended.

The goal of the training is to teach whole-house building science and to enable contractors to understand how to identify home energy-efficiency problems and opportunities.

3.7.3.1. Participation Workshop

To qualify for the Whole-House Program, at least one person from each contractor and Rater firm must attend a live session of the online Energy Upgrade California Participation Workshop webinar. There is no prerequisite for attending the workshop; participants must pre-register for the webinar and attendance is monitored.

The primary purpose of this workshop is to orient contractors to the requirements and features of the Whole-House Program as it is configured in PG&E territory. The stated goal of the workshop was to cover “Everything you need to know to participate.” This workshop provides an overview of the program and its goals, a description of the scope of the work, information about marketing and sales support, and an explanation of participation requirements.

The evaluation team viewed a recording of the Participation Workshop webinar that was accessed through the EUC Program Portal for the PG&E Whole-House Program on the Build It Green website. (Our understanding is that each live presentation of the workshop is recorded, and participants are emailed a link to the recording of the workshop in case they want to watch it again.) The actual date of the workshop recording is not known, but it pre-dates major program updates. Although we understand this workshop will be revised to coincide with the changes to the Whole-House Program, the evaluation team reviewed the workshop as it was at the time of the assessment. (Webinar link <https://www.builditgreenutility.org/participation-workshop>.)

The evaluation team observed the recording of the webinar. The presenter was very knowledgeable and provided a high-quality presentation.

This workshop is marketed as a three-hour presentation, but the session recording was only about one-and-a-half hours. However, this was not a problem because the presenter was able to go through the PowerPoint materials at a fairly rapid pace; the presentation was focused and kept your attention, and the presenter was able to cover the content very well and still have time to answer questions posed by online participants.

One way the presenter was able to present the materials so quickly was to offer, in follow-up email, the links to additional content on several topics, such as additional details of the program, marketing materials, the presentation slides and a recording of the webinar, and other program-related documents such as the new rules and configuration for the new Basic program, now called “Home Upgrade.” Attendees also were told they would receive emails with contact information for the presenters and program managers and were encouraged to contact them with any questions or concerns. Importantly, the participants were encouraged to ask questions using the GoToWebinar “Questions” box, and the presenter stopped periodically to answer questions posed by the participants.

The evaluation team also reviewed a hard copy of the PowerPoint slides used in the presentation.

The workshop is not “training” in the technical sense where “students” are provided instruction with time to practice, develop, and demonstrate new skills. Rather, this workshop is more accurately described as an “information transfer” where valuable concepts and ideas are presented to an interested audience.

The workshop was very well conceived and presented, and covered all of the topics that were promised in the online description. The criteria the evaluation team considered also were addressed very well. (It is obvious to the evaluation team that Build It Green implemented virtually all of the recommendations that were made for the SCE version of the Participation Workshop.)

Review of Participation Workshop Slide Deck

The presentation is a PowerPoint slide deck of about 100 slides. About half of the slides contained only text, about 20% were primarily text with related graphics, and another 20% contained photographs with sufficient explanatory text. None of the slides contained only images or photos and no text.

A few slides were text-heavy and used a small font that made them difficult to read online. However, participants were able to download the slide deck, and the text was larger and easier to read when viewed locally.

By and large, there were no differences between the hard copy of the slide deck and the content of the workshop recording. On several occasions, the presenter put up a slide that repeated the news about the name changes for the program’s Basic Package (with major changes, and will be called Home Upgrade) and Advanced Package (the program stays mostly the same as it has been and will be called Advanced Home Upgrade).

Presentation Topics and Content

This workshop served well to introduce contractors to the Whole-House Program and present a concise factual overview of the program. Essentially, it meets the program requirements, and provided practical help getting contractors started with the program.

Specifically, the workshop covered the steps required for program enrollment, job submission, rebate processing, quality assurance, health and safety, and next steps for participation.

The agenda for the presentation we reviewed was:

- Why home performance and Energy Upgrade California
- How to participate in Energy Upgrade California in PG&E service territory
 - ▣ Program scope
 - ▣ Participant enrollment process and requirements (participants are qualified contractors and qualified HERS Whole House raters)
 - ▣ Jobs reporting and rebate application overview
 - ▣ Field mentoring and quality assurance

The contractors were informed that the program had training requirements and that their business administrative costs might increase. Also, contractors are adequately informed about the modeling requirements of the program and that they will need to purchase and use EnergyPro software for Advanced Package work.

The presentation provided details about the Quality Assurance requirements of the program (determining whether processes and tests performed meet program requirements). It also mentioned that there would be on-site inspections of the contractors' work, and that the work would be compared to the program standards.

Application of Adult Learning Principles

To some extent, this workshop applied adult-learning principles and practices, such as presenting a contractor-perspective orientation and a description of the usefulness of the session.

However, since we do not consider this to be training in the technical sense, and due to the nature of the online webinar format, it did not concern us that there were no interactive activities or discussion (other than occasional questions presented by the contractors and answered by the presenter), hands-on practice or application, written exercises, and no formal training objectives.

To the extent the session encouraged participation in the Whole-House Program, we can say the materials supported behavior change. There are slides of specific checklists participants can use in the program that facilitate contractor enrollment.

This workshop included motivation to action by describing the program's benefits for contractors and how the training and the program both focus on the needs of contractors.

As stated above, there were not really any training objectives for the Participation Workshop and the evaluation team did not expect to find any. What we used for this purpose was the online description of the session and agenda. To a great extent, we found that all of the topics promised in the online description were covered very well.

The relevance of the Whole-House Program as a whole, and why it is a win-win for the homeowner and contractor, is explained well. The presentation covers well the program incentives and reasons why contractors and homeowners should participate. In particular, the presentation of several case studies of contractors who had been successful within the program served to “sell” the program. It also explains the value of the QA.

This session effectively covers the actual on-the-job steps contractors and Raters need to take to qualify and enroll in the program, as well as expectations after they are approved.

This workshop focuses on selling the idea of the program to contractors and Raters as experienced professionals. It has an approach of demonstrating how EUC is a good concept and solves some of the issues in the industry.

Online Description, “Participation Workshop – Online, PG&E Territory”

The online description from the Energy Upgrade California website informed participants that if they join the webinar, they could expect to “find out how Energy Upgrade California can help you build your business,” and that they will “learn how to get involved, gain visibility with homeowners who are looking for contractors doing the work, and make the most of program rebates and incentives.”

Participants were informed they would “learn valuable information about” the following:

- Home performance and Energy Upgrade California
- How to participate in the PG&E service territory
- Marketing support and outreach activities
- Contractor and Rater enrollment process and requirements
- Job reporting and rebate application
- Field mentoring, quality assurance, and safety
- Local opportunities and government incentives

Matching Promised Objectives to Workshop Content

For the most part, the content provided in the Participation Workshop matched the content promised in the online description and in the agenda slide at the beginning of the workshop.

It included details on how to enroll in the program (becoming a program participant), including required training, eligibility requirements, certifications, licenses, etc. The overview of the process for doing the work, submitting a job, and processing rebates was detailed and complete. The presenter gave several reminders that the folks at Build It Green were very ready to answer any contractor questions about implementing the program.

Homeowner-related content included a summary of program benefits and information about eligibility, and is displayed so that contractors are familiar with how they're being chosen and how they fit in. The presentation explained well how contractors can participate in the PG&E program.

Much of the content in the first half of the webinar is about why to participate rather than how, and that portion was presented nicely by highlighting advantages and benefits, and presented several successful program contractors as case studies.

The second half of the presentation covered the details of how to participate—including enrolling, submitting jobs, and applying for file rebates—and included information on QA verification and field mentoring. The presentation discusses safety in a section that lists the many hazardous materials that may be encountered on-site, and strongly urges caution for gas-related safety issues.

Part of our assignment was to look specifically for workshop content on sales, marketing, and administrative requirements. Each of these was covered to some degree. The presentation discusses the online marketing collateral contractors can download and adapt for their business. There was no specific discussion of marketing strategies, except perhaps in the success stories that showcase how other businesses were able to fit the Whole-House Program with their business plan and make it work. There is also no mention of the marketing webinars or outreach activities in the slide content. (There is an online webinar that participants can attend titled “Marketing: Whole House Marketing Tactics Worth Stealing” that provides practical recommendations.)

On the topic of sales, the presentation mentions that contractors can contact Build It Green for tips on selling the program to homeowners after attending the workshop. (There is an online webinar that participants can attend titled “Sales: Whole House sales Strategies that Work” that provides practical recommendations.)

3.7.3.2. Basic Upgrade Package Technical Training

The Basic Upgrade Package Technical Training is mandatory for contractors who are not certified by the Building Performance Institute, Inc. (BPI), and who want to participate in Whole-House Program Basic Upgrade jobs. It is highly recommended, but not mandatory, for businesses that have a BPI-certified Building Analyst on staff. To be eligible, contractors must have previously attended the Participation Workshop.

The training is intended for contractors entering into the home-performance-construction industry, regardless of experience level. However, to participate in the Whole-House Program, contractors must be licensed California contractors, General B or C-2 and C-20.

The intent of this training is to give contractors the skills and knowledge required to perform home upgrades and effectively implement the Basic Upgrade measures. This class provides a solid foundation for Basic Upgrade work, an adequate combustion-safety curriculum, and some hands-on practice with diagnostic tools.

This training is primarily delivered at the PG&E Energy Training Center (ETC) in Stockton, CA. In addition to classroom facilities, the ETC has a “demonstration house” which is an actual home, and a “combustion test laboratory” where students can practice certain energy-upgrade procedures and protocols.

The training we reviewed is a three-day course, with about eight hours of instruction per day. In our interview with the instructor, we confirmed our understanding of how the class is configured and presented. The training initially was designed for two days in the classroom and one day in the test house with hands-on exercises. However, the instructor prefers to present day one in the classroom, and days two and three about half in the classroom and half in the demonstration house.

The evaluation team reviewed the training as it was at the time of the assessment. We are aware that the Whole-House Program Basic Package for the PG&E territory is undergoing major changes, and as of June 3, 2013 was renamed the Home Upgrade program, and that the training strategy and materials will be revised to better fit the new situation.

Instructor and Class Size

Currently, the Basic Package Training provided by Build It Green is taught by a professor of Construction Management Technology at Cosumnes River College, Sacramento, CA, whom we interviewed to find out how the class was delivered. The professor is a carpenter by trade and has been a full-time college instructor since 2002. He is BPI-certified and has been an instructor for Build It Green since 2010, and the lead instructor for the Basic Upgrade Package Technical Training for more than a year.

Currently, no one else is available to help with the hands-on portions of the training. The average class size is between 10 and 15 students. The instructor says there have not been any problems with instructing a class of this size, and he has been able to provide the training effectively.

Basic Training Class Materials, Workbook, Slides and Videos

We did not attend this class, but assessed it by interviewing the instructor for the class and by reviewing a hard copy of the training materials (a student workbook), which consisted of reproduced copies of the class PowerPoint slides and more than 200 pages of supporting background and reference documents consisting mostly of reproduced copies of BPI Technical Standards documents. Our understanding is that Build It Green has been using the same training materials since about 2011 with only a few minor changes to the content.

The PowerPoint slide presentation contains a mix of types of content. Most slides contain text and related graphics. Some slides present graphics with adequate descriptive text to demonstrate the concept. Other slides with photographs do not have accompanying text to describe or explain the image. Some slides depicted documents where the text was unreadable (possibly reproduced in the supplementary appendices).

The instructor realizes that more than 200 pages of supporting background and reference documents is too much to go over in the classroom. Instead, he points out a selected few, such as essential BPI standards, that he feels are important for the contractors to understand.

On day two, the presentation includes three short videos of contractors talking about best practices for air sealing and insulation.

Details about the Training Content

This course covers best-practice remediation skills, house-as-a-system concepts, basic building science training in the building envelope (e.g., insulation), duct sealing, combustion testing, and specific skills required to survey a home. The materials cover testing, inspecting, surveying a home's systems for energy consumption, testing indoor air quality, and assessing building durability. Participants also are instructed on how upgrades will benefit occupants' health and energy costs. Participants in the Basic Package training are mostly from smaller businesses, and not from larger companies who are most likely already in the program.

The agenda slides list the topics covered in the Basic Package Training:

- First day:
 - ▣ Building Science Basics
 - ▣ Comfort and Climate
 - ▣ Indoor Air Quality
 - ▣ Typical Weatherization Measures
 - ▣ Worker Safety
 - ▣ Maintaining Quality Control
 - ▣ Combustion Safety
- Second day:
 - ▣ Aligning Pressure and Thermal Boundaries
 - ▣ Blower Door Basics
 - ▣ Building Shell Retrofit Strategies
 - ▣ Air Sealing and Attic Prep
 - ▣ Installing Attic Insulation
 - ▣ Mechanical Ventilation
 - ▣ Duct Testing and Leakage Calculations
 - ▣ Energy Upgrade CA Paths
 - ▣ Advanced Job Submission

Program Measures

The training covers all but one of the Basic Package program measures; we found no content on the thermostatic shut-off valve (which helps reduce waste by controlling hot water until it is needed). The class also did not cover the low-flow showerhead, which is recommended but not required by the program.

Meeting Program Requirements and Hands-On Practice

For the most part, this training meets program requirements. However, the Basic Package Training does not communicate in detail the Whole-House Program standards. One slide at the end of the class presents a summary of all minimum standards. Other than that, recommendations and standards are not distinguished well, and the materials do not document the complete standards.

As delivered at the Stockton ETC, students have opportunities for hands-on practice and, for the most part, would be able to perform the required Whole-House Program Basic Upgrade tasks to an acceptable degree after attending the training. The instructor reported that the degree of competence and success with completing the tasks required by the program varied with the level of prior experience of the contractors; some less-experienced contractors were not sufficiently prepared and indicated a need for additional practice.

Adult Learning Principles

To a certain degree, the Basic Package Training applied adult-learning principles and practices. Specifically, it presented a contractor perspective and explained the usefulness of the session. However, there were no documented interactive classroom activities, quizzes, or application. Though examples and stories connected new learning to the participants' prior learning and experience, the classroom materials only provided for lecture as the single instructional method. The training done in the demonstration house did include interactive hands-on activities.

One excellent practice that the instructor uses is, starting on the first day, he writes down, on a flip chart, information on how and where to obtain useful resources. At the end of the class, he has the students either copy the information, or use their phone to take a picture of it, or he emails a copy to whoever wants it.

Training Objectives

There are no formal training objectives for the Basic Package Training. We derived the training objectives from the content of the workbook and PowerPoint presentation, and from the online course descriptions. The high-level topics that determine the ultimate performance and enabling objectives are basic building science, program core measures, combustion-appliance testing, and general Whole-House Program knowledge.

The derived training objectives and the Basic Upgrade measures matched well, (except for the aforementioned omission of low-flow showerheads and thermostatic-activated flow-restriction valves).

The course description states that contractors will learn fundamentals of building science and gain practical experience with core measures in the Whole-House Program , including:

- How to find air leaks in the building shell and properly seal them
- How to insulate the attic plane
- How to test forced-air duct systems and building shells to program standards
- Combustion-appliance-safety (CAS) testing practices

- Essential components of PG&E’s Whole-House Program
- How program measures fit with HERS, HERS II, BPI, and other certifications and utility programs

The objectives we derived mostly meet the program requirements. Fundamentals of building science were covered well, as were finding air leaks and insulating the attic plane. There are opportunities for hands-on practice with the duct blaster and blower door.

The class provides an overview of combustion-safety testing for contractors who are not BPI-certified, with relevant photos. The role of the Basic Package contractor is mostly to support the BPI Building Analyst (BA), but also to identify and prevent combustion-safety hazards as the analysts perform their work. This session does a good job of identifying the basic safety hazards, but does not provide detail on how to remedy them. (This seems reasonable given limitations on instructional time). It mentions several times to “Check BPI/PG&E Standards” for things like testing limits and actions; but this group may not be familiar with those standards. The content does not go into detail on performing combustion-safety testing on specific appliances, which seems appropriate since most of these contractors will not perform the tests. However, one important piece that was not included is a discussion of the role of the BPI BA as the individual supervising or performing the tests.

Two of the stated objectives that were not covered adequately were those regarding the Whole-House Program essential components and how the program measures fit with HERS, HERS II, BPI, and other certification and utility programs. The components of the Whole-House Program are briefly discussed, including incentive levels and some of the eligibility requirements, but the focus is more on an overview of Advanced Package jobs and does not cover the submission or rebate-application processes for Basic Package jobs. This information might be best presented earlier in the training. The general “Energy Upgrade California” section (ostensibly at the end of day two) mentions the names of other potential rebates and incentives, but does not provide further information. Also, how HERS and BPI certifications fit into the program is not adequately covered.

Basic Upgrade jobs require pre- and post-upgrade duct-leakage and blower-door tests. The workbook contained PowerPoint slides that introduced blower door testing, and there is very good hands-on, interactive classroom training on setting up this tool and instructions for doing the home-performance tests. We also know from our discussion with the instructor that the blower door was demonstrated in the test house and that the students had opportunities for hands-on participation and practice with the blower door, and the combustion safety and duct testing equipment. The instructor expressed a need for more hand-on practice during the class. The instructor also reported that students agreed more hand-on practice time was needed.

In the classroom and demonstration house, the students have many opportunities for discussion and to ask questions when they need clarification on something. The hands-on practice is available in the demonstration house.

To the extent this class encouraged participation in the Whole-House Program; we can say the materials supported behavior change. However, there were no job aids or worksheets to help

in taking action. This class did include motivation to action by describing the benefits for homeowners of the program measures.

This training relates strongly to the actual steps contractors and Raters need to take to qualify and enroll in the program. Although we did not attend the class, the instructor's general description of how the class is conducted provides evidence that he respects the students as capable professionals.

At the end of the class there are no final exams or any kind of tests to demonstrate proficiency. The contractors are only required to attend the entire session, which is monitored closely. Based on the evaluation team's survey of contractors, of those contractors who attended the Basic Upgrade training, 80% felt sufficiently prepared to participate in the program.

3.7.3.3. Advanced Upgrade Package Technical Training

The Advanced Upgrade Package Technical Training (or Advanced Training) is required for all Building Performance Institute (BPI) professionals or Rater/Analysts who wish to submit combustion appliance safety test results to Pacific Gas and Electric's Energy Upgrade California program, and only BPI certified Building Analysts are permitted to attend.

To be eligible to take this course, contractors must have previously attended an online PG&E-hosted Participation Workshop. In addition, contractors who want to attend this class must work for a company that is a current Energy Upgrade California Participating Contractor, or work for a company that has attended the Participation Workshop and is in the process of becoming a Participating Contractor.

For the Advanced Upgrade Package, the program recommends that the scope of work include any Basic Upgrade measures not already installed. For this reason, while not a prerequisite, the program highly recommends contractors also attend the three-day Basic Package Class. (Advanced Upgrade jobs also require a pre- and post-upgrade duct-leakage and blower door tests.)

The intent of this training is to provide qualified contractors the skills and knowledge required to perform home upgrades and effectively implement the Advanced Upgrade measures. This is an advanced course for experienced contractors and primarily focuses on supplementary combustion appliance safety protocols that augment those specified by BPI.

Some Whole-House Program-specific requirements or specific protocols are more stringent than or different from what is required by BPI and these differences are highlighted in the course. One example is the Worst Case Spillage test of combustion gasses that spill from the flue vent into open space. For BPI, spillage is tested for five minutes, and for PG&E's Whole-House Program, spillage is tested for only one minute, and the contractors are instructed to follow the BPI standards to determine what action to take. It also provides training on proper duct testing techniques, which are not covered by BPI-certified professional training, and program installation specifications (described later).

This one-day class is conducted entirely in the classroom. Although there are no hands-on components, this class provides a solid foundation for the particular requirements of the

Advanced Upgrade work. The specific requirements of EUC in the PG&E territory are unlike that anywhere else in the state, and for some measures are more stringent than BPI standards. One of the key goals of this class is to identify these differences in protocols and requirements with the intent of helping the contractors be successful on the job.

Because this training assumes a solid familiarity with BPI protocols and procedures, it does not go into the fundamentals or installation particulars. It does discuss combustion safety topics at a high level, presents installation standards, and gives references to documents containing full details (many of which are provided in the supplemental documents in the training workbook).

The evaluation team reviewed the training as it was at the time of the assessment. We are aware that the Whole-House Program Advanced Package for the PG&E territory is undergoing some changes, and as of June 3, 2013 was renamed the Advanced Home Upgrade program. However, it is our understanding that the training strategy and materials will mostly remain the same.

Instructor and class size

The training we reviewed is titled “Advanced Upgrade Package Technical Training.” The instructor has been in the building science field since 1981. He has worked for several utility companies and has completed more than 7,500 residential energy analyses. He has taught BPI training through CBPCA and Energy Conservation Institute (ECI), is certified by CBPCA, HERS, Build It Green, and BPI, and is a BPI Proctor and Super Proctor.

There is only one instructor for this class in the PG&E territory. For Build It Green, he also teaches the Combustion Safety and Depressurization Testing Hands-on Training, and the Hands-On Duct Leakage Training, also known as the Duct Leakage to Outside (DLTO) class. He also instructs the Worst Case Depressurization and Combustion Safety class.

This Advanced Package Training is primarily delivered at the PG&E Energy Training Center (ETC) in Stockton, CA. The class size varies from as small as 5 to as large as 30 students.

Advanced Package Training Class materials, Workbook, Slide Deck

The evaluation team did not attend this class, but assessed it by reviewing a hard copy of the training materials (a student workbook), and by interviewing the instructor for the class. In our interview with the instructor, the evaluation team confirmed our understanding of how the class is configured and presented.

The class time is listed as six and one-half hours, but it usually runs longer, typically by an hour. This is due to the fact there is more content to teach than comfortably fits in the listed amount of time.

The class materials the evaluation team reviewed include a participant workbook that consisted of reproductions of the approximately 150 PowerPoint slides used for the training. The workbook also contains about 30 supporting background and reference documents consisting of about 125 pages. These include a variety of documents including reproduced copies of the Whole House Combustion Appliance Safety Test Procedure and BPI Technical Standards documents that describe certain home-improvement testing procedures and protocols.

Regarding the PowerPoint slide presentation, there is mix of the types of content on the slides. A majority of the slides are text only with a large but manageable amount of information, along with fewer slides that contain text along with related graphics. Some of these slides are very text heavy and use a small font that is difficult to read. Several of the slides contain images (photographs) without any descriptive text. These slides may leave participants wondering what the key message was if they go back to review them.

One useful aspect of these slides is how they color-code and use italic text to indicate, that for a given topic, there are additional related documents or standards they can refer to in the supplementary materials found in the appendix of the notebook. Another technique uses an asterisk and red fonts to draw attention to Whole-House Program-specific safety procedures that are not included in the BPI standards.

Details about the Training Content

This course primarily focuses on supplementary combustion appliance safety protocols that augment those specified by BPI. It also provides training on proper duct testing techniques, which are not covered by BPI-certified professional training, and program installation specifications.

The instructor previews the class by going over the agenda slide that lists the topics covered in the Advanced Training:

- BPI Quick Review
- Combustion Ventilation Air
- Duct Leakage Calculations
- 2-4 Unit Requirements
- PG&E Augmented CAS Protocols
- Test Measurements Form
- Combustion Appliance Safety Test Form

The class is mostly configured for lecture presentation. The instructor does take time to sketch on a whiteboard to illustrate concepts, and a small amount of time is dedicated to answering questions from the students. As a rule, the only scheduled individual or group activities involve performing some mathematical calculations.

The instructor does spend some time going over some of the supplemental documents in the workbook; in particular those PG&E versions of procedures that are substantially different from BPI, such as where and how measurements are taken, what are acceptable values, etc. As another example, the instructor reads in class verbatim the text from the set of PG&E safety action guidelines. This emphasizes the importance of the content, and is done in case there is someone who might return and claim this content wasn't covered. For this type of content, he follows the approved content closely, and he follows up when someone does not understand. Also, the instructor spends time to focus on combustion ventilation air (CVA) content and

calculations activities because he is aware that contractors are having trouble with this task (a high QA failure rate).

Covered program measures

An Advanced Upgrade Package is customized for a particular house, and the incentives are based on the expected energy savings. The homeowner may select a combination of upgrade measures that include replacing heating and/or cooling systems with high-efficiency units, wall, floor, and attic insulation, duct insulation, sealing and replacement, water-heating systems, and more. The “Participation Handbook” provides a complete list of the Advanced Upgrade Package measures.

Adult Learning Principles

To some degree, Advanced Package Training applied adult learning principles and practices, such as presenting a contractor-perspective orientation and a description of the usefulness of the session.

As with the Basic training, there were no documented interactive classroom activities, quizzes, or application. There were examples that connected new learning to the participants’ prior learning and experience. Also, the classroom materials only provided for lecture as the instructional method.

Training Objectives

There are no formal training objectives for the Advanced Package Training. The evaluation team derived the training objectives from the workbook and PowerPoint presentation content, and from the online course descriptions. The high-level topics that determine the terminal performance and enabling objectives are combustion ventilation air, duct leakage calculations, EUC installation standards, 2-4 unit requirements; PG&E augmented CAS protocols, and applying test measurements and CAS test forms.

The objectives we derived mostly meet the program requirements. This class did have an organizing plan, presented in the workbook as class organization (agendas) and class schedule.

There was a good match of the derived training objectives with the published intent of the training. Specifically, it did focus well on supplementary combustion appliance safety protocols that augment those specified by BPI, provided training on program installation specifications through a high-level, non-detailed review of the minimum required specifications for all measures, and a fairly complete review of proper duct testing techniques, which are not covered by BPI training (essentially the same duct leakage testing information included in the Basic Package training.)

More Observations about Adult Learning Principles

The training did not introduce the class with statements regarding the relevance of the content and class to the students (“what’s in it for you” for the students), although most are aware that understanding the combustion safety procedures and installation specifications are critical to performing their role. The training does touch on relevance in a later discussion of incentives and reasons why contractors should participate in the Whole-House Program.

The instructor does not inquire about students' goals and expectations; however, for smaller groups he has them do a round of self-introductions, asks how many residential tests they have done, and asks about their experience.

The students do have many opportunities for discussion and to ask questions when they need clarification. (In an introductory slide, participants are encouraged to ask questions, offer input, and share experiences.)

Almost 100% of this training relates to the actual tasks contractors and Raters need to perform on the job, and from that perspective is very practical.

This class presents a high level of detail for combustion testing and measure installation standards. As noted earlier, in the slide presentation, key differences between PG&E procedures and BPI standards are highlighted in red text. This is very helpful for the Building Analysts since there are many small differences that might otherwise be overlooked.

Another positive aspect of this training is how it shows the actual forms and fields that must be completed, and breaks them down into subsections with instructions on how to properly fill them in.

The topic of energy modeling is not covered, but the presentation provides links to websites that offer training. Not mentioned but should be is that EnergyPro modeling documents and webinars are available on the Build It Green EUC website.

The instructor's general descriptions of how the class is conducted provides evidence that he respects the students as capable professionals.

To the extent this class encouraged participation in the Whole-House Program, we can say the materials supported behavior change. The supplemental documents did provide some job aids and sample forms that provide help in taking action. Also, as with the Basic Upgrade training class, this class included motivation to action by describing the benefits for homeowners of the program measures.

The training does not include any "Check Your Understanding" activities (short, informal quizzes) during the class or summary slides to review key points.

Observations from the workbook showed that there was a logical organization of topics and this training generally meets program requirements. As classroom-only instruction, students did not have opportunities for hands-on practice, but for the most part, they should be able to perform the required EUC Advanced Upgrade tasks to an acceptable degree, particularly the more experienced contractors.

We noted from our discussion with the instructor that the degree of competence and success with completing the tasks required by the program varied with the level of prior experience of the contractors; some less-experienced contractors were not sufficiently prepared and indicated a need for additional practice.

At the end of this class there is no test or demonstration of skill required before they are allowed to do the work. After attending the Advanced Package Training, qualitative evidence

indicates that of those who were asked (not all were), more than 90% were satisfied with the training.

About BPI Certification

To implement the Whole-House Program Advanced Upgrade measures, a contractor must have at least one person on staff with a BPI Building Analyst certificate. PG&E does not offer the training that contractors need to prepare for the BPI certification exam or to become qualified to participate in the Whole-House Program. In the Whole-House Program Participant Handbook” there is a list of “Additional Training Opportunities” that lists BPI Affiliates.

The PG&E Advanced training is quite different from that offered by SCE for their Whole-House Program. SCE’s is a type of BPI certification training where PG&E requires that Advanced class participants already be BPI certified.

By itself, and even with the mentoring sessions and online training, BPI training does not in all cases provide the extensive hands-on experience required to adequately prepare many contractors to perform the Advanced Upgrade measures and fieldwork. This is confirmed in our review of selected QA reports, described elsewhere. Contractors new to this field have difficulty and require additional practice performing the required tasks. Many contractors who may not have attended this training have mentioned the need for additional training to address some of the performance gaps, e.g., occasional failure with air sealing, attic insulation, duct sealing, hot-water-pipe insulation, combustion testing, etc.

BPI is a national organization that describes itself as “a standards development and credentialing organization for residential energy efficiency retrofit work” and states that they help “support programs through professional certification, contractor accreditation, and quality assurance services.” BPI’s home-performance training prepares students to take the BPI certification exams and is designed and presented by independent third-party training organizations. BPI supports training through a network of affiliate organizations, but BPI does not endorse or approve the specific training.

There are several BPI “designations” for different types of certifications. The BPI Building Analyst (BA) is the type relevant to contractor eligibility for the Whole-House Program. The description of Building Analyst’s scope is to “go beyond a traditional energy audit to perform comprehensive, whole-home assessments, identify problems at the root cause and prescribe and prioritize solutions based on building science.”

During this assessment and our previous one with SCE, we have found that being a BPI-certified Building Analyst does not necessarily guarantee the skill set required to succeed in the Whole-House Program. One reason is that BPI certification can be obtained with no formal training—an individual only needs to pass the certification exams. Another reason is that there are several dozen third-party versions of the BPI home-performance training delivered at different venues in California and throughout the U.S. The quality and depth of this training varies widely. The training can be delivered in a classroom and in the field, or presented online for those who prefer self-instruction. Total training time ranges from zero to 12 days in the classroom and in the field.

Specific shortcomings of some of the BPI training include insufficient practice for EUC fieldwork, and a poor and often inadequate alignment with some EUC measures (air sealing, weatherization).

The scope of this assessment did not include an evaluation of any BPI training.

3.7.4. Optional Program Training

The evaluation team reviewed training that is optional but considered to be very useful for Whole-House Program contractors and Raters. This is because much of the content covered in this training is directly relevant to the EUC Program. Specifically, these classes offer an opportunity for a review of key building science concepts and hands-on practice with testing procedures and testing equipment.

The training we reviewed includes:

- Duct Leakage to Outside Hands-on Training
- Combustion Safety and Depressurization Testing Hands-on Training

3.7.4.1. Duct Leakage to Outside Hands-on Training (DLTO)

The “Duct Leakage to Outside Hands-on Training (DLTO)” is an optional course for the Energy Upgrade California contractors and Raters. Because the Duct Leakage to Outside procedure is required as part of the EUC Program for testing duct systems and on any new pre-application submissions, this is a recommended course. Although the training itself is not required by the program, it is very useful for contractors who want to become more familiar with test procedures.

This training is open only to participating contractors or Raters who are enrolled with the Whole-House Program. The training reinforces the ability of contractors and Raters to diagnose duct leakage more accurately for EnergyPro modeling and for developing a scope of work for EUC projects. This one-day session provides an opportunity for supplemental instruction, demonstration, and hands-on practice.

Instructor and Training Locations

The instructor has completed more than 7,500 residential energy analyses. He has taught BPI training through CBPCA and Energy Conservation Institute (ECI), is certified by CBPCA, HERS, Build It Green, and BPI, and is a BPI Proctor and Super Proctor.

The training is hosted by Build It Green and PG&E and is primarily delivered at the PG&E Energy Training Center (ETC) in Stockton, CA. In addition to classroom facilities, the ETC has on site a “demonstration house” and a “combustion test laboratory” where students can practice certain procedures and protocols. This class is also delivered at Laney College in Oakland and Skyline College in San Bruno, which have facilities for hands-on training.

The instructor reports that many students stay for the brief classroom presentation, but leave before or during the hands-on component. These are typically contractors with years of

experience, and are mainly interested in understanding program rules. Other contractors remain for the entire day, typically those who need hands-on practice and personal guidance.

Materials and Training Content

The training we reviewed is titled “Duct Leakage to Outside Hands-on Training.” In our interview with the instructor, we confirmed our understanding of how the class is configured and presented. As with the other training for the program, the evaluation team reviewed the training as it was at the time of the assessment.

The instructor begins the class with an introductory classroom lecture to walk through the Building Performance Institute (BPI) and California Energy Commission (CEC) procedures and program requirements. The majority of the class is used for hands-on practice in the lab.

The instructor provides an overview of the lab activities, which includes blower door and duct testing setup as part of the greater DLTO procedure. The students may select to practice with either the Minneapolis equipment using the DG-700 manometer (developed by The Energy Conservatory) or the Retrotec equipment, depending on the preference of the contractor.

After the main practice session, students are free to practice the particular functions or tests they feel would benefit them the most. Students who stay until the end of the day receive a lot of hands-on practice using the equipment with the instructor standing by to provide assistance.

The estimated time the instructor spends in the class for lecture and presentation is about 60% of the class time. The remaining time is on demonstration by the instructor (15%), demonstration by students (5%), individual students performing hands-on tasks (20%). The instructor monitors and evaluates the students’ work the entire time they are setting up test equipment.

Adult Learning Principles

Although there are no formal objectives documented for this class, the presentation slides include an agenda with a preview of the day’s topics and activities.

There are no formal training objectives for the “Duct Leakage to Outside Hands-on Training.” We derived the training objectives from the workbook and PowerPoint presentation content. The high-level topics that determine the terminal performance and enabling objectives include:

- Total duct leakage (TDL)
- Duct Leakage to Outside (DLTO)
- EnergyPro duct leakage percentage value
- Duct testing equipment
- BPI and CED review
- DLTO setup and test

The instructor does not inquire about attendees’ goals and expectations for the class; however, he does involve the students interactively by encouraging participation, asking questions, and facilitating discussion.

At the beginning of the presentation the instructor reminds students that the DLTO procedures are now required by the Whole-House Program, connecting the relevance of the training to on-the-job activities. The instructor offers a preview of other topics in the class including a list of resources for assistance with modeling. He also brings supplementary materials to class as well as providing “nuggets of wisdom” and time-saving tips in order to add value for the more experienced contractors.

Participant Feedback

This class receives generally very good reviews, and most students feel adequately prepared to perform DLTO tests in the field after attending the class. Students that have field experience and the quick learners feel well prepared; those who only recently completed a five-day BPI class with little field experience often do not feel well prepared.

3.7.4.2. Combustion Safety and Depressurization Testing Hands-on Training

The “Combustion Safety and Depressurization Testing Hands-on Training” (also called the “Combustion Appliance Safety/House Depressurization Class”) is another optional course for the Energy Upgrade California contractors and Raters. This training is not required by the Whole-House Program, and is open to anyone who wants to prepare for the BPI Building Analyst field test or who wants an opportunity to work directly in small groups with an experienced instructor to practice hands-on BPI-specific combustion safety protocols.

This one-day session is presented by PG&E at the Stockton Energy Training Center where there is about a five to one student to instructor ratio. For this class, the instructors and students use the “combustion lab” which has a variety of common gas appliances including water heaters and furnaces.

Instructors

There are two instructors for this class. One of the instructors for this class works as a heating, air conditioning, and electrical contractor. In addition to instructing classes at the PG&E Energy Training Center in Stockton, CA, he also instructs classes for the California Building Performance Contractors Association. The other instructor has completed more than 7,500 residential energy analyses. He has taught BPI training through CBPCA and Energy Conservation Institute (ECI), is certified by CBPCA, HERS, Build It Green, and BPI, and is a BPI Proctor and Super Proctor.

Class Materials and Instruction

Class participants are given a package of handouts which includes a hard copy of the presentation slide deck, a quick reference checklist for the full combustion safety test procedure, and several printed copies of graphics that help explain concepts and memos regarding specific problem areas.

The evaluation team downloaded and reviewed an electronic copy of the PowerPoint presentation titled “Combustion Safety & Depressurization Furnace & Water Heater Parts” and interviewed Mr. Wahl for an understanding of how the class is conducted.

This class is promoted as an opportunity to “increase your confidence and competence in combustion safety, according to BPI protocol.”

As stated earlier, this class is open to anyone who wants to prepare for the BPI BA field exam. Many students are from local community college programs, and many of the students who attend are already BPI certified and attend this class for additional practice with the test procedures. The instructor notes that some students repeat the class as many as four or five times. Many are business owners who only occasionally perform CST.

The Stockton ETC “combustion lab” provides a workplace for testing procedures including the spillage, carbon monoxide (CO), and draft tests. Every student is given an opportunity to go through every step of the tests following the official forms. Students are observed by the instructor who provides assistance and feedback.

In the Worst Case Depressurization (WCD) lab, the instructor initially demonstrates the process. Then each student is given an opportunity to set up a WCD scenario for the furnace combustion appliance zone (CAZ). The lab dampers are manipulated to provide different pressure levels and the students are provided two manometers to test pressure differences, and the instructor records the results. During the lab, the instructor observes the students closely and provides feedback on their work.

Another WCD run through is done for water heaters. In this case, there usually is not enough time for every student to take their own measurements and the students use the instructor’s or other classmate’s readings to use for calculations.

The estimated time the instructors spend in the class for lecture and presentation is only about 15% of the class time. The remaining time is on demonstration by the instructors (35%), demonstration by students (25%), individual students performing hands-on tasks (25%). The instructors monitor and evaluate the students’ work for the whole class, all of the time.

Participant feedback

As we have indicated previously, the level of experience of the students varies widely, even for BPI certified contractors. After attending this class, some participants indicate they feel somewhat prepared to conduct combustion safety testing in the field. In the same way as students in the DLTO class, those with field experience and the quick learners feel well prepared; those who only recently completed a five-day BPI class with little field experience often do not feel well prepared.

This class receives generally very good reviews. Experienced students appreciate the review the class offers and others admit that the class opened their eyes to many new things, even as BPI certified contractors.

Adult Learning Principles

There are no formal training objectives for the “Combustion Safety and Depressurization Testing Hands-on Training.” We derived the training objectives from the workbook and PowerPoint presentation content, and from the online course descriptions. The high-level topics that determine the terminal performance and enabling objectives are described in the

online course description that states that contractors will learn combustion safety protocols including:

- Types of combustion venting for natural gas water heaters and furnaces
- BPI combustion safety protocols
- Familiarization with testing equipment
- Worst-case depressurization testing procedures
- Recommendations to the customer

The objectives we derived meet the program requirements and there is a good match with the slide contents and the objectives. The topics were covered well, and this class offers valuable opportunities for hands-on practice with the combustion safety procedures.

The instructor does not inquire about students' goals and expectations for the class, but for smaller groups he has them do a round of self-introductions, asks how many residential tests they have done, and asks about their experience. The instructor is considering adding this component.

For this class there are no written classroom exercises. The relevance and value are found in the desire of students whose intent it is to pass the BPI field exam, and for those contractors in the program, passing the QA test-out verification.

This training relates strongly to the actual tests contractors and Raters need to perform on the job. Although we did not attend the class, the instructor's general descriptions of how the class is conducted provides evidence that he respects the students as capable professionals.

At the end of the class there are no final exams or any kind of tests to demonstrate proficiency. We suppose those who want to pass the BPI test consider that the "final exam."

3.7.5. Online Webinar Training Recordings

Through Build It Green's Program Portal for Recorded Webinars, Energy Upgrade California program participants have access to a library of some 22 recordings of training webinars on a variety of topics. (Here's the link to the website: <http://www.builditgreenutility.org/webinars>.)

This portal offers on-demand, self-paced sessions for contractors, Raters, and other interested parties. Participation in this training is not mandatory, but according to program managers, it provides contractors with the opportunity to better understand the business and technical requirements of the program.

Some of the webinar recordings are from as early as April 2011, and continue through to June 2013 with a presentation of information on the new Home Upgrade Program.

The series of webinar recordings primarily present details on the Whole-House Program as well as recent program updates, including benefits of the program to contractors and homeowners, and the particulars for getting involved. Others target how to use EnergyPro modeling software and to successfully submit program-required forms and checklists to help contractors make it

through the QA review process. Several of the webinar recordings focus on how contractors can enhance their business model and practices with tips for marketing and selling their services as well as suggestions for administrative tasks such as using the EUC Green Energy Compass to submit data forms and job processing. Also, there are a couple of webinar recordings that present information on the EUC Multifamily Pilot Program.

In the review of the webinar recordings, we used the following criteria as a guideline for our assessment:

- Did the presenters introduce themselves and provide something of their background and relationship with the Whole-House Program or Build It Green?
- Regarding the general presentation, was there an effective PowerPoint slide deck? Did the content cover what was promised, and what it needed to cover? Was there a logical sequence and flow to the content? Were the slides visually appealing and optimized for online viewing? Were the participants told whether they could download a copy of the slides?
- Was there an explanation to the participants about the logistics of the webinar, how long they expected the presentation to take, and how it works, such as how to participate interactively, and how to ask questions? Were they told when to ask questions and when the presenters would answer them (e.g., anytime during the session, or only at the end, etc.)? Were they told the session was being recorded and whether a copy would be available?
- Were there opportunities for interactivity, such as taking a poll or answering posed questions (such as check your understanding quizzes, multiple-choice review questions)?
- Regarding content, did the presenter provide an overview, preview, or agenda of what to expect from the webinar? Were there summary slides following key sections of the training with a review of the main points?
- Was there a definite stopping point in the presentation where participants were asked if they had any final questions? Did the presenters offer contact information for follow-up questions after the webinar?

From the online list, we reviewed the following webinar recordings:

- Business Opportunity through Energy Upgrade California (How to incorporate EUC into your model)
- Marketing: Whole House Marketing Tactics Worth Stealing
- Sales: Whole House Sales Strategies That Work
- Modeling existing homes with EnergyPro
- An Introduction to Green Energy Compass

3.7.5.1. Business Opportunity through Energy Upgrade California

This webinar is subtitled: How to incorporate EUC into your model. The webinar is promoted as an opportunity to learn about “the business case for integrating home performance into your

business, and how to make the most of program rebates and incentives.” This webinar presents case studies of “how other remodelers and production builders have added home performance into their home sales process...”

This is an “informational webinar” with duration of one hour 15 minutes. The evaluation team downloaded a copy of the pdf file of the reproduced PowerPoint slides for reference and watched the recording of the webinar from April 12, 2013. It was presented by Build It Green management staff and instructors.

The presenters introduced themselves and provided information about their backgrounds and relationship with Build It Green and PG&E’s Whole-House Program. Participants were informed that the webinar was being recorded and that they would be emailed links to the recording and a copy of the slide deck, as well as contact information so they can ask additional questions if they had any. During the webinar, participants were also told that under the “Questions” section on their screen they can ask questions that will be answered at the end of the broadcast.

After the introduction to the webinar and how this presentation would cover business opportunities for contractors, there was an initial interactive activity in which the participants were asked to respond to questions using the “little hand button” on their screen. The poll was taken with a “show of hands” to the questions of how many are remodelers? followed with how many HVAC contractors? new home builders? consultants? HERS Raters or other “green” consultants? BPI training? designers? other trades people? Then the participants were told if they didn’t answer yes to any of the previous questions, to please type in what you do.

The presenter did point out where and how participants could ask questions or comment on any reception problems anyone might be having with the broadcast. The participants also were told that this was not the Participation Workshop, in case they were there by mistake, and were told when that presentation was to be given.

There was an initial agenda slide that previewed the presentation content. This presentation gave a very good overview of the scope and steps involved with home performance work and a whole house analysis. This presentation also did an excellent job of covering how contractors can integrate home performance into their businesses, and the many benefits it can provide not only their business, but also for homeowners, the local economy, and the environment.

The presentation describes the typical jobs the participant might encounter under the Whole-House Program, including typical problems found with a home, the solution measures, associated costs and rebates, and the resultant energy improvements.

There also were several examples of possible business models they might incorporate, and provided practical and usable guidance on making the most of the Whole-House Program rebates and incentives. It did, as promised, present case examples of how other remodelers and production builders have added home performance into their home sales process.

This is a very good all-around presentation of the specifics and role the contractors will take as home performance professionals. There was a logical sequence and flow to the content and the slides were very visually appealing, and to a degree were optimized for online viewing. The

PowerPoint slides were professionally done, of a high quality, and included very good use of graphics. The “projected” slides from the recording were rather small, but we were able to refer to the downloaded resource for a better look at the slides.

All of the speakers spoke at good pace, covering the content well, and highlighted the key take-away points from the presentation.

The promised content was covered very well, with sections relative to the specifics of how the program can support contractors and the services offered by Build It Green, including technical training and mentoring, best business practices, administration and support with the program paper work, and personalized sales and marketing support.

At the end of the presentation a “Next Steps” slide included links to signing up for the Participation Workshop (required for contractors who wish to become part of the program), links to the Build It Green Contractor Portal for the Whole-House Program where participants can access recorded webinars, documents, policies, and more, and to the statewide EUC portal. This final slide also repeated the contact hotline and email information.

3.7.5.2. Marketing: Whole House Marketing Tactics Worth Stealing

This webinar titled “Marketing: Whole House Marketing Tactics Worth Stealing” is described as an opportunity to learn about “the low-cost marketing tactics used by others to sell ‘whole house’ energy efficiency improvements,” and also about “how to use neighborhood workshops, job completion open houses, neighborhood door hangers, yard signs, and at least six more proven marketing tactics.” This webinar is also called, “Home Performance Marketing—Tactics Worth Stealing.”

This webinar presents examples of businesses that were successful in adopting the whole house marketing concepts in a home performance business model. This is an informational webinar with a total duration of one hour 20 minutes. The PowerPoint presentation lasted about an hour, and the remaining time was used to answer questions from the participants. The evaluation team downloaded a copy of the electronic file of the reproduced PowerPoint slides for reference and watched the recording of the webinar from March 16, 2012.

This webinar was presented by staff from the Electric & Gas Industries Association who introduced the presentation as part of the Whole House webinar series sponsored by PG&E as part of the Whole-House Program.

The moderator mentioned providing participants an email with link to a web page where they can download a copy of the PowerPoint slide presentation. Also, she mentioned the GoToWebinar link to view online as they go through the presentation slides. Participants also were notified the webinar was being recorded and they will receive an email with a link to the recording the following day, and a link to the Build It Green contractor portal.

There was a brief explanation to the participants about the logistics of the webinar, and how to ask questions. They also were told that phone lines were on mute, and if there is a question, to type it into the GoToWebinar application and the presenters will answer questions at the end of the presentation.

The moderator introduced the webinar, and stated that its intent was to present an overview of successful marketing strategies and how to integrate these into the participants' business. The moderator introduced the presenters, and provided their backgrounds and job history as well as current position and responsibilities at EGIA.

The first presenter introduced the session as an introduction to marketing options for contractors, and opened with a summary of the benefits to contractors of the whole house approach. The slide deck did not have an initial webinar agenda or a preview of the presentation topics, which is an interesting approach; the "agenda" slide was shown later in the presentation.

By and large, the presentation provided practical marketing and general business model suggestions, and identified the traits of top-tier contractors and what makes them successful. The gist was that if you do what these contractors do, you too can be successful in home performance work. To this point, there were several examples of companies that demonstrated the benefits of getting into home performance and of using smart marketing strategies. One company marketed their services through home owners associations; another, a former realtor, marketed to old contacts; and another did cross-selling through subcontractors to promote the whole house solution they offered their customers.

The second presenter is a strong speaker and is very experienced and knowledgeable about whole house and home performance sales and marketing. He acknowledged that the participants on the line were EUC contractors and he addressed them as professionals.

When he began, he presented an agenda for the remainder of the presentation, and previewed the topics that were to follow. The presentation covered many practical marketing ideas and strategies, and introduced the participants to the Energy Upgrade California website, where there are many resources and marketing materials they can download and adapt for their own business.

The presenters gave some very solid advice on how to market successfully, and more, how to be honest about your work, to go by the book, and be ethical in your business dealings. They emphasized the need for contractors to improve their skills to be a "housing scientist," how to be more than a "box swapper" and to set the bar high, higher than the low-ball contractors. They also provided advice about putting marketing funds in the budget for the work, then to use the marketing money wisely. At the end of the presentation, the summary "Build-Your-Own Marketing Plan" slide was repeated for emphasis and to drive home the key points.

The presentation was turned back over to the moderator to handle the questions from participants. She again reminded participants to type their questions in the GoToMeeting application. As the participants were typing in their questions, Build It Green staff promoted an upcoming event and Build It Green's portal.

The presenters respected the questions that were asked by the participants, and provided targeted answers. The presenters reiterated that the recording and slides would be available for download and participants would receive an email with links to these. In the presentation wrap up, there was a slide with contact information on the screen for future contact and questions.

3.7.5.3. Sales: Whole House Sales Strategies that Work

This webinar titled “Sales: Whole House Sales Strategies that Work” is described as an opportunity to learn about “successful sales strategies and kitchen table close techniques being used by whole house contractors in California with ‘how to’ details on how to apply their lessons learned to your business.” This webinar presents examples of how businesses can be successful in adopting certain sales techniques for home performance businesses.

This is an informational webinar with a total duration of about one hour 30 minutes. The PowerPoint presentation lasted about an hour, and the remaining time was used to answer questions from the participants. The evaluation team downloaded a copy of the file of the reproduced PowerPoint slides for reference and watched the recording of the webinar dated May, 2012. This webinar was presented by staff from the Electric & Gas Industries Association.

Moderator introduced herself and the presentation as part of the Whole House webinar series sponsored by PG&E as part of the Whole-House Program. The moderator mentioned providing participants an email with link to a web page where they can download a copy of the PowerPoint slide presentation. Also, she mentioned the GoToWebinar link to view online as they go through the presentation slides. Participants also were notified the webinar was being recorded and they will receive an email with a link to the recording the following day, and a link to the Build It Green EUC contractor portal. They were told that phone lines were on mute, and if there is a question, to type it into the GoToWebinar application and the presenters will answer questions at the end of the presentation.

The presenter briefly introduced the session titled “Sales: Whole House Strategies That Work” and stated that its intent was to present an overview of successful sales strategies and how to integrate these into the participants’ business. She then introduced two other presenters and gave their backgrounds and job history as well as current position and responsibilities at EGIA.

The first presenter introduced and previewed the session using the “agenda” content in the first slide, then continued with the first part of the webinar going through the slide deck. The second presenter was on the phone and the audio quality was good. He had several good observations and ideas that were not specific bullet points on the slides. Both presenters were comfortable with their narration and were knowledgeable and experienced with sales.

In general, this webinar covered what was promised, and what it needed to cover. It presented basic sales training, and provided valuable suggestions for making the sale and for ways to develop and present a consistent sales strategy and company identity to prospective customers. The content was well organized and appropriate for the audience and there was mostly a logical sequence and flow to the content. It made use of case studies to summarize and drive home key points. It provided good suggestions for showing value to the customer, such as taking and presenting to the customer “before and after” photographs using infrared camera.

Other than the ability to ask questions, there were no other opportunities for interactivity, such as taking a poll or answering posed questions (such as check your understanding quizzes, multiple-choice review questions).

The final presenter wrapped up the session using a slide with a summary of key points. The moderator then took over and provided the participants with an opportunity for questions and answers. Again, participants were instructed to type in the questions in the webinar application. The questions asked provided an opportunity for both presenters to talk “off the cuff” in a general discussion that included how to approach customers for those without a lot of “people skills” and sales experience. The open discussion lasted about 30 minutes. Other discussion topics included some general tips for selling to homeowners, showing calculated savings, benefits, and investments, presenting proposals, and the importance of attempting to understand customers and responding to their wants and needs.

The presenters wrapped up the session with a final point about managing the perception of the customer, because it’s what the homeowner sees value in. The moderator again told the participants they would be mailed a link to a recording of the session.

3.7.5.4. Modeling Existing Homes with EnergyPro

This webinar titled “Modeling Existing Homes with EnergyPro” is offered as an introductory session on how to model existing homes in EnergyPro, the software contractors must use to model upgrades and calculate energy savings. In addition to teaching contractors how to use the EnergyPro software, this webinar highlights “common pitfalls in the job submission process” and provides tips for getting jobs through the process “the first time while maximizing incentives.”

This is an instructional and procedural webinar with a duration of one and one-half hours. The evaluation team viewed the recording posted in September, 2011. The three presenters hosting the webinar did not introduce themselves as part of the introduction, or provide information about their background or relationship with Build It Green or PG&E’s Whole-House Program. At certain points in the presentation, they did refer to each other by their first names.

There was no initial agenda or overview slide in the presentation, although there were slides containing summaries of the major steps toward the end of the webinar. The presenter encouraged participants to submit typed questions at any time. He asked a co-presenter to inform him of any questions relating to the immediate topic, and indicated that other questions will be answered toward the end of the webinar.

The format of this webinar consists of a live software demonstration of EnergyPro conducted from the presenter’s desktop, along with supplemental PowerPoint slides containing screenshots and limited text. The presenter informed participants that they would receive a copy of the slide deck for future reference, along with an explanation that it is not meant to be self-contained. The slide deck was not posted along with the webinar recording on the Build It Green EUC website.

All of the speakers spoke at good pace and covered the content well. The main presenter seemed very knowledgeable about the software. He explained complicated aspects of the EnergyPro software in clear and easy-to-understand manner. The co-presenters seemed very knowledgeable as well, particularly on modeling considerations relating specifically to the Whole-House Program.

The promised content was covered very well; the presenter walked through all the steps in energy modeling, from inputting basic information to exporting the XML file. As the presenter navigated through the software, he described the various menu options that must be selected, the proper default values to use, the fields that must be populated, and fields that can be left blank. At several points throughout the presentation, the co-presenters joined in to elaborate on a topic or to provide tips for avoiding common mistakes.

The presenters also did a good job of explaining the complex nature of EnergyPro. They informed contractors that it is an industry tool used for several purposes, and throughout the training identified portions of the software that EUC contractors could disregard.

The presenters did not field any questions during the delivery of the training content, but devoted the last 30 minutes of the webinar to answering the many participant questions that had accumulated. To address these questions, the co-presenters would read them aloud and the main presenter would answer in depth.

There was no final slide displaying next steps or providing contact information for follow-up questions, but this information was provided verbally in closing remarks as well as dates for upcoming EUC webinars.

3.7.6. An Introduction to Green Energy Compass

This webinar titled “An Introduction to Green Energy Compass” is offered as an introductory session “describing how to submit and track jobs using Green Energy Compass,” the web-based software that contractors must use for job submission for the Whole-House Program. This webinar provides a guided tour of the software and goes through the steps contractors will need to take to input job information and submit documents.

This is an instructional and procedural webinar with duration of about an hour. The evaluation team viewed the recording posted in September, 2011. It was co-presented by Program Managers from Build It Green. It should be noted that this recording dates back to the initial implementation of Green Energy Compass, and much of the information is now out of date. The presentation was originally intended for a small informal audience, and thus is less polished than other program webinars. The evaluation team chose to review this webinar despite its age since it is the only training available for the Green Energy Compass software.

The presenters began the webinar by introducing themselves, but did not provide information about their backgrounds or relationship with Build It Green and PG&E’s Whole-House Program. Presenters explained that this was an informal webinar for a small group of “power” users, selected to help test the software, provide feedback, and receive individualized attention.

Presenters informed participants that they would receive an information packet afterward, containing a user’s guide and other supporting documents. The presenters gave their contact information as well as for the general help desk for any off-line questions that might come up later. If there were questions from the participants during the broadcast, they were instructed to use the webinar’s “raise your hand” icon and to ask a question at any time.

After the introduction, the presenters dove right in to the content. No agenda or overview slides were displayed, as a slide deck was not utilized in this training.

The format of this webinar consists of a remote desktop view of the presenter’s screen as he navigates through the Green Energy Compass software online. The presenters provide a walk through all the steps of job processing, from adding a new job to processing the rebate. As the presenter navigates through the various pages and forms, he describes formatting requirements and the error-checking mechanisms in place for each field. At several points, the presenter mentions quirks with the software and processes that are likely to change, many of which have probably already been resolved.

Both of the speakers spoke at a good pace, were easy to understand, and covered the content fairly well. It was obvious that some aspects of the Compass software were still new to the presenter; however, this was probably not an issue at the time of presentation since it was intended only for a small initial group. It seems that the presenters were not aware this recording would be posted as a source of training for all program contractors.

About every 15 minutes, the participants had an opportunity to ask questions, at which time the microphones of all participants on the line were un-muted. Each time this happened, background noises from participants caused a major distraction. When the noises died down, a question or two would come through from the participants. Unfortunately, most of the questions had to do with receiving login information for Compass or about rebate rules for various counties, and were largely off-topic for training contractors on how to use the Green Energy Compass software.

At the end of the presentation, the presenters answered a few remaining questions and provided information about upcoming participation and contractor update webinars. They also discussed the next steps for this small group of initial users, most of which do not apply to the larger contractor population.

3.7.7. Field Quality Assurance Scores

The evaluation team analyzed a random sample of 50 Field Quality Assurance score sheets with the purpose of assessing contractor performance in the field, and to determine a sense of how field performance may relate to the training program.

The score sheets contain five tiers of fail criteria, labeled “Fail 0” through “Fail 4” in order of most serious (Fail 0) to least serious (Fail 4). Each tier contains several possible safety and performance issues; with a job considered failing if any of these items is marked as “fail.”

There also are two tiers of “pass” criteria, with Pass 0 representing acceptable work and Pass 1 representing exceptional work. A breakdown of Field QA overall scores for the sample of 50 jobs is provided Table 61.

The evaluation team mapped the fieldwork deficiencies documented in these scoring sheets to the required contractor skills and knowledge, which resulted in many useful and detailed recommendations.

Table 61: Overall Contractor Field QA Scores

	Score						
	Pass 1	Pass 0	Fail 4	Fail 3	Fail 2	Fail 1	Fail 0
Jobs	9	3	9	9	6	11	3
Percentage	18%	6%	18%	18%	12%	22%	6%

Out of the 50 sample score sheets, only 12 jobs (24%) received a passing score. The remaining 38 jobs (76%) had one or more issues requiring remediation. This indicates that a large portion of program contractors would benefit from additional training and mentoring.

The pass rate was relatively low during late 2012 but seems to have improved significantly in the first few months of 2013. This could be related to training improvements over this period or to contractors performing better work as they gain experience over time.

Among jobs receiving a failing score, only 6% received a “Fail 0” (the most serious). This means that major safety hazards were not observed for 94% of jobs in the sample, and seems to indicate that safety training has been adequate for preventing critical mistakes.

Among jobs receiving a passing score, three times as many received a “Pass 1” as a “Pass 0” score. This shows that despite the many contractors struggling to meet program standards, there is a class of contractors performing exceptional work above and beyond the rest.

This wide range of contractor capability and performance supports the recommendation for a flexible and modular training curriculum, allowing contractors to get appropriate training for their individual needs.

3.7.8. Contractor Performance Gaps

Training design typically looks at the gaps in the performance of the persons being trained. The evaluation team analyzed Field QA Score Sheets which revealed gaps in contractor performance. We studied the individual pass/fail items from the score sheets as well as QA verifier comments to capture the most common issues regarding safety and measure installation.

We cannot conclude that these performance gaps are directly caused by inadequacies in the training materials we reviewed. However, many of these performance gaps can likely be addressed by remedial training or observational study.

Performance gaps fall into several categories:

- **Safety performance gaps** are problems related to following combustion safety testing and gas safety protocols.
- **Measure-related performance gaps** include issues related to measure assessment, implementation, and modeling.

- ❑ **Assessment performance gaps** are problems with identifying, recognizing, or measuring existing conditions at a job.
- ❑ **Implementation performance gaps** are problems with implementing or executing the energy-related measure in the job.
- ❑ **Modeling performance gaps** are problems related to modeling program upgrades according to program requirements using energy modeling software.

The evaluation team analyzed individual pass/fail items and associated QA verifier comments within each scoring tier to identify the most common safety-related and other performance gaps in the field. The results of the analysis are presented in the tables "Top Safety Gaps in Contractor Performance" and "Top Measure-related Gaps in Contractor Performance" below.

A summary of the most frequently occurring safety gaps in contractor performance are provided in Table 62.

Table 62: Top Safety Gaps in Contractor Performance

Rank	Frequency	Performance Gap
1	40%	Detecting small to moderate gas leaks
2	16%	Taking spillage measurements for combustion appliances
3	14%	Identifying proper ventilation for combustion appliances
4	14%	Taking carbon monoxide (CO) flue measurements
5	12%	Providing sufficient fire clearance for combustion appliance venting
6	12%	Conducting draft testing for combustion appliances
7	10%	Creating worst case depressurization in the combustion appliance zone

A summary of the most frequently occurring performance gaps in contractor performance are provided in Table 63.

Table 63: Top Measure-related Gaps in Contractor Performance

Rank	Frequency	Performance Gap
1	24%	Characterizing attic insulation
2	22%	Identifying air leaks
3	18%	Performing blower door testing
4	16%	Performing duct testing
5	14%	Accurately modeling upgrades in EnergyPro
6	12%	Installing attic insulation
7	10%	Characterizing duct insulation
8	8%	Assembly or sealing of ductwork

Full detail for each of these performance gaps is provided in the section below.

3.7.8.1. Safety Gaps

Detecting Small to Moderate Natural Gas Leaks

This performance gap was found in 40% of sampled jobs.

Contractors often fail to recognize or act on natural gas leaks that may pose a safety risk to residents. These unaddressed leaks are most often found at the meter, as well as certain combustion appliances. Leaks have been discovered on the flex line or valves for furnaces, ovens, clothes dryers, and water heaters. Two-thirds of these leaks have been considered small by QA verifiers, with only one-third considered moderate. No leaks deemed significant were found in the sample of 50 jobs used.

The contractors' failure to take appropriate actions when unsafe conditions are present may be due to lack of knowledge on the part of the contractor, or the use of ineffective methods for testing for leaks.

To help prevent this issue, Build It Green has provided content in both the Basic and Advanced Package courses on the importance of checking for gas leaks and common locations where they may occur, although details on Gas Service Representatives (GSR) call procedures and triggering conditions are only delivered in the Advanced Package Training.

Taking Spillage Measurements for Combustion Appliances

This performance gap was found in 16% of sampled jobs.

Natural gas appliances such as water heaters and furnaces create combustion gases that, when exhausted properly, escape up the flue and to the outside. Combustion gas spillage occurs when the appliance is not properly ventilated and negative pressure occurs and combustion gases are drawn into the home. Excessive spillage presents a safety risk to occupants since combustion byproducts such as carbon monoxide can be introduced into a nearby zone, or into the living area. This situation is most often associated with domestic water heaters.

To perform a spillage test, contractors must set up a scenario known as “worst case depressurization,” which creates maximum negative pressure within a particular combustion appliance zone. Contractors then use a smoke stick to observe if smoke leaks from the venting system, and employ a tactile test to feel for exhaust vapors that may be spilling out. If the spillage test fails, the ventilation system may need repair or replacement, or other factors affecting pressure must be addressed so that all appliances within the zone can operate safely and without spillage under a worst case depressurization scenario.

Spillage testing can become complicated when multiple appliances share the same venting system. Often, when more than one of these appliances is in use, the venting system becomes over-pressurized and causes a large amount of spillage.

Sometimes when contractors perform a spillage test, they give it a passing score; but when a QA verifier repeats the same test, it fails. Discrepancies between the results found by contractors and QA verifiers could be due to problems with the worst case depressurization

setup, in which the negative pressure is not maximized, resulting in less spillage. Another possible cause is that the same level of spillage is occurring, but it is not being measured correctly by the contractor due to misuse of the smoke and tactile testing techniques. In the case of commonly vented appliances, some contractors may not be familiar with differences in testing procedure or know how to perform the necessary modifications when the test fails.

To help prevent this issue, Build It Green provides detailed information on testing spillage through the Advanced Package Training, including specific instructions on when to take measurements and action steps. In the Basic Package training, a summary slide is devoted to spillage to increase awareness among all contractors.

In addition, Build It Green developed a course titled “Combustion Safety and Depressurization Testing Hands-on Training” that is presented at the Energy Training Center in Stockton. This class (described earlier in this report), offers opportunities to practice setting up worst case depressurization (WCD) and taking spillage measurements.

Identifying Proper Ventilation for Combustion Appliances

This performance gap was found in 14% of sampled jobs.

Some contractors fail to identify a lack of adequate combustion ventilation air (CVA) in a combustion appliance zone (CAZ). This issue is typically associated with water heaters and occasionally with furnaces.

For combustion appliances located in confined spaces such as utility closets, air used for combustion must be balanced by a vent providing make-up air from the outside. Inadequate make-up air risks the safety of residents since the appliance may not be able to vent properly, potentially allowing harmful gasses to enter the space. It can also increase energy use if combustion make-up air is pulled from the conditioned area of the home.

QA verifiers sometimes report finding CVA make-up vents that are too small or have been obstructed and were not identified by the contractor. This may be due to lack of awareness by contractors of CVA protocols and in which situations they apply.

To help prevent this issue, Build It Green provides detailed information on calculating CVA within the Advanced Package Training, including opportunities to practice the calculations as a group. In the Basic Package training, a summary of the procedure is presented to bolster awareness among all contractors.

Taking Carbon Monoxide (CO) Flue Measurements

This performance gap was found in 14% of sampled jobs.

Occasionally, a contractor records an acceptable level of carbon monoxide (CO) from the flue of an appliance, but the measurement fails when replicated during field QA. This issue occurs with many appliances; most commonly with furnaces, clothes dryers, and gas log fireplaces.

Failure to identify or communicate a high CO measurement at the flue caused by either spillage or back-drafting poses a safety risk to occupants.

To perform this test, the flue of an appliance is drilled and a probe is inserted to measure CO. This is done after conditions have attained a steady state, or after a certain period of appliance run-time under the specified settings. The proper air-free measurement is taken by drilling at a location on the flue before dilution air enters. If it is considered unsafe to drill a hole, an ambient CO measurement is taken from the air directly above the appliance and is used instead.

This test fails when CO measurements surpass the parts per million (ppm) threshold for the particular appliance as set forth in program documentation. A failed CO test in the flue usually indicates negative pressure problems, inadequate combustion ventilation air, or a mechanical problem with the appliance. It may warrant a flue modification or an adjustment to ventilation in the zone.

There are several ways that contractors are failing to meet program standards in taking CO flue measurements. In the cases where the contractor records a much different level of CO than the QA verifier, it may be due to drilling in a location already diluted with air, or to not allowing the proper run-time for the appliance to achieve a steady state before taking the measurement.

In some instances, flues have not been drilled at all, indicating that the contractor did not attempt to take the required measurements, or that measurements were taken at the vent termination. At other times, contractors take readings that exceed safety thresholds, but do not make a service recommendation to the homeowner.

Build It Green offers the “Combustion Safety and Depressurization Testing Hands-on Training” for practice with combustion safety testing at the Energy Training Center in Stockton and other locations. This class provides opportunities to practice setting up worst-case depressurization (WCD) and conducting CO tests.

In addition, Build It Green provides detailed information on testing CO levels through the Advanced Package Training, including specific instructions on where to take measurements for different appliance types. The differences between ambient, air-free, and as-measured CO tests are clearly presented. However, the training did not provide a description of what it means for an appliance to attain a steady state. In the Basic Package training, several slides are devoted to an overview of taking CO measurements.

Providing Sufficient Fire Clearance for Combustion Appliance Venting

This performance gap was found in 12% of sampled jobs.

Contractors sometimes leave combustible material in contact with or in close proximity to the flue of an appliance. When a QA verifier conducts a visual inspection, it is scored as a fail if the material is too close. This performance gap is typically associated with water heater and furnace flues, and poses a safety risk to occupants as a fire hazard.

From time to time, a contractor will install combustible insulation material in the attic or on the ductwork too close to an appliance flue. If the QA verifier finds it to be closer than six inches from a single-wall flue or one inch from a B-vent, the contractor will be required to remove the insulation or make other adjustments as necessary.

Flues can fail visual inspection for other reasons as well. QA verifiers report that some flues are not properly fastened in place, or do not terminate above the roofline as required by program standards.

It seems that lack of awareness may be the reason some contractors are underperforming in this area. Some contractors may not be aware of the required clearance from combustibles for the different types of flues and vents. Other contractors may not be familiar with some aspects of the work, such as setting up an attic insulation dam.

To help prevent this issue, the Basic Package training presents several slides to remind contractors to maintain clearance from combustibles. However, the class does not cover the limits associated with different vent types and the materials that commonly pose a fire hazard. The Advanced training does not address fire clearance issues.

Conducting Draft Testing for Combustion Appliances

This performance gap was found in 12% of sampled jobs.

To perform a draft test, contractors must set up a scenario known as “worst case depressurization,” which creates maximum negative pressure within a particular combustion appliance zone. The flue of the appliance is then drilled and a probe is inserted to measure pressure. Readings must show pressure equal to or more negative than the specified limit. If positive pressures occur within the venting system, harmful exhaust may backdraft out into the nearby area. Remedying the situation might include adjustments to the flue size or finding a way to relieve negative pressure in the combustion appliance zone.

Drafting can become complicated when multiple appliances share the same venting system. Often, when appliances are in use simultaneously, the venting system becomes over-pressurized and causes one of the appliances to back draft, in addition to spillage.

Occasionally, contractors record a draft test as passing, but the same test is considered a fail when repeated by a QA verifier. A failed draft test presents a safety risk to occupants since combustion byproducts could back draft into the nearby zone, or into the living area. This performance gap is most often associated with domestic water heaters.

Discrepancies between contractor and verifier results could be due to problems with the worst case depressurization setup, in which the negative pressure is not maximized, resulting in a different pressure reading within the flue. In the case of commonly vented appliances, some contractors may not be familiar with solutions for this type of complex drafting issue.

The Advanced Package Training provides information on draft testing, but does not provide content on where to perform the measurement on an appliance. The class does refer to BPI guidelines for this test. In the Basic Package training, a summary slide presents an overview of draft testing.

Build It Green developed a course titled “Combustion Safety and Depressurization Testing Hands-on Training” (described earlier in this report), that offers opportunities to practice setting up worst-case depressurization (WCD) and conducting draft tests are provided.

Creating Worst Case Depressurization in the Combustion Appliance Zone

This performance gap was found in 10% of sampled jobs.

On some jobs, the contractor will set up a worst case depressurization (WCD) scenario and take a pressure measurement which passes, followed by the QA verifier taking a measurement that fails.

To set up WCD conditions, all external doors and windows are closed and exhaust fans and all natural draft appliances are turned on to create the most amount of negative pressure possible in the space. There is a strict limit on the amount of negative pressure in an appliance zone during WCD of -5 Pa. If an “orphaned” water heater is present, the limit is lower at -2 Pa.

QA verifiers have recorded pressures far beyond the limit, some as high as -20 Pa, indicating serious flaws in the WCD scenario set up by the contractor. In addition to causing a QA failure on its own, improper WCD set up can have negative side effects, as all of the other parts of the combustion test performed under the flawed WCD conditions may not be valid.

This gap appears to be due to contractors not following a comprehensive or systematic approach to WCD set up. Others may have set it up and observed a fail or near-fail, but are unsure how to reduce the negative pressure under the circumstances of the particular combustion appliance zone.

The Advanced Package Training provides detailed information on setting up WCD and the BPI depressurization limits. In the Basic Package training, a summary slide presents an overview of WCD set up and limits.

Again, refer to the course titled “Combustion Safety and Depressurization Testing Hands-on Training” that is presented at the ETC in Stockton. This class (described earlier in this report) offers opportunities to practice worst case depressurization (WCD).

3.7.8.2. Measure Assessment Gaps

Characterizing Attic Insulation

This performance gap was found in 24% of sampled jobs.

One of the most common findings is that contractors often do not accurately judge the quality of coverage or accurately measure the R-value of attic insulation.

The locations at which contractors measure insulation depth vary and can affect the estimated R-value. This issue affects estimates of energy savings and can delay jobs if insulation is does not meet program requirements.

Contractors occasionally install insulation to less than the required R-38 level, without making any recommendation to the homeowner, despite the program requiring this level as a minimum. Other times, attic insulation will be installed to the R-38 level for most of the attic, but gaps and voids in the insulation are found which results in insulation values as low as R-14. There also are cases of contractors modeling insulation as higher than R-38 when it is not actually the case.

Reasons for substandard performance in this area may be due to lack of awareness of program minimum standards, or to a lack of understanding of how to identify the R-value for various materials and depths. Another possibility is that contractors are attempting to take shortcuts or cut costs by using less material.

To help mitigate this problem, the Basic Package Training includes a fairly extensive section on installing spray foam attic insulation, as well as covering most program standards in various places in the training. It does not, however, indicate which recommendations are actually based on program standards. The Advanced Package Training does not go into the details of installation, but provides content on all applicable standards.

Identifying Air Leaks

This performance gap was found in 22% of sampled jobs.

A common finding is that contractors fail to meet air-sealing requirements in the houses they are upgrading. If a house is not properly sealed and ventilation levels are high, the conditioned inside air is exchanged with outside air too often. The program requires a minimum of .35 and a maximum of .5 air changes per hour (ACH), which is the number of times the entire air volume within the house is exchanged in an hour, or an improvement of at least 20% from an initial baseline value.

The lack of proper air-sealing can be caused by failing to detect air leaks, close off interstitial cavities, or provide proper caulking or weather-stripping. Failing to meet air-sealing requirements delays jobs and affects estimates of energy savings.

The Basic Package training covers air sealing in detail. The course provides information on finding and sealing air leaks, commonly overlooked locations of leakage, and recommendations on the order in which areas should be sealed for greatest effect. The Advanced Package Training covers high-level program standards regarding air sealing.

Characterizing Duct Insulation

This performance gap was found in 10% of sampled jobs.

Occasionally, contractors will mischaracterize duct insulation, claiming a value higher than what is observed by the QA verifier.

The program requires duct insulation to be R-8 or higher. Contractors sometimes install material such as foil-faced bubble wrap and model it as R-8, when it is only able to achieve a maximum of R-6. Also, not including the correct amount of airspace can reduce the R-value further. This seems to imply a lack of understanding of how to use the appropriate materials and installation practices to achieve the recommended R-8 level.

In some cases, contractors will install and model duct insulation at a value lower than the program minimum, which reflects a distinct lack of awareness of the requirement.

The Basic Package training instructs contractors to install duct insulation to the recommended R-value, but does not specifically inform the contractors that R-8 is recommended. The Advanced Package Training mentions duct insulation in only one place, but does specify that R-8 is recommended.

3.7.8.3. Measure Implementation Gaps

Performing Blower Door Testing

This performance gap was found in 18% of sampled jobs.

For some blower door tests performed at test-out, contractor and QA verifier results differ significantly.

Most discrepancies beyond program limits are usually in the 10-15% range, most likely indicating minor problems with setting up the test. However, some tests show a difference of 30-40%, indicating major flaws in the test setup by the contractor.

Other times, the contractor and verifier test values may be the same, but results show a high degree of leakage and reflect missed opportunities for air sealing.

In rare cases, a home is sealed too tightly and this problem is neither identified by the contractor nor mentioned to the homeowner along with recommendations for additional ventilation.

To help prepare contractors prepare for blower door testing on the job, the Basic Package training offered by Build It Green provides a good amount lecture as well as hands-on training on the subject. It may be that many of the contractors struggling with this procedure did not attend Basic Package training.

Performing Duct Testing

This performance gap was found in 16% of sampled jobs.

For many duct leakage tests performed at test-out, contractor and QA verifier results differ significantly.

In the most common scenario, a contractor will perform a duct leakage test, and the verifier will find a much higher percentage of duct leakage when attempting to replicate the test. These discrepancies indicate differences in duct leakage testing procedure.

Differences are often relatively small, at 4% to 6%, but in some cases the duct cannot pressurize at all, indicating catastrophic duct leakage. The verifier test-out number might be 10 times higher than the contractor's, and the verifier is unable to get close to the contractor reading after multiple attempts. In this case, WCD conditions cannot be established for combustion safety testing purposes.

Sometimes contractor and verifier measurements are the same, but large leakage numbers still indicate a need for additional duct sealing.

Some contractors may be confused on how to properly set up and perform duct leakage testing. It can be a complex process, and there are several different techniques that can be used.

To help prevent this issue, Build It Green provides detailed information on performing duct leakage tests in the Advanced Package Training. This class describes various methods, including plenum pressure matching and the use of a flow capture hood. The newly required Duct

Leakage to Outside (DLTO) method is also discussed. In the Basic Package training, there are several slides dedicated to duct leakage testing, but only a single summary slide covers the DLTO procedure.

To improve results, as well as train contractors on the new procedures, Build It Green has developed the Duct Leakage to Outside Hands-on Training (DLTO) class, described earlier in this report. It offers hands-on practice and training on how to calculate leakage using the DLTO method. This method requires use of the blower door and the duct blaster testing equipment simultaneously, and provides ample opportunity to practice both.

Installing Attic Insulation

This performance gap was found in 12% of sampled jobs.

On occasion, a contractor will air seal and insulate an attic, but may omit important aspects of the installation such as insulating attic hatches or providing sufficient insulation coverage of buried ducts.

Often the contractor does not install knee wall insulation, or has installed it but neglected to insulate or seal where it joins with the floor. In other instances, the contractor has simply forgotten to staple rulers in the attic that show insulation depth.

These performance issues may be associated with a lack of understanding of the program requirements for attic insulation, or a lack of attention to detail by the contractor.

To help mitigate this problem, the Basic Package training conducted by Build It Green includes an extensive section on air sealing and installing attic insulation, but does little to point out which recommendations are actually program standards. The Advanced Package Training does not go into the details of installation, but describes all applicable standards.

Assembly or Sealing of Ductwork

This performance gap was found in 8% of sampled jobs.

Every once in a while, a QA verifier will come across ductwork that has not been sealed or has been improperly assembled, causing the job to fail inspection.

Contractors should be sealing all accessible ductwork at wyes and duct boot connections. On some jobs, verifiers report sealing on only a small portion of the ductwork. On other jobs, only the plenums may be sealed. Verifiers have reported other examples of improperly installed ductwork that include ducts that are unsupported and resting on soil, or ductwork that is completely disconnected.

This performance gap is most likely associated with improper duct testing procedures. If a contractor thinks the duct work is sealed well enough, they may choose not to do the additional work to seal all accessible ductwork. In the case of improper duct assembly, it is likely due to a lack of field experience.

To help mitigate this problem, the Basic Package training includes an extensive section on the visual inspection of ductwork and duct leakage testing, but does not put much emphasis on

duct sealing. The Advanced Package Training does not go into the details of installation, but does describe all applicable standards.

Advanced Upgrade Package Technical Training

All of the Raters interviewed were HERS II certified and all attended the required Advanced Upgrade Package Technical Training. When asked after taking the training if they felt prepared for the Whole-House Program, the results were moderately favorable. Rating the program training on a 0 to 10 scale there was a mean score of 6.5 overall. Most of the Raters were familiar with the topics and measures covered, and were more interested in the specific program specifications.

3.7.8.4. Modeling Gaps

Accurately Modeling Upgrades in EnergyPro

This performance gap was found in 14% of sampled jobs.

Occasionally, a mistake is found in a contractor's energy model that is more than just a discrepancy in measurement.

The most common issue relates to the modeled location of the ductwork. Ducts may be modeled as if they were in the attic when they are actually located below the home in a crawlspace. Other times ducts might be modeled as if they were in the crawlspace but are actually located in the garage.

Some rarer modeling issues include an upgraded water heater modeled with a standby loss that does not match the nameplate observed. In one case, an upgraded water heater was modeled, but was not actually installed in the home.

These issues could be attributed to simple oversight or insufficient attention to detail. It is also possible that the person performing the modeling is working off of a coworker's notes, and a miscommunication occurred.

The EnergyPro training webinars provided by Build It Green seem to be effective in educating contractors about EUC-specific considerations, such as export procedures and situations where default values should be used.

3.7.9. Content Mapping Analysis

The training materials and other documentation reviewed for this assessment were those that were used prior to the changeover in June, 2013 to the new "Home Upgrade Program" that was designed to replace the current Basic Upgrade Package of the Whole-House Program. We understand that the training materials for this program are being revised to conform to the new approach.

As part of the training evaluation, we looked at the written materials for the Basic and Advanced Package courses and compared them to program requirements and best practices found in official program documents. The program documents used for reference include the

“Program Participant Handbook,” “EUC Installation Specifications,” and the “Whole House Combustion Appliance Safety Testing Procedure Guide.”

While it is not practical to include all of the existing recommendations and best practices in the required program trainings, there are some that should be considered. The recommendations section contains lists displaying the results of our content mapping analysis, highlighting the items we think are important enough to add to the existing courses.

3.7.10. About HERS Energy Raters and the Required Training

Raters have the same requirements as contractors for attending the training, and all of the interviewed Raters stated they completed the required training. This section further describes the training-relevant characteristics of HERS Energy Raters and provides recommendations specifically for these Whole-House Program participants.

Participation Workshop

All of the interviewed Raters attended the Participation Workshop and were familiar with this session when asked about it. Four of the six felt this session adequately prepared them to participate in the program. The other two felt there was more to find out in the field, more than what the workshop was able to present. The number of staff who attended the Participation Workshop ranged from one to three.

Because Raters are BPI certified, none attended the Basic Package training. The Basic Package training was not pursued because all of the Raters that were interviewed did not intend to do any Basic Package jobs. (Raters in the Whole-House Program typically do not perform repairs or install equipment.) However, and if they are not as experienced or if they need a review of program procedures and protocols, we recommend they attend this class because it covers the Basic Package measures, which are recommended as part of the Advanced Package measures as well.

Of those Raters who attended the Advanced Package Training, 67% stated they felt sufficiently prepared for their work in the Whole-House Program.

Raters did report there was some disconnect regarding the training they received such as program rules, documentation requirements, and paperwork found in the field; they were not clear on the program requirements until they ran into them in the field. However, the ones that did have questions or misunderstanding eventually were able to get them resolved. The EUC Help Desk is very responsive and Raters may call at any time for answers to questions regarding the program.

EnergyPro

All of the interviewed Raters have had some type of training on EnergyPro. Five of the six Raters interviewed used EnergyPro modeling software before participating in the program. Some had been using EnergyPro for a long time (some for decades, and taught EnergyPro themselves); however, one Rater had never used this application before and was struggling. This task for Raters is not outsourced.

As we have seen, there is a lot more to EnergyPro than just what is used specifically for modeling in the Whole-House Program for Advanced Package measures. The Raters recommend that the EnergyPro training should be targeted to just those parts of the software tool. (Again, note that there are recordings of EnergyPro webinars offered online.)

Raters were asked, in addition to the required training, what other types of program-related training would benefit them or their staff. The specific responses were mixed: one wanted training in marketing; four requested more technical training in combustion and safety, follow-up training with modeling and EnergyPro and why models pass or fail, and the QA assessment processes. Several indicated Whole-House Program-specific training: one indicated prescription packages and how the rebates work, and three mentioned program administration topics including paperwork processes and requirements, and how rebates are calculated.

When asked, “do you or your company want additional training on how best to market company and services,” five of the six Raters responded “yes.”

Marketing, Selling, Business Experience, and Compensation

Typically, Raters are contacted and hired directly by customers who are interested in the Whole-House Program and getting a home energy assessment, and are the homeowners’ first point of contact. Some Raters partner with contractors who make the contact, but usually the process is initiated by the customer. Sometimes Raters get referrals through architects or contractors. Some Raters do their own advertising for their services; others get their business through word of mouth.

This group was having difficulty in obtaining jobs and would benefit from guidance and mentoring. For example, only one out of six of the interviewed Raters had extensive experience with marketing strategies and how to sell jobs. Of the six Raters that were interviewed by ODC, only three reported they were promoting the program to their customers. For the other three Raters, they report that they do assessments, but it is the customer that comes to them looking to participate in the Whole-House Program. This again confirms the mismatch in expectations for the Raters by the Whole-House Program.

Related to this is the issue of compensation for the Raters and how the Whole-House Program can make it worth their while to participate. Some Raters are unsure about the financial workings for their role in the program, and how they can make it profitable.

Formerly, Raters were paid incentives through the program to perform preliminary home energy assessments. But now it is not cost effective to do an assessment on their own unless there is some type of retrofit where they receive some incentive as part of the agreement. Also, determining whether there is an assured project at the customer’s house involves up-front time and an assessment, and how and whether a Rater is compensated becomes a challenge for both the contractor and Rater.

Addressing the Role of Raters in the Program

One issue we encountered which calls for clarification is that there is an apparent mismatch between how the Raters perceive their role in the program compared with the intent and understanding of the Whole-House Program management. In general terms, Raters were

unaware of how their role was evolving within the program to include more than “business as usual” of simply conducting residential ratings.

The recently identified intent for Raters was for them to play a leading role within the Whole-House Program. Program management envisioned Raters who were self-motivated producers of homeowner contacts and sales; program partners who would independently step up to acquire and coordinate the jobs being done. Some Raters are finding their own jobs; some do their own marketing, and some partner with contractors.

However, some Raters are not fulfilling to the desired extent the work of promoting the program and encouraging homeowners to commit to energy upgrades. Raters are typically not experienced with the role of rounding up new work, and were unsure about how much of their job required generating jobs through the use of marketing and promotion. From their perspective, some were expecting the program to provide referrals and to offer help obtaining jobs.

Relationship between Raters and Contractors

A concern for the evaluation team is situations where there is tension and distrust between Raters and contractors, which makes it difficult if not impossible for them to work together.

This is a challenge for both Raters and contractors, because each group has different levels of experience in the home performance field. Some contractors are suspicious of Raters because they consider them to be from some organization that checks on the work of the contractors, outsiders who are looking over contractors’ shoulders as they do their work. Some contractors cite the inexperience of some Raters, not necessarily those in the Whole-House Program but others outside the program who were giving bad ratings and demanding contractors do what they consider to be unnecessary work. Some contractors report that the Raters are like “cops” just waiting to write them a ticket.

Some Raters say there is a need for more of an attitude of teamwork for them and the contractors, a need to work together in cooperation and not in an adversarial relationship. To some extent, it’s a matter of perception: what is perhaps not understood by the contractors is that Raters are not Field Quality Assurance QA verifiers. (These are the real “cops” from their perspective.)

3.7.11. EnergyPro Training

Some of the contractors simply want to “get in the game,” with the Whole-House Program and add some volume to their work, and are not ready to spend a lot of time learning and understanding EnergyPro. These contractors simply hire professionals to do this work for them.

On the other hand, there are others who work with computers every day. Some of these are part of a larger company and on the project management side. These people see themselves becoming the in-house modeling expert for the Advanced Package work, and who want to know about EnergyPro software. Many people can do data collection and testing, but don’t understand how to do the modeling.

3.7.12. Field Mentoring

Build It Green offers hands-on field mentoring as an option for all PG&E EUC contractors. Contractors are encouraged to request a mentoring session to be conducted at a customer's home at the time of test-out. These mentoring sessions are performed by Build It Green's field Quality Assurance (QA) verifiers, and replace of the normal QA procedure, in which the verifier assesses and scores the job independently.

Although these sessions are often referred to as training, there are no formal training materials. These sessions include observation and evaluation of contractors, feedback, and hands-on practice. During a mentoring session, the contractor has an opportunity to correct any deficiencies on the spot. While walking through the home, QA verifiers and contractors have a chance to review the Field QA score sheet and discuss program standards and best practices.

Build It Green encourages all contractors to bring multiple crew members to each session, and each contractor can request up to five mentoring sessions at no cost. Mentoring becomes fee-based after the initial five sessions, or if mentoring becomes required due to poor QA results.

When compared with SCE's Whole-House Program training, we find PG&E's mentoring approach to be more instructional and of a potentially greater benefit to the contractor. Instead of an observation-only approach, mentors are directly engaging with contractors to work through challenging aspects of the work.

Despite the PG&E mentoring approach having a lot to offer to contractors, contractors have made very few requests for this service. From our interviews with program management and instructors and from contractor survey results, it seems that many contractors are hesitant to receive mentoring at the job site in the presence of a customer. Some contractors feel that being instructed in front of the customer could negatively affect their impression of the contractor's competence.

3.7.13. The Modular Training Option

Over the course of the training assessment, it has become clear that a "one size fits all" approach is not optimal.

Contractors in PG&E's Whole-House Program come from different professional backgrounds and have different training needs. Some are veteran home performance contractors who just need to know the distinct EUC rules, and already have the techniques and best practices mastered. Many contractors are competent in certain aspects of the program such as HVAC or insulation, but may need additional combustion safety training. Others may have recently completed a BPI certification, but have no real-world experience and still need training in many areas.

Contractors from different backgrounds and levels of experience need different "onramps," where they can come up to speed with program expectations by addressing their individual training needs. This would save contractors time by not needing to review areas where they

already are very experienced. For example, not all contractors would need training on all of the testing procedures in the Basic Package training.

Additionally, many contractors find it difficult to accommodate multiple-day trainings such as the three-day Basic Package training. This is especially the case during the summer months, when business is at its highest for AC repairs. Modular training offerings would likely increase participation by these contractors.

Build It Green has already made strides in this area by developing the optional courses for DLTO and Hands-On Combustion Safety Testing. Also, according to interviews with program management, the idea of redesigning the training into modules is being considered within Build It Green with the launch of the Home Upgrade program.

3.7.14. Leveraging Existing Resources

Throughout our interviews with PG&E and Build It Green program managers, the concept of “leveraging existing resources” was mentioned repeatedly. In the context of the training program, existing resources to leverage include additional facilities that could be utilized, or trainings that are already being offered within the PG&E service territory.

For instance, in addition to the required courses and the two hands-on courses, there are several classes offered by the ETC in Stockton that are highly recommended for EUC contractors to support their home improvement education and skill set.

These classes include:

- Air Sealing and Insulating Existing Homes, instructed by Gavin Healy
- Auditing Electricity Use in Homes, instructed by Chris Hunt
- Balanced Ventilation for High Performing Homes, instructed by Gavin Healy and Dan Perunko
- Windows Selection for New and Existing Homes, instructed by Steve Easley
- Optimizing Residential HVAC System Performance, instructed by Dan Perunko

4. SURVEY INSTRUMENTS AND TABULATIONS

4.1. Homeowner Participant Survey

4.1.1. Survey Guide

Survey Introduction

S1. Hello, my name is *** . I'm calling on behalf of Pacific Gas and Electric regarding your recent energy upgrade [IF PARTICIPANT ADDRESS IS NOT BLANK, "at [INSERT ADDRESS]"]. Is [INSERT PARTICIPANT NAME] available? [IF PARTICIPANT NAME IS BLANK, "Could I talk to the person who had the most experience with the Whole House Retrofit program, also known as the Energy Upgrade California Program?]

(IF RESPONDENT IS NOT AVAILABLE: When would be a good time to reach [INSERT NAME]? (IF PARTICIPANT NAME IS BLANK, "When would be a good time to reach the person who had the most experience with the program?))

(ONCE CORRECT PERSON IS ON THE PHONE :)

According to our records, you recently participated in a PG&E program called the Whole House program, also known as the Energy Upgrade California Program, designed to help save energy in your home. PG&E would like to hear from program participants about their experience in the program. We are offering you a \$25 check as a thank-you for your time. (IF NEEDED: This survey will take approximately 20 minutes.) Your answers will be kept confidential and will be used for evaluation purposes only. (SCHEDULE CALLBACK IF NECESSARY)

(IF NECESSARY "We will mail you a check so that it arrives in the next 2 to 3 weeks. We will confirm your address at the end of the survey.)

Great. Let's get started. This call may be monitored for quality assurance purposes.

First...

How Participants Heard About Program

HE3. Where did you FIRST hear about the program? [IF NECESSARY: Use the short list below when survey participant needs assistance getting started.]

1. Letter from PG&E
2. Email announcement
3. Family/Friend
4. The Whole House Program Website
5. Newspaper advertisement
6. Contractor
7. Local Government and/or Local Energy Efficiency Rebate Program
8. Radio
9. Television
10. Transit/Bus

- 11. Billboard
- 12. Flyer or door hanger
- 13. City or County
- 14. Energy champion or ambassador
- 15. Neighborhood party
- 00. Other, please describe: _____
- 98. (Don't know)
- 99. (Refused)

Website

[SKIP IF HE3 =4]

W1. Have you ever visited the Energy Upgrade California Whole House website, located at energyupgradeca.org?

- 1. Yes
- 2. No
- 8. (Don't know)
- 9. (Refused)

[ASK IF W1 = 1 OR IF HE3 =4]

W2. Considering the information that was available on the website, please rate your agreement with the following statements on a scale of 0 to 10, where 0 means 'strongly disagree' and 10 means 'strongly agree': [ROTATE A-E] [SCALE 0-10]

- a. The website gave me a good understanding of what the program offers.
- b. The information on the website was easy to understand.
- c. The website accurately reflected what I experienced with the program.

Project Timing

Now, I have a few questions about the timing of the energy upgrades you completed at your home.

PT1. Which of the following best describes the home energy upgrades you completed?

- 1. The home energy upgrades were an extension of a home remodel project
- 2. The home energy upgrades were a stand-alone project
- 8. (Don't know)
- 9. (Refused)

PT1a. Was your energy efficiency project part of an effort to add solar photovoltaic (PV) panels to your home?

- 01. Yes
- 02. No
- 98. (Don't know)

99. (Refused)

PT1B. Did you add square footage to your home either as part of the project or after completing an energy efficiency project through PG&E's Whole House Program?

1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF PT1=1]

PT2. Would you have considered the home energy upgrades if you were not already doing a home remodel project?

1. Yes
2. No
8. (Don't know)
9. (Refused)

[ASK IF PT2=2]

PT2a. Can you please explain why not?

PT3. Which of the following best describes the type of home remodel you would have done without the program's incentives?

1. I would have done THE EXACT SAME home remodel project without the Energy Upgrade California program.
2. I would have done A SLIGHTLY DIFFERENT home remodel project without the Energy Upgrade California program.
3. I would NOT HAVE DONE the home remodel at all without the Energy Upgrade California program.
8. (Don't know)
9. (Refused)

Contractor(s)

Now, I have a few questions about the contractors you interacted with as part of the program.

CO3. How many contractors did you consider, talk to, or meet with before starting your energy upgrade project? [NUMERIC OPEN END 0-50]

CO5. How did you find the contractor for your energy upgrade project? [multiple response of 5]
(READ LIST IF NEEDED)

1. (Referral from a friend/neighbor.)
2. (Contacted by the contractor.)
3. (Found the contractor from the Whole House Program website)
4. (Found the contractor from the PG&E website)

- 5. (Found the contractor from yellow pages of a phone book.)
- 6. (Already knew the contractor)
- 7. (A workshop/meeting I attended about the program)
- 00. (Other, specify: _____)
- 98. (Don't know)
- 99. (Refused)

[IF CO5=2]

CO2. How did the contractor you selected contact you?.

- 1. (Face-to-face discussion)
- 2. (Door hanger)
- 3. (A group talk or presentation)
- 4. (Telephoned me)
- 5. (As part of another project or service call)
- 6. (Emailed me)
- (Other, please describe: _____)
- 98. (Don't know)
- 99. (Refused)

CO3. When you installed the equipment, did your contractor offer you a maintenance program?

- 1. Yes
- 2. No
- 8. (Don't know)
- 9. (Refused)

CO6. Now I'd like to ask about the person who conducted the home energy assessment at your home, who is also known as an Energy Rater. On a scale of 1 to 5, with 1 being very dissatisfied and 5 being very satisfied, please rate the following areas: [SCALE 1-5] [ROTATE]

- a. Their explanation of the home energy assessment process
- b. Their answers to your questions
- c. Their level of knowledge about the work to be done
- d. Their professionalism
- e. Their knowledge of the rebates available
- f. Their knowledge of financing options available to you

CO7. Would you recommend this Energy Rater to others?

- 1. Yes
- 2. No
- 6. (Do not know who Energy Rater is)
- 8. (Don't know)

9. (Refused)

[ASK IF CO7=2]

CO7A. Why not? (OPEN END)

Assessment

These next questions are about your experience with the home energy assessment.

AS3. How did the Energy Rater who conducted your home energy assessment provide you with the assessment results? [MULT. RESPONSE, UP TO 3] (READ LIST IF NEEDED)

1. (A written report was handed/mailed/ emailed to me)
2. (I went online to get the results)
3. (I viewed it on the contractor's laptop computer)
4. (The contractor discussed it with me in person)
5. (The contractor did not provide me with the results)
00. (Other, specify: _____)
98. (Don't know)
99. (Refused)

[ASK IF AS3 =1 OR 2, ELSE SKIP TO AS4B]

AS4. On a scale of 1 to 5, with 1 being 'not at all comprehensive' and 5 being 'very comprehensive', how comprehensive was the report? [SCALE 1-5]

AS4a. On a scale of 1 to 5, with 1 being 'very dissatisfied' and 5 being 'very satisfied', how satisfied were you with the report? [SCALE 1-5]

AS4b. In regard to the home improvement recommendations provided to you after the home assessment, how many of the recommendations did you do?

1. All
2. Some
8. (Don't know)
9. (Refused)

[ASK IF AS4B =2]

AS5. Why were some recommendations NOT completed? (MULTIPLE RESPONSE) (READ LIST IF NEEDED)

1. (Could not afford the rest of the work/ Ran out of money)
2. (Did not want to have that additional work/disruption in the home)
3. (Haven't had the time to follow-up or schedule the work)
4. (Am planning on completing some in the future)
5. (The contractor has not followed up.)
00. (Other, specify: _____)

AS6. Did your Energy Rater give you an estimate for how much money you might receive from PG&E in program incentives?

- 1. Yes
- 2. No
- 8. (Don't know)
- 9. (Refused)

[CONTINUE IF AS6=1, ELSE SKIP TO MO5]

AS7. Have you received your incentive payment from PG&E yet?

- 1. Yes
- 2. No
- 8. (Don't know)
- 9. (Refused)

[ASK IF AS7=1, ELSE SKIP TO AS9]

AS8. How did the actual incentive amount you received from PG&E compare to the contractors' estimate? Was the amount you received...

- 1. Lower than estimated
- 2. Higher than estimated
- 3. Roughly the same as estimated
- 8. (Don't Know)
- 9. (Refused)

AS9. [READ IF AS7 = 1: Our records show that you received [AMOUNT] from PG&E for your home energy upgrades.] Did you also apply for incentives from organizations other than PG&E for these home energy upgrades? [IF AMOUNT IS BLANK, INSERT "an incentive"]

- 1. Yes
- 2. No
- 8. (Don't Know)
- 9. (Refused)

[ASK IF AS9=1, ELSE SKIP TO M09]

AS10. How much did you receive, or do you expect to receive, in additional incentives?

- 1. [ENTER DOLLAR AMOUNT]
- 8. (Don't Know)
- 9. (Refused)

MO9. Beyond any incentives you may have received, how did you pay for the Energy Upgrade project? Did you [1=YES, 2=NO] [ROTATE MO9a-d]

a. Use cash or check

b. Take out a loan

[ASK IF AS9 = 1] c. Receive or apply for additional incentives from local governments or other agencies

d. Use a credit card

e. Pay for it some other way, describe: _____

[ASK IF AS9=2, 8, OR 9, ELSE SKIP TO MO5]

AS11. Aside from the PG&E incentives, were you aware of any other incentives or financing offered by other programs or sources for the home energy upgrades?

1. Yes

2 No

8. (Don't Know)

9. (Refused)

Motivation to Participate and Home Improvement Decision-making

MO5. How important were each of the following factors in motivating you to take actions to complete home energy upgrades through this program? On a scale of 1 to 5, with 1 being 'Not at all important', and 5 being 'very important', please rate the importance of each of the following factors: [ROTATE, SCALE 1-5]

a. Reducing your energy usage

b. Saving money on your energy bills

c. Improving the comfort of your home

d. Addressing health and safety issues in your home

e. Improving the air quality in your home

f. Reducing the environmental impact of your home

g. Increasing the value of your home

h. Replacing failing or broken equipment

i. Incentives available from PG&E

j. The home energy assessment you received

k. Incentives available from your city or county

l. [ASK IF PT1A = 1] The requirement to address energy efficiency before installing solar PV panels

MO6. Are there any other reasons why you wanted to make home energy upgrades? [OPEN END; MULT RESPONSE UP TO 5; 96 = No other reasons]

MO7. Please tell us if any of the following apply to your household. [1=Yes, 2=No] [ROTATE]

a. Did someone in your household recently retire when you decided to get home upgrades

b. Did you recently move into the home for the first time when you decided to get home upgrades

- c. Were you preparing to sell the home when you decided to get home upgrades
- d. After the home upgrades were installed, did more people move into the home than were there previously
- e. After the home upgrades were installed, did anyone move out of the home
- g. Were you expecting to add a new child to your household when you decided upon the home upgrades
- h. Did the heating or air conditioner needed to be replaced prior to getting the home upgrades

MO8. Were there any other changes to your household either 6 months before or 6 months after your participation in PG&E's Whole House Program that might affect your home's energy use?

- 1. Yes
- 2. No
- 8. (Don't know)
- 9. (Refused)

[ASK IF MO8=1]

MO8A. Please describe the changes. Be as specific as possible. [OPEN END]

Satisfaction with Upgrades

US2. On a scale of 1 to 5, with 1 being 'very dissatisfied' and 5 being 'very satisfied', how would you rate the overall quality of the EQUIPMENT installed by the contractor? [SCALE 1-5]

US3. On the same 1 to 5 scale, how would you rate the overall quality of the WORK performed by the contractor? [SCALE 1-5]

Satisfaction with the Inspection Process

IP1. Was your home inspected by someone from the program at any point?

- 1. Yes
- 2. No [SKIP TO NEXT SECTION]
- 8. (Don't know) [SKIP TO NEXT SECTION]
- 9. (Refused) [SKIP TO NEXT SECTION]

IP2. On a scale of 1 to 5, with 1 being 'very dissatisfied' and 5 being 'very satisfied', how satisfied were you with the inspection process? [SCALE 1-5]

[ASK IF IP2 <4]

IP3. Please explain why you gave that rating? [OPEN END]

WH4a. Did the contractor provide you with an estimate of how much you might save on your energy bills after the upgrade?

- 1. Yes

- 2. No
- 8. (Don't know)
- 9. (Refused)

WH5. Do you think your energy bill increased, decreased, or stayed the same after completing an energy efficiency project through PG&E's Whole House Program?

- 1. Increased
- 2. Decreased
- 3. Stayed the same
- 8. (Don't know)
- 9. (Refused)

[ASK IF QWH51=1 OR 3]

WH5a. Were you surprised to see [READ IF WH5=1: "YOUR ENERGY BILL INCREASE"; READ IF WH5=3: "NO CHANGE TO YOUR ENERGY BILL"]?

- 1. Yes
- 2. No
- 8. (Don't know)
- 9. (Refused)

[ASK IF QWH51=1 OR 3]

WH5b. Why do you think you did not see bill savings after completing an energy efficiency project through PG&E's Whole House Program? [OPEN END]

Non-Energy Benefits

NEB1. Now I'm going to read you a list of benefits that you may have experienced since participating in the program. Out of this list, please tell me the top 3 benefits that you experienced. (MULTIPLE RESPONSE, UP TO 3) [NOTE TO INTERVIEWER: respondent does not have to choose 3 if does not feel there are 3 benefits]

- 1. Saving energy
- 2. Saving money on utility bills
- 3. Helping the environment
- 4. Home comfort
- 5. Better indoor air quality/health
- 6. Increased home market value
- 7. Rebates and incentives

96. (None of these) [SKIP TO WH6]

8. (Don't know) [SKIP TO WH6]

9. (Refused) [SKIP TO WH6]

[SKIP IF ONLY ONE ANSWER TO NEB1]

NEB2. Considering the cost of your recent retrofit and these main benefits that you experienced, if you were to express the value of each of these benefits by distributing 100 dollars across your list – how much out of 100 dollars would you pay for...?

A. [FIRST RESPONSE FROM NEB1] _____ DOLLARS

B. [SECOND RESPONSE FROM NEB1]_____ DOLLARS

C. [THIRD RESPONSE FROM NEB1]_____ DOLLARS

[NEB2 A-C MUST ADD TO 100 DOLLARS]

Overall Satisfaction

WH6. Using a scale of 1 to 5 with 1 being ‘very dissatisfied’ and 5 being ‘very satisfied’, how satisfied have you been with the Energy Upgrade Program as a whole? [SCALE 1-5]

WH7. Please explain why you gave the program that rating? [OPEN END]

WH10. From your perspective, how can the program be improved? [OPEN END; MULT RESPONSE UP TO 5; 96=No improvements needed]

WH13. If you were to talk to friends or family about the program, what would you tell them about it? [OPEN END; MULT RESPONSE UP TO 3; 96=Nothing]

Household Characteristics

WH2. Before participating in the program, did your home have ... [1 = Yes, 2 = No]

- a. An operational central heating system
- b. An operational central cooling system

[ASK IF WH2A = 1, ELSE SKIP TO WH3B]

WH3a. Before participating in the program, did your central heating system have a programmable thermostat?

- 1. Yes
- 2. No

[ASK IF WH2B = 1]

WH3b. Before participating in the program, did your central cooling system have a programmable thermostat?

- 1. Yes
- 2. No

[SKIP TO D1 IF WH2A = 2,8,9 & WH2B = 2,8,9]

WH4aa. Since participating in the program do you.... [1= yes, 2= no, 3 = don’t know] [ROTATE ORDER OF A-D]

[ASK IF WH3A = 1] Set your heating system at a lower temperature

[ASK IF WH2A = 1] Use your heating system more often than before

[ASK IF WH3B = 1] Set your cooling system at a higher temperature

[ASK IF WH2B = 1] Use your cooling system more often than before

[ASK IF WH4AAB = 1]

WH4e. Why do you use your heating system more often than before? [OPEN END]

[ASK IF WH4AAD = 1]

WH4f. Why do you use your cooling system more often than before? [OPEN END]

WH4AA_E. Does your home have central air conditioning and/or central heat?

- 01. (Yes – central air conditioning)
- 02. (Yes – central heating)
- 03. (No – central air conditioning or heating)
- 8. (Don't know)
- 9. (Refused)

Demographics

These last questions ask about your household and are for statistical purposes only.

D1. Including yourself, how many people currently live in your household year-round (more than nine months out of the year)? [NUMERIC OPEN END]

[SKIP IF D1=1]

D2. How many children 18 and younger currently live in your household year-round (more than nine months out of the year)? [NUMERIC OPEN END]

D3. Which of the following best represents your annual household income from all sources in 2012, before taxes? Please stop me when I read your category. Was it ...

- 1. Under \$25,000
- 2. \$25,000 to under \$35,000
- 3. \$35,000 to under \$50,000
- 4. \$50,000 to under \$75,000
- 5. \$75,000 to under \$100,000
- 6. \$100,000 to under \$150,000
- 7. \$150,000 or more
- 8. (Don't know)
- 9. (Refused)

D4. What is the last level of school you completed?

- 1. (Less than high school)
- 2. (High school graduate)
- 3. (Some collage/Vocational or technical school)
- 4. (College graduate)
- 5. (Post graduate education)
- 8. (Don't know)
- 9. (Refused)

D5. In what year were you born? [NUMERIC OPEN END; 1900-1999]

9998. (Don't know)

9999. (Refused)

D6. How would you describe your race or ethnicity?

1. (White or Caucasian)
2. (Black or African American)
3. (American Indian or Alaska Native)
4. (Hispanic, Mexican, Latino, Puerto Rican, or other Hispanic)
5. (Chinese)
6. (Indian or South Asian)
7. (Other Asian or Pacific Islander)
8. (Mixed or multi-racial)
00. (Another group, please list: _____)
98. (Don't know)
99. (Refused)

D7a. What is the approximate square footage of your home?

1. (Less than 1000 square feet)
2. (1000 to 1499 square feet)
3. (1500 to 1999 square feet)
4. (2000 to 2499 square feet)
5. (2500 to 2999 square feet)
6. (3000 to 3499 square feet)
7. (3500 or more square feet)
98. (Don't know)
99. (Refused)

D9. How long have you owned your home?

1. (Less than 5 years)
2. (6-10 years)
3. (11-15 years)
4. (16-20 years)
5. (21-25 years)
6. (26-30 years)
7. (More than 30 years)
98. (Don't know)
99. (Refused)

D10. How much longer do you intend to live in this home?

- (Less than 5 years)
(6-10 years)
(11-15 years)
(16-20 years)

(More than 20 years)

8. (Don't know)

9. (Refused)

Closing

That is all of the questions in our survey. Please enter your name and address so that we may send you the \$25, incentive in appreciation for your time today. [OPEN ENDS FOR NAME, ADDRESS]

A check will arrive within 2 to 3 weeks.

Thank you very much for your time.

4.1.2. Survey Frequency Tables

Throughout this topline report, 100 PG&E customers answered each question in 2012 (62 PG&E customers in 2011). We include a different number in the data tables in cases where the total number of respondents is different from the total survey population for a given question.

How Participants Heard About Program

HE3. Where did you FIRST hear about the program? [IF NECESSARY: Use the short list below when survey participant needs assistance getting started.]

	Year		Total
	2011	2012	
Letter from PG&E	4.8%	8.0%	6.8%
Email announcement	.0%	1.0%	.6%
Family/Friend	16.1%	12.0%	13.6%
The Whole House Program Website	1.6%	4.0%	3.1%
Newspaper advertisement	4.8%	3.0%	3.7%
Contractor	33.9%	32.0%	32.7%
Local Government and/or Local Energy Efficiency Rebate Program	.0%	2.0%	1.2%
Radio	3.2%	3.0%	3.1%
Television	3.2%	1.0%	1.9%
Transit/Bus	1.6%	.0%	.6%
Flyer or door hanger	1.6%	4.0%	3.1%
City or County	1.6%	8.0%	5.6%
Energy champion or ambassador	1.6%	.0%	.6%
Neighborhood party	3.2%	7.0%	5.6%
Mail unspecified	4.8%	.0%	1.9%
Mortgage lender/loan officer/real estate agent/bank	11.3%	.0%	4.3%
Online	4.8%	6.0%	5.6%
Retailer	.0%	1.0%	.6%
Other	1.6%	4.0%	3.1%
Don't know	.0%	4.0%	2.5%
Total	100.0%	100.0%	100.0%

Website

[SKIP IF HE3 =4]

W1. Have you ever visited the Energy Upgrade California Whole House website, located at energyupgradeca.org?

	Year		Total (n=157)
	2011 (n=61)	2012 (n=6)	
Yes	49.2%	44.8%	46.5%
No	47.5%	49.0%	48.4%
Don't know	3.3%	6.3%	5.1%
Total	100.0%	100.0%	100.0%

[ASK IF W1 = 1 OR IF HE3 =4]

W2. Considering the information that was available on the website, please rate your agreement with the following statements on a scale of 0 to 10, where 0 means 'strongly disagree' and 10 means 'strongly agree': [ROTATE A-E] [SCALE 0-10]

- a. The website gave me a good understanding of what the program offers.

	Year		Total (n=78)
	2011 (n=31)	2012 (n=47)	
4	.0%	2.1%	1.3%
5	16.1%	2.1%	7.7%
6	6.5%	2.1%	3.8%
7	6.5%	17.0%	12.8%
8	16.1%	19.1%	17.9%
9	19.4%	12.8%	15.4%
10 - Strongly agree	32.3%	36.2%	34.6%
(Don't know)	3.2%	8.5%	6.4%
Total	100.0%	100.0%	100.0%

- b. The information on the website was easy to understand.

	Year		Total (n=78)
	2011 (n=31)	2012 (n=47)	
4	.0%	2.1%	1.3%
5	12.9%	2.1%	6.4%
6	.0%	4.3%	2.6%
7	9.7%	12.8%	11.5%
8	19.4%	31.9%	26.9%
9	19.4%	6.4%	11.5%

	Year		Total (n=78)
	2011 (n=31)	2012 (n=47)	
10 - Strongly agree	38.7%	34.0%	35.9%
(Don't know)	.0%	6.4%	3.8%
Total	100.0%	100.0%	100.0%

- c. The website accurately reflected what I experienced with the program.

	Year		Total (n=78)
	2011 (n=31)	2012 (n=47)	
4	.0%	4.3%	2.6%
5	19.4%	4.3%	10.3%
6	3.2%	10.6%	7.7%
7	12.9%	10.6%	11.5%
8	9.7%	14.9%	12.8%
9	16.1%	19.1%	17.9%
10 - Strongly agree	38.7%	25.5%	30.8%
(Don't know)	.0%	10.6%	6.4%
Total	100.0%	100.0%	100.0%

Project Timing

Now, I have a few questions about the timing of the energy upgrades you completed at your home.

PT1. Which of the following best describes the home energy upgrades you completed?

	Year		Total
	2011	2012	
The home energy upgrades were an extension of a home remodel project	9.7%	11.0%	10.5%
The home energy upgrades were a stand-alone project	90.3%	88.0%	88.9%
(Don't Know)	.0%	1.0%	.6%
Total	100.0%	100.0%	100.0%

PT1a. Was your energy efficiency project part of an effort to add solar photovoltaic (PV) panels to your home?

	Year	Total
	2012	
Yes	11.0%	11.0%
No	89.0%	89.0%
Total	100.0%	100.0%

PT1B. Did you add square footage to your home either as part of the project or after completing an energy efficiency project through PG&E’s Whole House Program?

	Year	Total (n=95)
	2012 (n=95)	
Yes	1.1%	1.1%
No	98.9%	98.9%
Total	100.0%	100.0%

[ASK IF PT1=1]

PT2. Would you have considered the home energy upgrades if you were not already doing a home remodel project?

	Year		Total (n=17)
	2011 (n=6)	2012 (n=11)	
Yes	50.0%	72.7%	64.7%
No	50.0%	18.2%	29.4%
Don't Know	.0%	9.1%	5.9%
Total	100.0%	100.0%	100.0%

[ASK IF PT2=2]

PT2a. Can you please explain why not?

	Year		Total (n=5)
	2011 (n=3)	2012 (n=2)	
Too expensive (outside the program)/Included in the home mortgage	66.7%	.0%	40.0%
(Other)	33.3%	100.0%	60.0%

	Year		Total
Total	100.0%	100.0%	100.0%

PT3. Which of the following best describes the type of home remodel you would have done without the program's incentives?

	Year		Total
	2011	2012	
I would have done THE EXACT SAME home remodel project without the Energy Upgrade California program	21.0%	22.0%	21.6%
I would have done A SLIGHTLY DIFFERENT home remodel project without the Energy Upgrade California program	38.7%	24.0%	29.6%
I would NOT HAVE DONE the home remodel at all without the Energy Upgrade California program.	35.5%	48.0%	43.2%
(Don't know)	4.8%	2.0%	3.1%
(Refused)	.0%	4.0%	2.5%
Total	100.0%	100.0%	100.0%

Contractor(s)

Now, I have a few questions about the contractors you interacted with as part of the program.

CO3. How many contractors did you consider, talk to, or meet with before starting your energy upgrade project? [NUMERIC OPEN END 0-50]

	Year		Total
	2011	2012	
0	.0%	1.0%	.6%
1	53.2%	41.0%	45.7%
2	12.9%	33.0%	25.3%
3	21.0%	13.0%	16.0%
4	9.7%	6.0%	7.4%
5	1.6%	1.0%	1.2%
6	1.6%	1.0%	1.2%
7	.0%	1.0%	.6%
8	.0%	1.0%	.6%
(Don't know)	.0%	2.0%	1.2%
Total	100.0%	100.0%	100.0%

CO5. How did you find the contractor for your energy upgrade project? [multiple response of 5]
(READ LIST IF NEEDED)

	Year		Total
	2011	2012	
Referral from a friend/neighbor	29%	24%	26%
Found the contractor from the Whole House Program website	15%	13%	14%
Internet/other website	10%	11%	10%
Contacted by the contractor.	6%	10%	9%
Found the contractor from the PG&E website	3%	7%	6%
A workshop/meeting I attended about the program	2%	7%	5%
Angie's list	3%	5%	4%
Mortgage lender/loan officer/real estate agent/bank	11%	0%	4%
Through the program/other parties involved in the project	8%	2%	4%
Flyer/mailer	10%	1%	4%
Other	3%	5%	4%
Found the contractor from yellow pages of a phone book	3%	3%	3%
Town/city government	0%	5%	3%
Don't know	0%	5%	3%
Already knew the contractor	5%	1%	2%
Retailer	0%	4%	2%
Newspaper/magazine/other print media	5%	0%	2%
TV/radio	2%	1%	1%
Total	115%	191%	108%

[IF CO5=2]

CO2. How did the contractor you selected contact you?

	Year		Total (n=11)
	2011 (n=3)	2012 (n=8)	
Face-to-face discussion	.0%	37.5%	27.3%
Door hanger	.0%	12.5%	9.1%
Telephoned me	.0%	25.0%	18.2%
As part of another project or service call	.0%	12.5%	9.1%

	Year		Total
Emailed me	66.7%	.0%	18.2%
Other	33.3%	.0%	9.1%
Don't know	.0%	12.5%	9.1%
Total	100.0%	100.0%	100.0%

CO3. When you installed the equipment, did your contractor offer you a maintenance program?

	Year	Total
	2012	
Yes	27.0%	27.0%
No	65.0%	65.0%
(Don't Know)	8.0%	8.0%
Total	100.0%	100.0%

CO6. Now I'd like to ask about the person who conducted the home energy assessment at your home, who is also known as an Energy Rater. On a scale of 1 to 5, with 1 being very dissatisfied and 5 being very satisfied, please rate the following areas: [SCALE 1-5] [ROTATE]

a. Their explanation of the home energy assessment process

	Year		Total
	2011	2012	
1 - Very dissatisfied	.0%	1.0%	.6%
2	3.2%	2.0%	2.5%
3	3.2%	8.0%	6.2%
4	27.4%	20.0%	22.8%
5 - Very satisfied	66.1%	69.0%	67.9%
Total	100.0%	100.0%	100.0%

b. Their answers to your questions

	Year		Total
	2011	2012	
1- Very dissatisfied	.0%	2.0%	1.2%
2	3.2%	1.0%	1.9%

	Year		Total
3	8.1%	7.0%	7.4%
4	29.0%	23.0%	25.3%
5 - Very satisfied	59.7%	65.0%	63.0%
(Don't know)	.0%	2.0%	1.2%
Total	100.0%	100.0%	100.0%

c. Their level of knowledge about the work to be done

	Year		Total
	2011	2012	
1- Very dissatisfied	.0%	3.0%	1.9%
2	1.6%	.0%	.6%
3	6.5%	3.0%	4.3%
4	22.6%	21.0%	21.6%
5 - Very satisfied	69.4%	71.0%	70.4%
(Don't know)	.0%	2.0%	1.2%
Total	100.0%	100.0%	100.0%

d. Their professionalism

	Year		Total
	2011	2012	
1 - Very dissatisfied	1.6%	2.0%	1.9%
2	3.2%	1.0%	1.9%
3	3.2%	8.0%	6.2%
4	24.2%	18.0%	20.4%
5 - Very satisfied	67.7%	71.0%	69.8%
Total	100.0%	100.0%	100.0%

e. Their knowledge of the rebates available

	Year		Total
	2011	2012	
1 - Very dissatisfied	1.6%	2.0%	1.9%

	Year		Total
2	4.8%	2.0%	3.1%
3	4.8%	7.0%	6.2%
4	21.0%	19.0%	19.8%
5 - Very satisfied	67.7%	64.0%	65.4%
(Don't know)	.0%	6.0%	3.7%
Total	100.0%	100.0%	100.0%

f. Their knowledge of financing options available to you?

	Year		Total
	2011	2012	
1 - Very dissatisfied	4.8%	5.0%	4.9%
2	3.2%	4.0%	3.7%
3	8.1%	14.0%	11.7%
4	14.5%	16.0%	15.4%
5 - Very satisfied	43.5%	34.0%	37.7%
(Don't know)	21.0%	26.0%	24.1%
(Refused)	4.8%	1.0%	2.5%
Total	100.0%	100.0%	100.0%

CO7. Would you recommend this Energy Rater to others?

	Year		Total
	2011	2012	
Yes	90.3%	90.0%	90.1%
No	6.5%	8.0%	7.4%
(Do not know who Energy Rater is)	.0%	1.0%	.6%
(Don't Know)	3.2%	1.0%	1.9%
Total	100.0%	100.0%	100.0%

[ASK IF CO7=2]

CO7A. Why not? (OPEN END)

	2012 (n=8)	Total
Rude/rushed	50%	50%
Poor communication/unresponsive	38%	38%
Expensive	25%	25%
Poor quality work/didn't know what they were doing	13%	13%
(Other)	13%	13%
(Don't know)	13%	13%
Total	150%	150%

Assessment

These next questions are about your experience with the home energy assessment.

AS3.How did the Energy Rater who conducted your home energy assessment provide you with the assessment results? [MULT. REPONSE, UP TO 3] (READ LIST IF NEEDED)

	Year		Total
	2011	2012	
A written report was handed/mailed/ emailed to me	71%	74%	122%
I went online to get the results	0%	5%	149%
I viewed it on the contractor's laptop computer	2%	1%	146%
The contractor discussed it with me in person	47%	35%	145%
The contractor did not provide me with the results	3%	1%	106%
The contractor discussed it with me over the phone	3%	1%	104%
Don't know	2%	2%	102%
Total	100%	100%	122%

[ASK IF AS3 =1 OR 2, ELSE SKIP TO AS4B]

AS4. On a scale of 1 to 5, with 1 being 'not at all comprehensive' and 5 being 'very comprehensive', how comprehensive was the report? [SCALE 1-5]

	Year		Total (n=115)
	2011 (n=43)	2012 (n=72)	
1 - Not at all comprehensive	2.3%	1.4%	1.7%
2	2.3%	1.4%	1.7%
3	7.0%	4.2%	5.2%
4	30.2%	29.2%	29.6%

	Year		Total
5 - Very comprehensive	53.5%	58.3%	56.5%
(Don't know)	2.3%	5.6%	4.3%
(Refused)	2.3%	.0%	.9%
Total	100.0%	100.0%	100.0%

AS4a. On a scale of 1 to 5, with 1 being ‘very dissatisfied’ and 5 being ‘very satisfied’, how satisfied were you with the report? [SCALE 1-5]

	Year		Total
	2011 (n=43)	2012 (n=72)	(115)
1 - Very dissatisfied	.0%	1.4%	.9%
2	2.3%	1.4%	1.7%
3	4.7%	5.6%	5.2%
4	25.6%	31.9%	29.6%
5 - Very satisfied	65.1%	58.3%	60.9%
(Don't know)	2.3%	1.4%	1.7%
Total	100.0%	100.0%	100.0%

AS4b. In regard to the home improvement recommendations provided to you after the home assessment, how many of the recommendations did you do?

	Year		Total
	2011	2012	
All	56.5%	46.0%	50.0%
Some	35.5%	52.0%	45.7%
(Don't know)	4.8%	2.0%	3.1%
(Refused)	3.2%	.0%	1.2%
Total	100.0%	100.0%	100.0%

[ASK IF AS4b =2]

AS5. Why were some recommendations NOT completed? (MULTIPLE RESPONSE) (READ LIST IF NEEDED)

	2011 (n=22)	2012 (n=52)	Total (n=74)
Could not afford the rest of the work/ Ran out of money	59%	54%	55%
They were relatively unimportant/not effective for savings	18%	13%	15%
They were unnecessary	23%	6%	11%
Am planning on completing some in the future	9%	10%	9%
Other	0%	8%	5%
Don't know	5%	4%	4%
Did not want to have that additional work/disruption in the home	0%	4%	3%
Haven't had the time to follow-up or schedule the work	5%	2%	3%
They were not covered by the rebate	5%	2%	3%
Didn't offer anything else	0%	2%	1%
Total	123%	104%	109%

AS6. Did your Energy Rater give you an estimate for how much money you might receive from PG&E in program incentives?

	Year		Total
	2011	2012	
Yes	100.0%	93.0%	95.7%
No	.0%	5.0%	3.1%
(Don't Know)	.0%	2.0%	1.2%
Total	100.0%	100.0%	100.0%

[CONTINUE IF AS6=1, ELSE SKIP TO MO5]

AS7. Have you received your incentive payment from PG&E yet?

	Year	Total
	2012 (n=93)	
Yes	97.8%	97.8%
(Don't Know)	2.2%	2.2%
Total	100.0%	100.0%

[ASK IF AS7=1, ELSE SKIP TO AS9]

AS8. How did the actual incentive amount you received from PG&E compare to the contractors' estimate? Was the amount you received...

	Year		Total (n=153)
	2011 (n=62)	2012 (n=91)	
Lower than estimated	9.7%	8.8%	9.2%
Higher than estimated	11.3%	8.8%	9.8%
Roughly the same as estimated	77.4%	81.3%	79.7%
(Don't Know)	1.6%	1.1%	1.3%
Total	100.0%	100.0%	100.0%

AS9. [READ IF AS7 = 1: Our records show that you received [AMOUNT] from PG&E for your home energy upgrades.] Did you also apply for incentives from organizations other than PG&E for these home energy upgrades? [IF AMOUNT IS BLANK, INSERT "an incentive"]

	Year		Total (n=155)
	2011 (n=62)	2012 (n=93)	
Yes	54.8%	29.0%	39.4%
No	41.9%	67.7%	57.4%
(Don't Know)	3.2%	3.2%	3.2%
Total	100.0%	100.0%	100.0%

[ASK IF AS9=1, ELSE SKIP TO M09]

AS10. How much did you receive, or do you expect to receive, in additional incentives?

	Year		Total (n=61)
	2011 (n=34)	2012 (n=27)	
0	.0%	7.4%	3.3%
200	5.9%	3.7%	4.9%
250	2.9%	3.7%	3.3%
500	2.9%	3.7%	3.3%

	Year		Total
1000	.0%	11.1%	4.9%
1500	5.9%	7.4%	6.6%
2000	14.7%	7.4%	11.5%
2100	2.9%	.0%	1.6%
2300	8.8%	.0%	4.9%
2500	2.9%	.0%	1.6%
3000	2.9%	.0%	1.6%
3500	2.9%	.0%	1.6%
4000	14.7%	3.7%	9.8%
5000	8.8%	3.7%	6.6%
5500	2.9%	.0%	1.6%
6300	2.9%	.0%	1.6%
7000	5.9%	.0%	3.3%
7300	2.9%	.0%	1.6%
10000	.0%	7.4%	3.3%
(Don't know)	8.8%	40.7%	23.0%
Total	100.0%	100.0%	100.0%

M09. Beyond any incentives you may have received, how did you pay for the Energy Upgrade project? Did you [1=YES, 2=NO] [ROTATE M09a-d]

a. Use cash or check

	Year		Total
	2011	2012	
Yes	74.2%	71.0%	72.2%
No	25.8%	26.0%	25.9%
(Don't Know)	.0%	3.0%	1.9%
Total	100.0%	100.0%	100.0%

b. Take out a loan

	Year		Total
	2011	2012	
Yes	41.9%	16.0%	25.9%
No	56.5%	83.0%	72.8%
(Don't Know)	1.6%	1.0%	1.2%
Total	100.0%	100.0%	100.0%

[ASK IF AS9 = 1] c. Receive or apply for additional incentives from local governments or other agencies

	Year		Total (n=94)
	2011 (n=62)	2012 (n=32)	
Yes	59.7%	46.9%	55.3%
No	40.3%	43.8%	41.5%
(Don't Know)	.0%	9.4%	3.2%
Total	100.0%	100.0%	100.0%

a. Use a credit card

	Year		Total
	2011	2012	
Yes	19.4%	31.0%	26.5%
No	79.0%	67.0%	71.6%
(Don't Know)	1.6%	2.0%	1.9%
Total	100.0%	100.0%	100.0%

b. Pay for it some other way, describe: _____

	Year		Total (n=157)
	2011 (n=62)	2012 (n=95)	
Financing	8.1%	5.3%	6.4%
No	91.9%	92.6%	92.4%

	Year		Total
(Don't Know)	.0%	2.1%	1.3%
Total	100.0%	100.0%	100.0%

[ASK IF AS9=2, 8, OR 9, ELSE SKIP TO MO5]

AS11. Aside from the PG&E incentives, were you aware of any other incentives or financing offered by other programs or sources for the home energy upgrades?

	Year		Total (n=94)
	2011 (n=28)	2012 (n=66)	
Yes	39.3%	19.7%	25.5%
No	57.1%	75.8%	70.2%
(Don't Know)	3.6%	4.5%	4.3%
Total	100.0%	100.0%	100.0%

Motivation to Participate and Home Improvement Decision-making

MO5. How important were each of the following factors in motivating you to take actions to complete home energy upgrades through this program? On a scale of 1 to 5, with 1 being 'Not at all important', and 5 being 'very important', please rate the importance of each of the following factors: [ROTATE, SCALE 1-5]

a. Reducing your energy usage

	Year		Total
	2011	2012	
1 - Not at all important	.0%	4.0%	2.5%
3	8.1%	5.0%	6.2%
4	21.0%	20.0%	20.4%
5 - Very important	71.0%	71.0%	71.0%
Total	100.0%	100.0%	100.0%

b. Saving money on your energy bills

	Year		Total
	2011	2012	
1 - Not at all important	0.00%	3.00%	1.90%
2	1.60%	1.00%	1.20%

	Year		Total
3	14.50%	7.00%	9.90%
4	19.40%	18.00%	18.50%
5 - Very important	64.50%	70.00%	67.90%
(Don't know)	0.00%	1.00%	0.60%
Total	100.00%	100.00%	100.00%

c. Improving the comfort of your home

	Year		Total
	2011	2012	
1 - Not at all important	1.60%	1.00%	1.20%
2	0.00%	4.00%	2.50%
3	3.20%	5.00%	4.30%
4	17.70%	18.00%	17.90%
5 - Very important	77.40%	72.00%	74.10%
Total	100.00%	100.00%	100.00%

d. Addressing health and safety issues in your home

	Year		Total
	2011	2012	
1 - Not at all important	9.70%	18.00%	14.80%
2	6.50%	12.00%	9.90%
3	14.50%	13.00%	13.60%
4	16.10%	10.00%	12.30%
5 - Very important	50.00%	47.00%	48.10%
(Don't know)	3.20%	0.00%	1.20%
Total	100.00%	100.00%	100.00%

e. Improving the air quality in your home

	Year		Total
	2011	2012	
1 - Not at all important	8.10%	10.00%	9.30%

	Year		Total
2	6.50%	11.00%	9.30%
3	16.10%	16.00%	16.00%
4	14.50%	20.00%	17.90%
5 - Very important	53.20%	42.00%	46.30%
(Don't know)	1.60%	1.00%	1.20%
Total	100.00%	100.00%	100.00%

f. Reducing the environmental impact of your home

	Year		Total
	2011	2012	
1 - Not at all important	4.8%	8.0%	6.8%
2	4.8%	3.0%	3.7%
3	17.7%	12.0%	14.2%
4	30.6%	31.0%	30.9%
5 - Very important	40.3%	46.0%	43.8%
(Don't know)	1.6%	.0%	.6%
Total	100.0%	100.0%	100.0%

g. Increasing the value of your home

	Year		Total
	2011	2012	
1 - Not at all important	3.20%	8.00%	6.20%
2	11.30%	6.00%	8.00%
3	32.30%	27.00%	29.00%
4	22.60%	25.00%	24.10%
5 - Very important	30.60%	33.00%	32.10%
(Don't know)	0.00%	1.00%	0.60%
Total	100.00%	100.00%	100.00%

h. Replacing failing or broken equipment

	Year		Total
	2011	2012	

	Year		Total
1 - Not at all important	9.70%	24.00%	18.50%
2	4.80%	7.00%	6.20%
3	12.90%	10.00%	11.10%
4	17.70%	14.00%	15.40%
5 - Very important	54.80%	43.00%	47.50%
(Don't know)	0.00%	2.00%	1.20%
Total	100.00%	100.00%	100.00%

i. Incentives available from PG&E

	Year		Total
	2011	2012	
1 - Not at all important	0.00%	3.00%	1.90%
2	0.00%	3.00%	1.90%
3	8.10%	23.00%	17.30%
4	27.40%	20.00%	22.80%
5 - Very important	64.50%	51.00%	56.20%
Total	100.00%	100.00%	100.00%

j. The home energy assessment you received

	Year		Total
	2011	2012	
1 - Not at all important	1.60%	6.00%	4.30%
2	1.60%	4.00%	3.10%
3	8.10%	16.00%	13.00%
4	40.30%	29.00%	33.30%
5 - Very important	45.20%	45.00%	45.10%
(Don't know)	3.20%	0.00%	1.20%

k. Incentives available from your city or county

	Year		Total
	2011	2012	
1 - Not at all important	3.20%	31.00%	20.40%
2	6.50%	5.00%	5.60%
3	17.70%	18.00%	17.90%
4	19.40%	15.00%	16.70%
5 - Very important	46.80%	27.00%	34.60%
(Don't know)	6.50%	4.00%	4.90%
Total	100.00%	100.00%	100.00%

l. [ASK IF PT1A = 1] The requirement to address energy efficiency before installing solar PV panels

	Year	Total
	2012	
1 - Not at all important	36.40%	36.40%
4	9.10%	9.10%
5 - Very important	54.50%	54.50%
Total	100.00%	100.00%

MO6. Are there any other reasons why you wanted to make home energy upgrades? [OPEN END; MULT RESPONSE UP TO 5; 96 = No other reasons]

	Year		Total
	2011	2012	
Improving the comfort of my home	8%	7%	7%
Reducing my home energy usage	11%	2%	6%
Replacing failing or broken equipment	8%	2%	4%
Reducing the environmental impact of my home	6%	2%	4%
Saving money on my energy bill	6%	1%	3%
Addressing health/safety issues in my home	3%	1%	2%
Improving the air quality in my home	2%	1%	1%
The home energy assessment I received	0%	1%	1%
Incentives available from local government	2%	0%	1%

	Year		Total
Increasing the value of my home	2%	0%	1%
Incentives available from <UTIL>	2%	0%	1%
(Other)	3%	2%	2%
(No other reasons)	73%	86%	81%
Total	126%	105%	113%

MO7. Please tell us if any of the following apply to your household. [1=Yes, 2=No] [ROTATE]

- a. Did someone in your household recently retire when you decided to get home upgrades

	Year		Total
	2011	2012	
Yes	19.4%	15.0%	16.7%
No	80.6%	85.0%	83.3%
Total	100.0%	100.0%	100.0%

- b. Did you recently move into the home for the first time when you decided to get home upgrades

	Year		Total
	2011	2012	
Yes	32.3%	18.0%	23.5%
No	67.7%	82.0%	76.5%
Total	100.0%	100.0%	100.0%

- c. Were you preparing to sell the home when you decided to get home upgrades

	Year		Total
	2011	2012	
Yes	.0%	2.0%	1.2%
No	100.0%	97.0%	98.1%
(Don't know)	.0%	1.0%	.6%
Total	100.0%	100.0%	100.0%

- d. After the home upgrades were installed, did more people move into the home than were there previously

	Year		Total
	2011	2012	
Yes	4.8%	3.0%	3.7%
No	95.2%	97.0%	96.3%
Total	100.0%	100.0%	100.0%

- e. After the home upgrades were installed, did anyone move out of the home

	Year		Total
	2011	2012	
Yes	3.2%	4.0%	3.7%
No	96.8%	96.0%	96.3%
Total	100.0%	100.0%	100.0%

- f. Were you expecting to add a new child to your household when you decided upon the home upgrades

	Year		Total
	2011	2012	
Yes	8.1%	3.0%	4.9%
No	91.9%	97.0%	95.1%
Total	100.0%	100.0%	100.0%

- g. Did the heating or air conditioner needed to be replaced prior to getting the home upgrades

	Year		Total
	2011	2012	
Yes	43.5%	32.0%	36.4%
No	54.8%	67.0%	62.3%
(Don't know)	1.6%	1.0%	1.2%
Total	100.0%	100.0%	100.0%

MO8. Were there any other changes to your household either 6 months before or 6 months after your participation in PG&E's Whole House Program that might affect your home's energy use?

	Year	Total
	2012 (n=95)	
Yes	13.7%	13.7%
No	86.3%	86.3%
Total	100.0%	100.0%

[ASK IF MO8=1]

MO8A. Please describe the changes. Be as specific as possible. [OPEN END]

	Year	Total
	2012 (n=13)	
The number of occupants in the home changed	38.5%	38.5%
Electric car	23.1%	23.1%
(Other)	38.5%	38.5%
Total	100.0%	100.0%

Satisfaction with Upgrades

US2. On a scale of 1 to 5, with 1 being ‘very dissatisfied’ and 5 being ‘very satisfied’, how would you rate the overall quality of the EQUIPMENT installed by the contractor? [SCALE 1-5]

	Year		Total
	2011	2012	
1 - Very dissatisfied	.0%	2.0%	1.2%
2	.0%	1.0%	.6%
3	1.6%	3.0%	2.5%
4	24.2%	26.0%	25.3%
5 - Very satisfied	71.0%	67.0%	68.5%
(Don't know)	3.2%	1.0%	1.9%
Total	100.0%	100.0%	100.0%

US3. On the same 1 to 5 scale, how would you rate the overall quality of the WORK performed by the contractor? [SCALE 1-5]

	Year	Total
--	------	-------

	2011	2012	
1 - Very dissatisfied	1.6%	3.0%	2.5%
2	3.2%	4.0%	3.7%
3	8.1%	9.0%	8.6%
4	25.8%	25.0%	25.3%
5 - Very satisfied	61.3%	59.0%	59.9%
Total	100.0%	100.0%	100.0%

Satisfaction with the Inspection Process

IP1. Was your home inspected by someone from the program at any point?

	Year		Total
	2011	2012	
Yes	67.7%	64.0%	65.4%
No	27.4%	25.0%	25.9%
(Don't Know)	4.8%	11.0%	8.6%
Total	100.0%	100.0%	100.0%

IP2. On a scale of 1 to 5, with 1 being 'very dissatisfied' and 5 being 'very satisfied', how satisfied were you with the inspection process? [SCALE 1-5]

	Year		Total (n=106)
	2011 (n=42)	2012 (n=64)	
1 - Very dissatisfied	2.4%	.0%	.9%
2	.0%	1.6%	.9%
3	2.4%	4.7%	3.8%
4	19.0%	15.6%	17.0%
5 - Very satisfied	76.2%	73.4%	74.5%
(Don't know)	.0%	4.7%	2.8%
Total	100.0%	100.0%	100.0%

[ASK IF IP2 <4]

IP3. Please explain why you gave that rating? [OPEN END]

	Year	Total
--	------	-------

	2011 (n=2)	2012 (n=4)	(n=6)
The results were not shared with me	50.0%	.0%	16.7%
(Other)	50.0%	100.0%	83.3%
Total	100.0%	100.0%	100.0%

WH4a. Did the contractor provide you with an estimate of how much you might save on your energy bills after the upgrade?

	Year		Total
	2011	2012	
Yes	54.8%	70.0%	64.2%
No	45.2%	23.0%	31.5%
(Don't Know)	.0%	7.0%	4.3%
Total	100.0%	100.0%	100.0%

WH5. Do you think your energy bill increased, decreased, or stayed the same after completing an energy efficiency project through PG&E's Whole House Program?

	Year		Total (n=157)
	2011 (n=62)	2012 (n=95)	
(Increased)	4.8%	1.1%	2.5%
(Decreased)	82.3%	81.1%	81.5%
(Stayed the same)	8.1%	12.6%	10.8%
4	1.6%	.0%	.6%
(Don't know)	3.2%	5.3%	4.5%
Total	100.0%	100.0%	100.0%

[ASK IF QWH51=1 OR 3]

WH5a. Were you surprised to see [READ IF WH5=1: “YOUR ENERGY BILL INCREASE”; READ IF WH5=3: “NO CHANGE TO YOUR ENERGY BILL”]?

	Year	Total
	2012 (n=13)	
Yes	53.8%	53.8%
No	46.2%	46.2%
Total	100.0%	100.0%

[ASK IF QWH51=1 OR 3]

WH5b. Why do you think you did not see bill savings after completing an energy efficiency project through PG&E’s Whole House Program? [OPEN END]

	2012 (n=13)	Total
Increased usage	23%	23%
Weather	15%	15%
(Other)	15%	15%
(Don't know)	31%	31%
(Refused)	23%	23%
Total	108%	108%

Non-Energy Benefits

NEB1. Now I’m going to read you a list of benefits that you may have experienced since participating in the program. Out of this list, please tell me the top 3 benefits that you experienced. (MULTIPLE RESPONSE, UP TO 3) [NOTE TO INTERVIEWER: respondent does not have to choose 3 if does not feel there are 3 benefits]

	2012 (n=95)	Total
Saving Energy	55%	55%
Saving money on utility bills	59%	59%
Helping the environment	29%	29%
Home Comfort	48%	48%
Better indoor air quality/health	29%	29%
Increased home market value	17%	17%

	2012 (n=95)	Total
Rebates and incentives	42%	42%
None of these	91%	91%
Don't know	2%	2%
Total	373%	373%

[SKIP IF ONLY ONE ANSWER TO NEB1]

NEB2. Considering the cost of your recent retrofit and these main benefits that you experienced, if you were to express the value of each of these benefits by distributing 100 dollars across your list – how much out of 100 dollars would you pay for...?

A. [FIRST RESPONSE FROM NEB1] _____ DOLLARS

	Year	Total
	2012 (n=89)	
0	2.2%	2.2%
10	5.6%	5.6%
20	6.7%	6.7%
25	5.6%	5.6%
30	14.6%	14.6%
33	16.9%	16.9%
40	13.5%	13.5%
45	1.1%	1.1%
50	15.7%	15.7%
55	1.1%	1.1%
60	4.5%	4.5%
70	3.4%	3.4%
75	1.1%	1.1%
80	1.1%	1.1%
100	3.4%	3.4%
(Don't know)	3.4%	3.4%
Total	100.0%	100.0%

B. [SECOND RESPONSE FROM NEB1]_____ DOLLARS

	Year	Total
	2012 (n=89)	
0	6.7%	6.7%
10	4.5%	4.5%
15	1.1%	1.1%
20	14.6%	14.6%
25	11.2%	11.2%
30	16.9%	16.9%
33	16.9%	16.9%
35	1.1%	1.1%
40	12.4%	12.4%
45	1.1%	1.1%
50	6.7%	6.7%
75	1.1%	1.1%
80	2.2%	2.2%
85	1.1%	1.1%
100	1.1%	1.1%
(Don't know)	1.1%	1.1%
Total	100.0%	100.0%

C. [THIRD RESPONSE FROM NEB1]_____ DOLLARS

	Year	Total
	2012 (n=85)	
0	5.9%	5.9%
5	3.5%	3.5%
10	5.9%	5.9%
15	3.5%	3.5%
20	9.4%	9.4%
25	10.6%	10.6%

	Year	Total
30	21.2%	21.2%
33	15.3%	15.3%
34	2.4%	2.4%
40	7.1%	7.1%
45	1.2%	1.2%
50	11.8%	11.8%
80	1.2%	1.2%
100	1.2%	1.2%
Total	100.0%	100.0%

[NEB2 A-C MUST ADD TO 100 DOLLARS]

Overall Satisfaction

WH6. Using a scale of 1 to 5 with 1 being ‘very dissatisfied’ and 5 being ‘very satisfied’, how satisfied have you been with the Energy Upgrade Program as a whole? [SCALE 1-5]

	Year		Total
	2011	2012	
1 - Very dissatisfied	.0%	2.0%	1.2%
2	.0%	2.0%	1.2%
3	4.8%	5.0%	4.9%
4	17.7%	14.0%	15.4%
5 - Very satisfied	77.4%	77.0%	77.2%
Total	100.0%	100.0%	100.0%

Wh7. Please explain why you gave the program that rating? [OPEN END]

	Year		Total
	2011	2012	
House is more comfortable	26%	19%	22%
The financial incentives/rebates were good/made it affordable	34%	23%	27%
Contractor/staff was good, professional, nice, etc	11%	11%	11%
House is better for my health/safety	5%	6%	6%

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	Year		Total
	2011	2012	
The retrofit is saving me energy/good for the environment	18%	8%	12%
The retrofit is saving me money	21%	19%	20%
Satisfied with improvements/equipment/appliances	11%	12%	12%
Met expectations/no problems (general)	23%	25%	24%
Program/service is good/easy/helpful	19%	15%	17%
It took a long time to receive rebate/haven't received rebate	11%	3%	6%
Contractor/staff was not good, professional, nice, etc	2%	6%	4%
No results/no difference in bill/home comfort	3%	3%	3%
Too much/cumbersome paperwork/difficult process	8%	2%	4%
Poor quality of work/didn't do what was promised	0%	6%	4%
Speedy process/Rebate came quickly	0%	1%	1%
Issue with program measure/equipment/appliances	0%	1%	1%
Don't know	2%	4%	3%
Total	194%	164%	175%

WH10. From your perspective, how can the program be improved? [OPEN END; MULT RESPONSE UP TO 5; 96=No improvements needed]

	Year		Total
	2011	2012	
(No improvements needed)	24%	25%	25%
Publicize it more	19%	18%	19%
More money (rebates, incentives, free goods, etc)	8%	14%	12%
Better communication/customer service/program information	15%	10%	12%
Shorten the time it takes to get rebates/incentives	11%	9%	10%
Better training for contractors	15%	7%	10%
Loosen contractor restrictions/be able to use any contractor	6%	8%	7%
Decrease the number of parties involved/streamline process	5%	2%	3%
More explanation of savings/accurate prediction of savings	0%	3%	2%
Make the process easier to understand	3%	1%	2%
(Other)	6%	5%	6%

	Year		Total
(Don't know)	6%	12%	10%
(Refused)	2%	0%	1%
Total	121%	114%	117%

WH13. If you were to talk to friends or family about the program, what would you tell them about it? [OPEN END; MULT RESPONSE UP TO 3; 96=Nothing]

	Year		Total (n=103)
	2011 (n=3)	2012 (n=100)	
Do it/worthwhile/affordable/good idea	67%	45%	46%
About my positive experience/how satisfied I was	0%	24%	23%
About the money or energy savings/lowered utility bill	0%	24%	23%
Positive information about the upgrades/increased comfort	0%	11%	11%
About my negative experience	33%	9%	10%
Negative information about the contractor/quality of work	0%	3%	3%
Positive information about the contractor/quality of work	0%	1%	1%
(Other)	0%	6%	6%
(Don't know)	0%	3%	3%
(Nothing)	0%	2%	2%
Total	100%	100%	127%

Household Characteristics

WH2. Before participating in the program, did your home have ... [1 = Yes, 2 = No]

- a. An operational central heating system

	Year	Total
	2012	
Yes	98.0%	98.0%
No	1.0%	1.0%
(Don't know)	1.0%	1.0%
Total	100.0%	100.0%

- b. An operational central cooling system

	Year	Total
--	------	-------

	Year	Total
	2012	
Yes	44.0%	44.0%
No	55.0%	55.0%
(Don't know)	1.0%	1.0%
Total	100.0%	100.0%

[ASK IF WH2A = 1, ELSE SKIP TO WH3B]

WH3a. Before participating in the program, did your central heating system have a programmable thermostat?

	Year	Total
	2012 (n=98)	
Yes	83.7%	83.7%
No	15.3%	15.3%
(Don't know)	1.0%	1.0%
Total	100.0%	100.0%

[ASK IF WH2B = 1]

WH3b. Before participating in the program, did your central cooling system have a programmable thermostat?

	Year	Total
	2012 (n=44)	
Yes	90.9%	90.9%
No	9.1%	9.1%
Total	100.0%	100.0%

[SKIP TO D1 IF WH2A = 2,8,9 & WH2B = 2,8,9]

WH4aa. Since participating in the program do you.... [1= yes, 2= no, 3 = don't know] [ROTATE ORDER OF A-D]

A. [ASK IF WH3A = 1] Set your heating system at a lower temperature

	Year	Total
--	------	-------

	Year	Total
	2012 (n=82)	
Yes	46.3%	46.3%
No	50.0%	50.0%
(Don't know)	3.7%	3.7%
Total	100.0%	100.0%

B. [ASK IF WH2A = 1] Use your heating system more often than before

	Year	Total
	2012 (n=98)	
Yes	13.3%	13.3%
No	84.7%	84.7%
(Don't know)	2.0%	2.0%
Total	100.0%	100.0%

C. [ASK IF WH3B = 1] Set your cooling system at a higher temperature

	Year	Total
	2012 (n=40)	
Yes	30.0%	30.0%
No	67.5%	67.5%
(Don't know)	2.5%	2.5%
Total	100.0%	100.0%

D. [ASK IF WH2B = 1] Use your cooling system more often than before

	Year	Total
	2012 (n=44)	
Yes	20.5%	20.5%
No	77.3%	77.3%

	Year	Total
(Don't know)	2.3%	2.3%
Total	100.0%	100.0%

[ASK IF WH4AAB = 1]

WH4e. Why do you use your heating system more often than before? [OPEN END]

	Year	Total
	2012 (n=13)	
Because it's efficient/know it won't cost as much	38.5%	38.5%
Weather	7.7%	7.7%
(Other)	7.7%	7.7%
(Don't know)	46.2%	46.2%
Total	100.0%	100.0%

[ASK IF WH4AAD = 1]

WH4f. Why do you use your cooling system more often than before? [OPEN END]

	Year	Total
	2012 (n=9)	
Because it's efficient/know it won't cost as much	55.6%	55.6%
Weather	11.1%	11.1%
(Other)	22.2%	22.2%
(Don't know)	11.1%	11.1%
Total	100.0%	100.0%

WH4AA_E. Does your home have central air conditioning and/or central heat?

	Year	Total
	2012 (n=95)	
(Yes- central air conditioning)	53%	53%
(Yes- central heating)	95%	95%
Total	147%	147%

Demographics

These last questions ask about your household and are for statistical purposes only.

D1. Including yourself, how many people currently live in your household year-round (more than nine months out of the year)? [NUMERIC OPEN END]

	Year		Total
	2011	2012	
1	8.1%	13.0%	11.1%
2	51.6%	37.0%	42.6%
3	19.4%	24.0%	22.2%
4	14.5%	16.0%	15.4%
5	4.8%	6.0%	5.6%
6	.0%	1.0%	.6%
7	1.6%	.0%	.6%
(Refused)	.0%	3.0%	1.9%
Total	100.0%	100.0%	100.0%

[SKIP IF D1=1]

D2. How many children 18 and younger currently live in your household year-round (more than nine months out of the year)? [NUMERIC OPEN END]

	Year		Total (n=144)
	2011 (n=57)	2012 (n=87)	
0	63.2%	55.2%	58.3%
1	19.3%	21.8%	20.8%
2	14.0%	17.2%	16.0%
3	1.8%	3.4%	2.8%
4	1.8%	.0%	.7%
(Refused)	.0%	2.3%	1.4%
Total	100.0%	100.0%	100.0%

D3. Which of the following best represents your annual household income from all sources in 2012, before taxes? Please stop me when I read your category. Was it ...

	Year		Total
	2011	2012	
Under \$25,000	1.6%	3.0%	2.5%
\$25,000 to under \$35,000	8.1%	3.0%	4.9%
\$35,000 to under \$50,000	11.3%	5.0%	7.4%
\$50,000 to under \$75,000	17.7%	8.0%	11.7%
\$75,000 to under \$100,000	8.1%	12.0%	10.5%
\$100,000 to under \$150,000	17.7%	25.0%	22.2%
\$150,000 or more	33.9%	24.0%	27.8%
(Refused)	1.6%	20.0%	13.0%
Total	100.0%	100.0%	100.0%

D4. What is the last level of school you completed?

	Year		Total
	2011	2012	
(High school graduate)	4.8%	9.0%	7.4%
(Some collage/Vocational or technical school)	19.4%	15.0%	16.7%
(College graduate)	48.4%	41.0%	43.8%
(Post graduate education)	25.8%	33.0%	30.2%
(Refused)	1.6%	2.0%	1.9%
Total	100.0%	100.0%	100.0%

D5. In what year were you born? [NUMERIC OPEN END; 1900-1999]

	Year		Total
	2011	2012	
1926	1.6%	.0%	.6%
1931	1.6%	.0%	.6%
1932	.0%	1.0%	.6%
1933	1.6%	1.0%	1.2%
1934	1.6%	1.0%	1.2%
1936	.0%	1.0%	.6%

	Year		Total
1938	1.6%	1.0%	1.2%
1939	1.6%	1.0%	1.2%
1940	3.2%	1.0%	1.9%
1941	.0%	2.0%	1.2%
1942	.0%	3.0%	1.9%
1943	4.8%	.0%	1.9%
1944	1.6%	.0%	.6%
1945	.0%	3.0%	1.9%
1946	3.2%	3.0%	3.1%
1947	3.2%	1.0%	1.9%
1948	4.8%	2.0%	3.1%
1949	.0%	6.0%	3.7%
1950	.0%	1.0%	.6%
1951	1.6%	4.0%	3.1%
1952	1.6%	1.0%	1.2%
1953	3.2%	3.0%	3.1%
1954	.0%	2.0%	1.2%
1955	1.6%	3.0%	2.5%
1956	.0%	4.0%	2.5%
1957	1.6%	4.0%	3.1%
1958	4.8%	2.0%	3.1%
1959	1.6%	4.0%	3.1%
1961	3.2%	1.0%	1.9%
1962	1.6%	.0%	.6%
1963	3.2%	2.0%	2.5%
1964	3.2%	.0%	1.2%
1965	1.6%	7.0%	4.9%
1966	1.6%	1.0%	1.2%
1967	1.6%	.0%	.6%
1968	.0%	1.0%	.6%
1969	.0%	5.0%	3.1%
1970	3.2%	3.0%	3.1%

	Year		Total
1971	.0%	2.0%	1.2%
1972	6.5%	1.0%	3.1%
1973	1.6%	.0%	.6%
1974	.0%	3.0%	1.9%
1975	3.2%	3.0%	3.1%
1976	3.2%	1.0%	1.9%
1977	1.6%	1.0%	1.2%
1978	3.2%	.0%	1.2%
1979	1.6%	3.0%	2.5%
1980	1.6%	.0%	.6%
1981	3.2%	.0%	1.2%
1982	.0%	1.0%	.6%
1983	1.6%	.0%	.6%
1985	.0%	1.0%	.6%
1986	1.6%	1.0%	1.2%
1987	1.6%	.0%	.6%
1988	1.6%	.0%	.6%
1989	1.6%	.0%	.6%
(Refused)	.0%	8.0%	4.9%
Total	100.0%	100.0%	100.0%

D6. How would you describe your race or ethnicity?

	Year		Total
	2011	2012	
White or Caucasian	77%	72%	74%
Black or African American	0%	1%	1%
Hispanic, Mexican, Latino, Puerto Rican, or other Hispanic	5%	8%	7%
Chinese	10%	6%	7%
Indian or South Asian	3%	7%	6%
Other Asian or Pacific Islander	3%	3%	3%
Mixed or multi-racial	2%	3%	2%
Refused	0%	2%	1%

	Year		Total
Total	100%	102%	101%

D7a. What is the approximate square footage of your home?

	Year	Total
	2012 (n=95)	
Less than 1000 square feet	3.2%	3.2%
1000 to 1499 square feet	24.2%	24.2%
1500 to 1999 square feet	35.8%	35.8%
2000 to 2499 square feet	14.7%	14.7%
2500 to 2999 square feet	6.3%	6.3%
3000 to 3499 square feet	4.2%	4.2%
3500 or more square feet	7.4%	7.4%
Don't know	3.2%	3.2%
Refused	1.1%	1.1%
Total	100.0%	100.0%

D9. How long have you owned your home?

	Year		Total
	2011	2012	
(Less than 5 years)	48.4%	29.0%	36.4%
(6-10 years)	12.9%	10.0%	11.1%
(11-15 years)	6.5%	10.0%	8.6%
(16-20 years)	8.1%	15.0%	12.3%
(21-25 years)	1.6%	11.0%	7.4%
(26-30 years)	8.1%	6.0%	6.8%
(More than 30 years)	14.5%	17.0%	16.0%
(Refused)	.0%	2.0%	1.2%
Total	100.0%	100.0%	100.0%

D10. How much longer do you intend to live in this home?

	Year	Total
--	------	-------

	2011	2012	
(Less than 5 years)	4.8%	9.0%	7.4%
(6-10 years)	19.4%	18.0%	18.5%
(11-15 years)	8.1%	10.0%	9.3%
(16-20 years)	9.7%	10.0%	9.9%
(More than 20 years)	41.9%	49.0%	46.3%
8	16.1%	.0%	6.2%
(Refused)	.0%	4.0%	2.5%
Total	100.0%	100.0%	100.0%

Closing

That is all of the questions in our survey. Please enter your name and address so that we may send you the \$25, incentive in appreciation for your time today. [OPEN ENDS FOR NAME, ADDRESS]

A check will arrive within 2 to 3 weeks.

Thank you very much for your time.

4.2. BIG Drop-Out Survey

4.2.1. Survey Guide

The Opinion Dynamics Team will attempt to conduct 50 telephone surveys with PG&E customers who show up in BIG program records but did not fully complete a project (N=310). The purpose of the surveys is to determine the reason why some customers, who at least received an assessment through the program, fail to continue. The surveys will determine how customers learned about the program and what motivated customers to investigate the program. Additionally, the surveys will assess current levels of awareness, knowledge, and attitudes (AKA) of the customers. The survey results will be used to assess barriers to program participation and identify strategies for overcoming these barriers. Respondents will be offered a \$50 incentive for their participation.

Introduction

S1. Hello, my name is *** . I'm calling on behalf of Pacific Gas and Electric regarding your experience with the Energy Upgrade or Whole House Retrofit program. Is [INSERT PARTICIPANT NAME] available? [IF PARTICIPANT NAME IS BLANK, "Could I talk to the person who had the recent experience with the PG&E Whole House Retrofit program, also known as the Energy Upgrade California Program?]

[IF NEEDED: The Whole House Retrofit program provides incentives to PG&E customers who get a comprehensive home energy assessment and then install energy reducing products in their home such as new air conditioning systems, windows or insulation.]

(IF RESPONDENT IS NOT AVAILABLE: When would be a good time to reach [INSERT NAME]? (IF PARTICIPANT NAME IS BLANK, “When would be a good time to reach the person who had the most experience with the program?))

(ONCE CORRECT PERSON IS ON THE PHONE :)

According to our records, you recently contacted the PG&E Energy Upgrade California Program, also known as the Whole House program, designed to help save energy in your home. PG&E would like to hear from you regarding your experience with the program. We are offering a \$50 incentive as a thank-you for your time. (IF NEEDED: This survey will take about 15 to 20 minutes.) Your answers will be kept confidential and will be used for evaluation purposes only. The program records indicate that a contractor (also known as an Energy Rater) came to your home to conduct an energy assessment to see if you qualify for incentives for home energy upgrades through the Whole House Program. Is that correct?(SCHEDULE CALLBACK IF NECESSARY)

(IF NECESSARY “We will mail you a check so that it arrives in the next 2 to 3 weeks. We will confirm your address at the end of the survey.)

Great. Let’s get started. First...

Screening

S1. Are you a customer of PG&E for electricity or natural gas?

1. Yes, electric customer
2. Yes, gas customer
3. Yes, electric and gas customer
4. Neither electric nor gas customer [TERMINATE]
8. (Don’t know) [TERMINATE]
9. (Refused) [TERMINATE]

S2. Do you own or rent your home?

01. Own
02. Rent [TERMINATE]
00. Other, please describe: _____ [TERMINATE]
8. (Don’t know) [TERMINATE]
9. (Refused) [TERMINATE]

D5. Which of the following types of housing units would you say best describes your home? Is it a..?

01. Single-family detached house
02. Single-family attached house (townhouse, row house, excluding duplex)
03. Duplex
04. Apartment building or condominium with 2-4 units

- 05. Apartment building or condominium with 5 or more units [TERMINATE]
- 06. Mobile home or house trailer [TERMINATE]
- 8. (Don't know) [TERMINATE]
- 9. (Refused) [TERMINATE]

S4. Have you ever visited the Whole House Program website, at energyupgradeca.org?

- 1. Yes
- 2. No
- 8. (Don't know)
- 9. (Refused)

Program and Project Status

[ASK IF S4=1, ELSE SKIP TO PR1AA]

PR1a. Did you find the Energy Rater through the Whole House Program website? (IF NEEDED: The Energy Rater is the person who conducted the assessment through the Whole House program)

- 1. Yes
- 2. No

[ASK IF PR1a = 2,8,9 OR S4 = 2,8,9, ELSE SKIP TO PR1B]

PR1aa. How did you find the Energy Rater who conducted your home assessment? (Multiple response, up to 3) (READ LIST IF NEEDED)

- 1. (It was a referral from a friend/neighbor.)
- 2. (I was contacted by the Energy Rater.)
- 3. (I found the Energy Rater from the Whole House Program website)
- 4. (I found the Energy Rater from the PG&E website.)
- 5. (I found the Energy Rater from yellow pages of a phone book.)
- 6. (I knew the Energy Rater)
- 7. (A workshop/meeting I attended about the program)
- 00. (Other: specify)
- 98. (Don't know)
- 99. (Refused)

[ASK IF PR1AA = 2, ELSE SKIP TO PR1B]

CO2. How did the Energy Rater you selected contact you? (Multiple response, up to 3) (READ LIST IF NEEDED)

- 01. (Face-to-face discussion)
- 02. (Door hanger)
- 03. (A group talk or presentation)

- 04. (Telephoned me)
- 05. (As part of another project or service call)
- 00. (Other: specify)
- 98. (Don't know)
- 99. (Refused)

[SKIP IF PR1AA=2]

PR1b. On a scale of 1 to 5 where 1 means “not at all easy” and 5 means “very easy,” how easy was it to find a contractor Energy Rater to conduct assessment for the Whole House Program?

PR1c. Did the Energy Rater recommend any upgrades that you could install in your home through the Whole House program?

- 1. I have not received any report with results from the Energy Rater.
- 2. (No, Energy Rater did NOT recommend anything)
- 3. (Yes, the Energy Rater recommended upgrades)
- 00.(Other: specify)
- 98. (Don't know)
- 99. (Refused)

PR2. On a scale from 1 to 5 where 1 is “strongly disagree” and 5 is “strongly agree”, please indicate how much you agree with the following statements.

- a. [SKIP IF PR1c = 1] The home energy report was valuable.
- b. [SKIP IF PR1c = 1] The home energy report was easy to understand.
- c. The Energy Rater helped you better understand your home's energy usage.
- d. (READ IF PR1C=3) The Energy Rater gave you a better understanding of where energy improvements can be made in your home.
- e. (READ IF PR1C=3) The Energy Rater provided enough information to help you make a decision about installing recommended measures.

PR2f. Did the amount of information you received from the Energy Rater meet your expectations? Please rate on a scale of 1 to 5 where 1 is ‘fell short of expectations’ and 5 is ‘exceeded expectations.’

[ASK IF PR1c=3, ELSE SKIP TO PR4]

PR3. Have you decided whether you will conduct work on your home through the Whole House program? (READ IF NEEDED)

- 1, (Yes, I have decided to conduct work on my home that may receive an incentive through the program.)
- 2. (I am considering whether to conduct the work through the program, but I have not decided yet.) [SKIP TO PR4]
- 3. (I have decided NOT to conduct work through the program.) [SKIP TO PR4]
- 00. (Other: specify)
- 8. (Don't know)
- 9. (Refused)

[ASK IF PR3 = 1, ELSE SKIP TO PR4]

PR3a. What is the status of the home energy upgrades that you may receive an incentive for?
(READ LIST IF NEEDED)

1. (The work on my home is complete.)
2. (The work is in progress.)
3. (The work has not started yet.)
8. (Don't know)
9. (Refused)

[ASK IF PR3a =1,2, OR 3, ELSE SKIP TO PR4]

PR3b. Can you tell me when the work on your home [PR3a = 1: was completed/PR3a=2: started/IF PR3a = 3: is scheduled to start]? Please list the month and year if possible. [OPEN END]

[ASK ALL]

PR4. Now, have you completed any of the following home energy upgrades?[FOR EACH 1=yes, 2=No, 3= (Started or in process), 8=DK, 9=REF]

- a. Performed air sealing
- b. Performed duct sealing or duct insulation
- c. Installed attic, wall, or floor insulation
- d. Upgraded windows, doors or skylights
- e. Upgraded to ENERGY STAR appliances
- f. Upgraded to ENERGY STAR heating or cooling equipment
00. (Other: specify)
98. (Don't know)
99. (Refused)

[SKIP TO PR5c IF PR3 = 3]

[ASK IF ANY PR4a-g =1 OR PR400 = 1, ELSE SKIP TO PR6]

PR5. Which of the upgrades did you complete through the Whole House program? (READ LIST IF NECESSARY "DID YOU...") [1=Completed through the Whole House Program, 2=Did not complete through the Whole House Program, 8=DK, 9=REF]

- [ASK IF PR4a=1] a. Perform air sealing
- [ASK IF PR4b=1] b. Perform duct sealing or duct insulation
- [ASK IF PR4c=1] c. Install attic, wall, or floor insulation
- [ASK IF PR4d=1] d. Upgrade windows, doors or skylights
- [ASK IF PR4e=1] e. Upgrade to ENERGY STAR appliances
- [ASK IF PR4f=1] f. Upgrade to ENERGY STAR heating or cooling equipment
- [ASK IF PR4 00=1] g. [READ IN PR4 00]

[ASK IF ANY PR5a-g=2, ELSE SKIP TO PR6]

PR5c1. For those upgrades you completed outside of the Whole House program, which of the following did you use to cover the costs of the work? [MULTIPLE RESPONSE]

- 01. My own funds.
- 02. A loan through the CHF Residential Energy Retrofit program.
- 03. A loan through Umpqua Bank's GreenStreet Lending program.
- 04. A loan through another bank or financial institution.
- 05. Financing or a payment plan through the contractor.
- 00. (Other: specify)
- 98. (Don't know)
- 99. (Refused)

[ASK IF PR5c1 = 4, ELSE SKIP TO PR6]

PR5d1. Which bank or financial institution? [OPEN END]

[ASK IF ANY PR4a-g, PR4 00=2 OR 3, ELSE SKIP TO BAR2]

PR6. Do you intend to complete any of the following in the next two years? (IF NECESSARY, READ LIST "DO YOU INTEND TO...") [1=Yes, 0=No, 8=DK, 9=REF]

- [ASK IF PR4a=2] a. Air sealing
- [ASK IF PR4b=2] b. Duct sealing or duct insulation
- [ASK IF PR4c=2] c. Install attic, wall, or floor insulation
- [ASK IF PR4d=2] d. Upgrade windows, doors or skylights
- [ASK IF PR4e=2] e. Upgrade to ENERGY STAR appliances
- [ASK IF PR4f=2] f. Upgrade to ENERGY STAR heating or cooling equipment
- [ASK IF PR4 00=2] g. [READ IN PR4 00]

[ASK IF ANY PR6a-g=1, ELSE SKIP TO BAR2]

PR7. Which of these upgrades do you intend to complete through the Whole House Program in the next two years? (IF NECESSARY, READ LIST "DO YOU INTEND TO... THROUGH THE WHOLE HOUSE PROGRAM) [1=Will complete through the program, 2=Will NOT complete through the program, 8=DK, 9=REF]

- [ASK IF PR6a=1] a. Perform Air sealing
- [ASK IF PR6b=1] b. Perform Duct sealing or duct insulation
- [ASK IF PR6c=1] c. Install attic, wall, or floor insulation
- [ASK IF PR6d=1] d. Upgrade windows, doors or skylights
- [ASK IF PR6e=1] e. Upgrade to ENERGY STAR appliances
- [ASK IF PR6f=1] f. Upgrade to ENERGY STAR heating or cooling equipment
- [ASK IF PR6g=1] g. [READ IN PR4 00]

[ASK IF ANY PR7a-g=2, ELSE SKIP TO BAR2]

PR5c2. For those upgrades you intend to complete outside of the Whole House program, which of the following will you use to cover the costs of the work? [MULTIPLE RESPONSE]

- 01. My own funds.

- 02. A loan through the CHF Residential Energy Retrofit program.
- 03. A loan through Umpqua Bank’s GreenStreet Lending program.
- 04. A loan through another bank or financial institution.
- 05. Financing or a payment plan through the contractor.
- 00. (Other: specify)
- 98. (Don’t know)
- 99. (Refused)

[ASK IF PR5c2 = 4, ELSE SKIP TO BAR2]

PR5d2. Which bank or financial institution? [OPEN END]

Barriers to Participation

[SKIP TO PK2 if PR4 ALL = 1 & PR5 ALL = 1]

[ASK IF PR3 = 2 OR 3, ELSE SKIP TO BAR3]

BAR2. What is the main reason you haven’t signed up for any home upgrades through the Whole House program [IF PR3 = 2 READ: “yet”]?

- 01. (The initial cost is too high.)
- 02. (I haven’t had time.)
- 03. (I haven’t found a contractor that I want to work with for the installations.)
- 04. (I need more information about the program.)
- 05. (My home doesn’t need any of the upgrades sponsored by the program.)
- 06. (I cannot get financing to cover the project cost.)
- 07. (My project was not eligible for the program.)
- 09. (The contractor recommended against it.)
- 00. (Other: specify)
- 98. (Don’t know)
- 99. (Refused)

[ASK IF BAR2 = 1, ELSE SKIP TO BAR2B]

BAR2a. Other than cost, are there any other reasons you have not moved forward with home upgrades through the Whole House Retrofit program? (MULTIPLE RESPONSE, UP TO 5)

- 01. (I haven’t had time to contact them.)
- 02. (I haven’t found a contractor yet.)
- 03. (I need more information about the program.)
- 04. (My home doesn’t need any of the upgrades sponsored by the program.)
- 00. (Other: specify)
- 96. (None)

98. (Don't know)

99. (Refused)

[ASK IF BAR2 = 09, ELSE SKIP TO BAR3]

BAR2b. What did the contractor say? [OPEN END]

[ASK IF PR5 ANY = 2, ELSE SKIP TO BAR4]

BAR3. What is the main reason that you paid for any of your home energy upgrades outside of the Whole House program?

01. (The initial cost was too high through the program.)

02. (Did not want to work with any of the participating contractors.)

03. (Wanted to work with a specific contractor who was not affiliated with the program.)

04. (Not enough information.)

05. (Upgrades did not qualify.)

00. (Other: specify)

98. (Don't know)

99. (Refused)

[ASK IF BAR3 = 02 or BAR3 = 03]

BAR3a. What was the name of the contracting company you worked with for your home energy upgrades? [OPEN END]

[ASK IF BAR3 = 04]

BAR3b. What information did you want that you did not receive? [OPEN END]

[ASK IF BAR3 = 05]

BAR3c. What upgrades did you install that did not qualify for Whole House Program funding? [OPEN END]

[ASK IF BAR2 = 1 or BAR2 = 6, ELSE SKIP TO BAR5]

BAR4. Now I'm going to read you a list of potential financing measures for energy efficiency upgrades for your home. Using a scale from 1 to 5, where 1 means 'does not increase at all' and 5 means 'increases a great deal,' please indicate whether these measures would increase your likelihood to install the recommended equipment from your Home Performance audit. [0-10, 98 DK 99 REF]

a. On-bill financing (IF NEEDED: Your electric utility would finance the project, and you pay back the loan through your monthly utility bills)

b. Lower interest rate for loans for energy efficiency upgrades (IF NEEDED: The utility partners with a bank to bring down the interest rate of these loans)

c. A payment plan or financing through your contractor

d. Mortgage through a bank or financial institution for energy efficiency upgrades

- e. Non-mortgage loans through local bank or financial institution

BAR5. What could the program do to help you install energy upgrades in your home? [OPEN END] [96=Nothing]

Program Knowledge

PK2. How did you first hear about the rebates available through the Whole House program?

- 01. (A contractor)
- 02. (Farmer's market or community event)
- 03. (Internet ad)
- 04. (Email)
- 05. (Direct mailing to your home, by mail, or a door hanger)
- 06. (Radio ad)
- 07. (Television ad)
- 08. (Newspaper ad)
- 09. (Billboard or transit ad)
- 10. (Mentioned by family member, friend, co-worker or neighbor)
- 11. (Whole House Program website)
- 12. (Utility website)
- 13. (Called into the PGE call center and they mentioned the program)
- 14. (Home Energy Reports)
- 00. (Other: specify)

[ASK IF S4=1, ELSE SKIP TO AKAB]

PK3. You mentioned visiting the Whole House Program website. What brought you to the Whole House Program website? [OPEN-END]

PK6. On a scale from 1 to 5, with 1 meaning "not at all helpful" and 5 meaning "very helpful," how helpful was the Whole House Program website in providing you with the information you needed to learn about the rebate program?

[ASK IF PK6 < 3]

PK7. Why did you give that rating? [OPEN END]

AKA-B

4.2.1.1. Block A

Using a scale where 0 is 'Not at all agree and 10 is 'Completely agree', how much do you agree with the following statements: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

AK6c. Conserving electricity will help reduce global warming.

CON6c. I sometimes worry whether there is enough money to pay my energy bill.

PER1e2. I feel a personal responsibility to help lower my household's utility bills.

CON4a. I would be very uncomfortable living in a house with very bad drafts and uneven temperatures

NSC1b. If I wanted to complete a full set of energy efficiency upgrades to my home, I don't think anything would keep me from doing it.

NSC1a. I know people who worry about the impact of their home's energy use on the environment.

4.2.1.2. Block B

Using a scale where 0 is 'Not at all agree' and 10 is 'Completely agree', how much do you agree with the following statements: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

AK6a. I am not sure whether a full set of home energy improvements would save a significant amount of money.

PER1c. If I didn't try to make my home energy efficient, I would feel a little guilty about harming the environment.

NSC1d. I know I could significantly decrease my electricity bill if I wanted to.

BI2a. This summer, I intend to try harder to save electricity than I did last summer

CON1b. My household uses electricity or natural gas without thinking much about how it impacts our utility bills.

NSC4a. I really don't think I could afford to complete a full set of energy upgrades to my home, even with rebates.

4.2.1.3. Block C

Using a scale where 0 is 'Not at all agree' and 10 is 'Completely agree', how much do you agree with the following statements: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

PER1b. I feel strongly that I need to keep my house at comfortable temperatures year round.

NSC1e. [ASK IF S1=2 OR 3] I know I could significantly decrease my natural gas bill if I wanted to.

BI2b. I intend to look for new ways to save energy this year

CON6a. I am very concerned about how energy use affects the environment.

PER1f. I feel guilty if I use too much energy

4.2.1.4. Block D

Using a scale where 0 is 'Not at all agree' and 10 is 'Completely agree', how much do you agree with the following statements: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

PER1h. If others in my household can't or won't change their behavior to lower our utility bills, I feel I should personally do even more to control these energy costs

CON6b. I am very concerned about the environmental impacts of power plants

PER1a. In my household, I am the person most responsible for making my home comfortable by doing things like keeping it free from drafts.

PER1d. I feel it is my job to find ways to reduce my home's impact on the environment.

NSC4b. My home's structure or age makes it hard to complete a full set of energy upgrades.

PER1g. If my utility bills go up, I feel like I must do something to lower them.

CON4b. I know people who talk about their homes being drafty and having uneven temperatures.

4.2.1.5. Block 1

Using a scale where 0 is 'Not at all concerned' and 10 is 'Very concerned', how concerned are you with each of the following: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

CON2a. The cost of heating or cooling your home

CON2b. Global warming

CON3. a. Finding ways to control your home energy costs

CON3. b. Keeping your home free from drafts and hot and uneven temperatures

4.2.1.6. Block 2

Using a scale from 0 to 10 where 0 is 'None' and 10 is 'A lot' how many of the following types of ads have you've seen or heard in the past year: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

AK1a. Ads about major home energy improvements or upgrades.

AK1b. Ads that say making home energy improvements decreases a home's impact on the environment.

AK1c. Ads that say home energy improvements lower utility bills.

4.2.1.7. Block 3

I am going to ask you some questions about improvements that homeowners might make to increase the comfort of their homes. Please answer using a scale from 0 to 10 where 0 is "would not increase comfort at all" and 10 is "would increase comfort a lot". [SCALE 0-10, 98=DK, 99=REF] [ROTATE]

AK4a. How much do you think weather stripping and caulking would increase the comfort of a home that doesn't have it already?

AK4b. How much do you think adding 8 inches of insulation to the attic or walls would increase the comfort of a home in your area that doesn't have it already?

4.2.1.8. Block 4

Using a scale from 0 to 10 where 0 is 'Not at all knowledgeable' and 10 is 'Very knowledgeable', how knowledgeable do you feel you are about... [ROTATE, SCALE 0-10, 98=DK, 99=REF]

AK5b. home energy improvements that would decrease the impact of your home's energy use on the environment the most?

AK5c. home improvements that would significantly decrease your PG&E bill?

AK5d. things you could do to make your home warmer in the winter and cooler in the summer without increasing your natural gas or electricity use?

Demographics

Now please answer some final questions about your household. Your responses are for statistical purposes only and will remain confidential.

D2. How many people currently live in your household year-round (more than nine months out of the year), including yourself? [NUMERIC OPEN END, 99 Prefer not to answer]

[Skip if D2=1]

D3. How many children 18 and younger currently live in your household year-round (more than nine months out of the year)? [NUMERIC OPEN END, 99 Prefer not to answer]

D4. When did you purchase your home?

1. (Within the last year)
2. (One to two years ago)
3. (Three to five years ago)
4. (More than 5 years ago)
98. (Don't know)
99. (Refused)

D6. Does your home have central air conditioning and/or central heat?

01. (Yes – central air conditioning)
02. (Yes – central heating)
03. (No – central air conditioning or heating)
98. (Don't know)
99. (Refused)

D7. In what year was your home built?

01. (2008 to 2012)
02. (2001 to 2007)
03. (1991 to 2000)
04. (1981 to 1990)
05. (1971 to 1980)
06. (1961 to 1970)
07. (1951 to 1960)
08. (1941 to 1950)
09. (1940 or earlier)
98. (Don't know)

99. (Refused)

D7a. What is the approximate square footage of your home?

1. (Less than 1000 square feet)
2. (1000 to 1499 square feet)
3. (1500 to 1999 square feet)
4. (2000 to 2499 square feet)
5. (2500 to 2999 square feet)
6. (3000 to 3499 square feet)
7. (3500 or more square feet)

98. (Don't know)

99. (Refused)

D8. How long have you lived in this home?

01. (Less than two years)
02. (3-5 years)
03. (6-10 years)
04. (11-20 years)
05. (21-plus years)

98. (Don't know)

99. (Refused)

D12. What is the last level of education you completed? (READ IF NEEDED)

01. (Less than high school)
02. (High school graduate)
03. (Some collage/Vocational or technical school)
04. (College graduate)
05. (Post graduate education)

98. (Don't know)

99. (Refused)

D13. In what year were you born? [NUMERIC OPEN END; 1900-1999]

98. (Don't know)

99. (Refused)

D14. How would you describe your race or ethnicity?

01. (White or Caucasian)
02. (Black or African American)
03. (American Indian or Alaska Native)

- 04. (Hispanic, Mexican, Latino, Puerto Rican, or other Hispanic)
- 05. (Chinese)
- 06. (Indian or South Asian)
- 07. (Other Asian or Pacific Islander)
- 08. (Mixed or multi-racial)
- 00. (Another group, please list: _____)
- 98. (Don't know)
- 99. (Refused)

D16. Which of the following best describes your current employment status? (READ IF NEEDED)

- 01. (Employed Full Time)
- 02. (Employed Part Time)
- 03. (Not Employed, Currently Seeking Employment)
- 04. (Not Employed, Not Seeking Employment)
- 05. (Retired)
- 06. (Student)
- 98. (Don't know)
- 99. (Refused)

D17. Which of the following best represents your annual household income from all sources in 2012, before taxes? Please step me when I reach your category. Was it ...

- 01. Under \$25,000
- 02. \$25,000 to under \$35,00
- 03. \$35,000 to under \$50,000
- 04. \$50,000 to under \$75,000
- 05. \$75,000 to under \$100,000
- 06. \$100,000 to under \$125,000
- 07. \$125,000 to under \$150,000
- 08. \$150,000 or more
- 98. (Don't know)
- 99. (Refused)

D18. That is all of the questions in our survey. Please enter your name and address so that we may send you the \$50, incentive in appreciation for your time today. [OPEN ENDS FOR NAME, ADDRESS]

Closing

Thanks for your help with this survey! You should receive the check within 2-3 weeks. Your responses will greatly help PG&E customers save energy and money in the future. On behalf of PG&E, thank you very much for your time and help with this study!

4.2.2. Survey Frequency Tables

Throughout this topline report, 50 respondents answered each question. We include a different number in the data tables in cases where the total number of respondents is different from the total survey population for a given question.

Program and Project Status

[ASK IF S4=1, ELSE SKIP TO PR1AA]

PR1a. Did you find the Energy Rater through the Whole House Program website? (IF NEEDED: The Energy Rater is the person who conducted the assessment through the Whole House program)

	Percent (n=24)
Yes	33%
No	46%
(Don't know)	21%
Total	100%

[ASK IF PR1a = 2,8,9 OR S4 = 2,8,9, ELSE SKIP TO PR1B]

PR1aa. How did you find the Energy Rater who conducted your home assessment? (Multiple response, up to 3) (READ LIST IF NEEDED)

	Percent (n=42)
(It was a referral from a friend/neighbor.)	14%
(A workshop/meeting I attended about the program)	14%
(Don't know)	14%
(I was contacted by the Energy Rater .)	12%
Online (general)	12%
Community outreach organization/event/local government	10%
(Other)	10%
Mailing or email (general)	7%
(I found the Energy Rater from the PG&E website.)	5%
(I found the Energy Rater from the Whole House Program website)	2%
Utility communication (general)	2%
Total	100%

[ASK IF PR1AA = 2, ELSE SKIP TO PR1B]

CO2. How did the Energy Rater you selected contact you? (Multiple response, up to 3) (READ LIST IF NEEDED)

	Percent (n=3)
(Face-to-face discussion)	67%
(Telephoned me)	33%
Total	100%

[SKIP IF PR1AA=2]

PR1b. On a scale of 1 to 5 where 1 means “not at all easy” and 5 means “very easy,” how easy was it to find a contractor Energy Rater to conduct assessment for the Whole House Program?

	Percent (n=47)
1 - Not at all easy	4%
3	17%
4	17%
5 - Very easy	57%
(Don't know)	4%
Total	100%

PR1c. Did the Energy Rater recommend any upgrades that you could install in your home through the Whole House program?

	Percent
(No, the Energy Rater did NOT recommend anything)	10%
(Yes, the Energy Rater recommended upgrades)	88%
(Don't know)	2%
Total	100%

PR2. On a scale from 1 to 5 where 1 is “strongly disagree” and 5 is “strongly agree”, please indicate how much you agree with the following statements.

- a. [SKIP IF PR1c = 1] The home energy report was valuable.

	Percent
1 - Strongly disagree	6%
2	8%
3	16%
4	30%
5 - Strongly agree	36%
(Don't know)	4%
Total	100%

- b. [SKIP IF PR1c = 1] The home energy report was easy to understand.

	Percent
1 - Strongly disagree	4%
2	4%
3	8%
4	40%
5 - Strongly agree	40%
(Don't know)	4%
Total	100%

- c. The Energy Rater helped you better understand your home's energy usage.

	Percent
1 - Strongly disagree	6%
2	4%
3	12%
4	28%
5 - Strongly agree	48%
(Don't know)	2%
Total	100%

- d. (READ IF PR1C=3) The Energy Rater gave you a better understanding of where energy improvements can be made in your home.

	Percent
1 - Strongly disagree	5%
3	16%
4	27%
5 - Strongly agree	52%
Total	100%

- e. (READ IF PR1C=3) The Energy Rater provided enough information to help you make a decision about installing recommended measures.

	Percent (n=44)
1 - Strongly disagree	7%
2	9%
3	14%
4	14%
5 - Strongly agree	57%
Total	100%

PR2f. Did the amount of information you received from the Energy Rater meet your expectations? Please rate on a scale of 1 to 5 where 1 is 'fell short of expectations' and 5 is 'exceeded expectations.'

	Percent
1 - Fell short of expectations	8%
2	2%
3	24%
4	36%
5 -Exceeded expectations	28%
(Don't know)	2%
Total	100%

[ASK IF PR1c=3, ELSE SKIP TO PR4]

PR3. Have you decided whether you will conduct work on your home through the Whole House program? (READ IF NEEDED)

	Percent (n=44)
(Yes, I have decided to conduct work on my home that may be eligible for an incentive through the program)	39%
(I am considering whether to conduct the work through the program, but I have not decided yet)	9%
(I have decided NOT to conduct work through the program)	43%
Completed work already	7%
(Other)	2%
Total	100%

[ASK IF PR3 = 1, ELSE SKIP TO PR4]

PR3a. What is the status of the home energy upgrades that you may receive an incentive for?
(READ LIST IF NEEDED)

	Percent (n=17)
(The work on my home is complete.)	65%
(The work is in progress.)	18%
(The work has not started yet.)	18%
Total	100%

[ASK IF PR3a =1,2, OR 3, ELSE SKIP TO PR4]

PR3b. Can you tell me when the work on your home [PR3a = 1: was completed/PR3a=2: started/IF PR3a = 3: is scheduled to start]? Please list the month and year if possible. [OPEN END]

	Percent (n=17)
2011 – Quarter 2	6%
2011 – Quarter 3	12%
2011 – Quarter 4	12%
2012 – Quarter 2	6%
2012 – Quarter 3	29%
2012 – Quarter 4	6%
2013 – Quarter 1	6%
(Not completing any upgrades)	6%
(Other)	6%

	Percent (n=17)
(Don't know)	12%
Total	100%

[ASK ALL]

PR4. Now, have you completed any of the following home energy upgrades?[FOR EACH 1=yes, 2=No, 3= (Started or in process), 8=DK, 9=REF]

a. Performed air sealing

	Percent
Yes, completed	50%
No	40%
(Started or in process)	6%
(Don't know)	4%
Total	100%

b. Performed duct sealing or duct insulation

	Percent
Yes, completed	58%
No	38%
(Started or in process)	4%
Total	100%

c. Installed attic, wall, or floor insulation

	Percent
Yes, completed	52%
No	44%
(Started or in process)	4%
Total	100%

d. Upgraded windows, doors or skylights

	Percent
Yes, completed	52%
No	44%
(Started or in process)	4%
Total	100%

e. Upgraded to ENERGY STAR appliances

	Percent
Yes, completed	74%
No	24%
(Don't know)	2%
Total	100%

f. Upgraded to ENERGY STAR heating or cooling equipment

	Percent
Yes, completed	44%
No	50%
(Started or in process)	2%
(Don't know)	4%
Total	100%

00. (Other: specify)

	Percent (n=16)
Tankless water heater	25%
Other water efficiency measure (low-flow toilet, plumbing)	31%
Solar/renewables (solar PV, solar water heater)	13%
Thermostat	6%
Whole house fan or ventilation	19%
Roofing or flooring	13%
Lighting or light switches/electric system(s)	13%

	Percent (n=16)
HVAC	6%
(Other)	6%
Kitchen appliances (refrigerator, stove, etc)	13%
Insulation (wall, floor, attic, crawlspace)	6%
Total	150%

[SKIP TO PR5c IF PR3 = 3]

[ASK IF ANY PR4a-g =1 OR PR400 = 1, ELSE SKIP TO PR6]

PR5. Which of the upgrades did you complete through the Whole House program? (READ LIST IF NECESSARY “DID YOU...” [1=Completed through the Whole House Program, 2=Did not complete through the Whole House Program, 8=DK, 9=REF]

[ASK IF PR4a=1] a. Perform air sealing

	Percent (n=19)
(Yes, completed through the Whole House program)	53%
(No, did NOT complete through the program)	47%
Total	100%

[ASK IF PR4b=1] b. Perform duct sealing or duct insulation

	Percent (n=22)
(Yes, completed through the Whole House program)	55%
(No, did NOT complete through the program)	45%
Total	100%

[ASK IF PR4c=1] c. Install attic, wall, or floor insulation

	Percent (n=18)
(Yes, completed through the Whole House program)	56%
(No, did NOT complete through the program)	39%
(Don't know)	6%
Total	100%

[ASK IF PR4d=1] d. Upgrade windows, doors or skylights

	Percent (n=17)
(Yes, completed through the Whole House program)	41%
(No, did NOT complete through the program)	53%
(Don't know)	6%
Total	100%

[ASK IF PR4e=1] e. Upgrade to ENERGY STAR appliances

	Percent (n=22)
(Yes, completed through the Whole House program)	23%
(No, did NOT complete through the program)	77%
Total	100%

[ASK IF PR4f=1] f. Upgrade to ENERGY STAR heating or cooling equipment

	Percent (n=13)
(Yes, completed through the Whole House program)	38%
(No, did NOT complete through the program)	54%
(Don't know)	8%
Total	100%

[ASK IF PR4 00=1] g. [READ IN PR4 00]

	Percent (n=12)
(Yes, completed through the Whole House program)	33%
(No, did NOT complete through the program)	58%
(Don't know)	8%
Total	100%

[ASK IF ANY PR5a-g=2, ELSE SKIP TO PR6]

PR5c1. For those upgrades you completed outside of the Whole House program, which of the following did you use to cover the costs of the work? [MULTIPLE RESPONSE]

	Percent (n=26)
My own funds.	96%
Financing or a payment plan through the contractor.	4%
(Other)	8%
A loan through another bank or financial institution.	15%
Total	123%

[ASK IF PR5c1 = 4, ELSE SKIP TO PR6]

PR5d1. Which bank or financial institution? [OPEN END]

	Percent (n=4)
(Other)	75%
(Don't know)	25%
Total	100%

[ASK IF ANY PR4a-g, PR4 00=2 OR 3, ELSE SKIP TO BAR2]

PR6. Do you intend to complete any of the following in the next two years? (IF NECESSARY, READ LIST "DO YOU INTEND TO...") [1=Yes, 0=No, 8=DK, 9=REF]

[ASK IF PR4a=2] a. Air sealing

	Percent (n=23)
Yes	30%
No	61%
(Don't know)	9%
Total	100%

[ASK IF PR4b=2] b. Duct sealing or duct insulation

	Percent (n=21)
Yes	43%
No	52%

	Percent (n=21)
(Don't know)	5%
Total	100%

[ASK IF PR4c=2] c. Install attic, wall, or floor insulation

	Percent (n=24)
Yes	42%
No	46%
(Don't know)	13%
Total	100%

[ASK IF PR4d=2] d. Upgrade windows, doors or skylights

	Percent (n=25)
Yes	24%
No	72%
(Don't know)	4%
Total	100%

[ASK IF PR4e=2] e. Upgrade to ENERGY STAR appliances

	Percent (n=12)
Yes	25%
No	75%
Total	100%

[ASK IF PR4f=2] f. Upgrade to ENERGY STAR heating or cooling equipment

	Percent (n=26)
Yes	35%
No	65%
Total	100%

[ASK IF PR4 00=2] g. [READ IN PR4 00]

	Percent
Solar/renewables (solar PV, solar water heater)	6%
Lighting or light switches/electric system(s)	2%
Insulation (wall, floor, attic, crawlspace)	4%
Kitchen appliances (refrigerator, stove, etc)	6%
Siding/new construction	4%
No	72%
(Don't know)	6%
Tankless water heater	2%
Other water efficiency measure (low-flow toilet, plumbing)	2%
Total	104%

[ASK IF ANY PR6a-g=1, ELSE SKIP TO BAR2]

PR7. Which of these upgrades do you intend to complete through the Whole House Program in the next two years? (IF NECESSARY, READ LIST “DO YOU INTEND TO... THROUGH THE WHOLE HOUSE PROGRAM) [1=Will complete through the program, 2=Will NOT complete through the program, 8=DK, 9=REF]

[ASK IF PR6a=1] a. Perform Air sealing

	Percent (n=7)
(Yes, WILL complete THROUGH the program)	43%
(No, will NOT complete through the program)	14%
(Don't know)	43%
Total	100%

[ASK IF PR6b=1] b. Perform Duct sealing or duct insulation

	Percent (n=9)
(Yes, WILL complete THROUGH the program)	22%
(No, will NOT complete through the program)	33%
(Don't know)	44%
Total	100%

[ASK IF PR6c=1] c. Install attic, wall, or floor insulation

	Percent (n=10)
(Yes, WILL complete THROUGH the program)	40%
(No, will NOT complete through the program)	10%
(Don't know)	50%
Total	100%

[ASK IF PR6d=1] d. Upgrade windows, doors or skylights

	Percent (n=6)
(Yes, WILL complete THROUGH the program)	50%
(Don't know)	50%
Total	100%

[ASK IF PR6e=1] e. Upgrade to ENERGY STAR appliances

	Percent (n=3)
(Yes, WILL complete THROUGH the program)	33%
(No, will NOT complete through the program)	33%
(Don't know)	33%
Total	100%

[ASK IF PR6f=1] f. Upgrade to ENERGY STAR heating or cooling equipment

	Percent (n=9)
(Yes, WILL complete THROUGH the program)	22%
(No, will NOT complete through the program)	33%
(Don't know)	44%
Total	100%

[ASK IF PR6g=1] g. [READ IN PR4 00]

	Percent (n=11)
(Yes, WILL complete THROUGH the program)	36%
(No, will NOT complete through the program)	36%
(Don't know)	27%
Total	100%

[ASK IF ANY PR7a-g=2, ELSE SKIP TO BAR2]

PR5c2. For those upgrades you intend to complete outside of the Whole House program, which of the following will you use to cover the costs of the work? [MULTIPLE RESPONSE]

	Percent (n=9)
My own funds.	67%
A loan through another bank or financial institution.	22%
(Don't know)	11%
(Other)	11%
Total	111%

[ASK IF PR5c2 = 4, ELSE SKIP TO BAR2]

PR5d2. Which bank or financial institution? [OPEN END]

	Percent (n=2)
(Don't know)	50%
(Refused)	50%
Total	100%

Barriers to Participation

[SKIP TO PK2 if PR4 ALL = 1 & PR5 ALL = 1]

[ASK IF PR3 = 2 OR 3, ELSE SKIP TO BAR3]

BAR2. What is the main reason you haven't signed up for any home upgrades through the Whole House program [IF PR3 = 2 READ: "yet"]?

	Percent (n=23)
(The initial cost is too high.)	65%
(I haven't found a contractor that I want to work with for the installations/negative experience with contractor)	17%
(My home doesn't need any of the upgrades sponsored by the program.)	9%
(My contractor advised against it)	4%
(Other)	4%
Total	100%

[ASK IF BAR2 = 1, ELSE SKIP TO BAR2B]

BAR2a. Other than cost, are there any other reasons you have not moved forward with home upgrades through the Whole House Retrofit program? (MULTIPLE RESPONSE, UP TO 5)

	Percent (n=14)
(I need more information about the program.)	7%
Don't think rebates are available/weary of qualification requirements	14%
Negative experience with contractor	7%
(No other reasons)	57%
(Other)	7%
(Don't know)	7%
Total	100%

[ASK IF BAR2 = 09, ELSE SKIP TO BAR3]

BAR2b. What did the contractor say? [OPEN END]

	Percent (n=1)
(Refused)	100%
Total	100%

[ASK IF PR5 ANY = 2, ELSE SKIP TO BAR4]

BAR3. What is the main reason that you paid for any of your home energy upgrades outside of the Whole House program?

	Percent (n=26)
(The initial cost was too high through the program)	23%
(Did not want to work with any of the participating contractors)	4%
(Wanted to work with a specific contractor who was not affiliated with the program)	8%
(Not enough information)	12%
Wanted to improve energy efficiency/make home more comfortable/lower energy costs	19%
Program no longer had funds for measure installed	4%
Timing did not fit with program (had to delay/could not wait for program)	8%
Not aware of the program/rebates were not offered	12%
(Did not complete any upgrades)	4%
(Other)	8%
Total	100%

[ASK IF BAR3 = 02 or BAR3 = 03]

BAR3a. What was the name of the contracting company you worked with for your home energy upgrades? [OPEN END]

	Percent (n=2)
(Other)	50%
(Don't know)	50%
Total	100%

[ASK IF BAR3 = 04]

BAR3b. What information did you want that you did not receive? [OPEN END]

	Percent (n=3)
(None)	33%
(Other)	33%
(Don't know)	33%
Total	100%

[ASK IF BAR3 = 05]

BAR3c. What upgrades did you install that did not qualify for Whole House Program funding?

[OPEN END]

	Percent (n=1)
(Other)	100%
Total	100%

[ASK IF BAR2 = 1 or BAR2 = 6, ELSE SKIP TO BAR5]

BAR4. Now I'm going to read you a list of potential financing measures for energy efficiency upgrades for your home. Using a scale from 1 to 5, where 1 means 'does not increase at all' and 5 means 'increases a great deal,' please indicate whether these measures would increase your likelihood to install the recommended equipment from your Home Performance audit. [0-10, 98 DK 99 REF]

- a. On-bill financing (IF NEEDED: Your electric utility would finance the project, and you pay back the loan through your monthly utility bills)

	Percent (n=14)
1 - Does not increase at all	57%
2	7%
3	29%
4	7%
Total	100%

- b. Lower interest rate for loans for energy efficiency upgrades (IF NEEDED: The utility partners with a bank to bring down the interest rate of these loans)

	Percent (n=14)
1 - Does not increase at all	7%
2	14%
3	36%
4	36%
(Don't know)	7%
Total	100%

c. A payment plan or financing through your contractor

	Percent (n=14)
1 - Does not increase at all	57%
2	21%
3	14%
4	7%
Total	100%

d. Mortgage through a bank or financial institution for energy efficiency upgrades

	Percent (n=14)
1 - Does not increase at all	57%
2	14%
3	29%
Total	100%

e. Non-mortgage loans through local bank or financial institution

	Percent (n=14)
1 - Does not increase at all	64%
2	14%
3	14%
4	7%
Total	100%

BAR5. What could the program do to help you install energy upgrades in your home? [OPEN
END] [96=Nothing]

	Percent
More incentives/higher rebates/lower up front costs	30%
More/better communication with program staff or contractors	2%
Provide incentives for more/different measures/areas of the home	6%
No restrictions on contractor/better access to contractors	8%
Tax incentives/financing options/low interest rate loans	18%

	Percent
Guarantee rebates or funding/continue defunded or expired programs	6%
Faster/easier incentive process	2%
Free/replace measures	4%
More information (general)	2%
Guarantee energy/bill savings	2%
(Nothing)	26%
(Other)	2%
(Don't know)	6%
Total	114%

Program Knowledge

PK2. How did you first hear about the rebates available through the Whole House program?

	Percent
(A contractor)	20%
(Farmer's market or community event)	10%
(Email)	4%
(Direct mailing to your home, by mail, or a door hanger)	16%
(Television ad)	4%
(Newspaper ad)	6%
(Billboard or transit ad)	2%
(Mentioned by family member, friend, co-worker or neighbor)	16%
(Whole House Program website)	2%
Work/employer	6%
Retailer (i.e. Home Depot)	4%
(Other)	4%
(Don't know)	6%
Total	100%

[ASK IF S4=1, ELSE SKIP TO AKAB]

PK3. You mentioned visiting the Whole House Program website. What brought you to the Whole House Program website? [OPEN-END]

	Percent (n=24)
Curiosity/research in general	8%
Wanted to find ways save energy/lower bill	8%
Saw an ad/flyer/mailling/email (general)	33%
Looking to replace specific equipment in home	13%
Through PG&E (email, ad, phone call, main website)	17%
Referred by a contractor/program ally	13%
Looking for financing/loans/rebates (general)	13%
Looking for more information/details about the program	8%
Total	100%

PK6. On a scale from 1 to 5, with 1 meaning “not at all helpful” and 5 meaning “very helpful,” how helpful was the Whole House Program website in providing you with the information you needed to learn about the rebate program?

	Percent (n=24)
1 - Not at all helpful	13%
2	4%
3	17%
4	29%
5 - Very helpful	38%
Total	100%

[ASK IF PK6 < 3]

PK7. Why did you give that rating? [OPEN END]

	Percent (n=4)
Uninformative/unclear/did not help resolve issue/questions (general)	75%
(Other)	25%
Contractor issues	50%
Total	100%

AKA-B

4.2.2.1. Block A

Using a scale where 0 is 'Not at all agree' and 10 is 'Completely agree', how much do you agree with the following statements: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

AK6c. Conserving electricity will help reduce global warming.

	Percent
0 - Not at all agree	6%
1	2%
2	2%
3	8%
4	4%
5	2%
6	8%
7	8%
8	16%
9	8%
10 - Completely agree	36%
Total	100%

CON6c. I sometimes worry whether there is enough money to pay my energy bill.

	Percent
0 - Not at all agree	26%
1	22%
2	14%
3	10%
5	2%
6	6%
7	10%
8	2%
10 - Completely agree	8%
Total	100%

PER1e2. I feel a personal responsibility to help lower my household's utility bills.

	Percent
2	2%
3	4%
5	12%
6	6%
7	4%
8	26%
9	12%
10 - Completely agree	34%
Total	100%

CON4a. I would be very uncomfortable living in a house with very bad drafts and uneven temperatures

	Percent
0 - Not at all agree	2%
1	2%
2	2%
4	2%
5	14%
6	2%
7	4%
8	16%
9	20%
10 - Completely agree	36%
Total	100%

NSC1b. If I wanted to complete a full set of energy efficiency upgrades to my home, I don't think anything would keep me from doing it.

	Percent
0 - Not at all agree	8%
1	4%

	Percent
2	16%
3	8%
4	12%
5	22%
6	4%
7	8%
8	2%
9	2%
10 - Completely agree	12%
(Don't know)	2%
Total	100%

NSC1a. I know people who worry about the impact of their home’s energy use on the environment.

	Percent
0 - Not at all agree	4%
1	2%
2	6%
3	8%
4	6%
5	20%
6	6%
7	14%
8	8%
9	6%
10 - Completely agree	18%
(Refused)	2%
Total	100%

4.2.2.2. Block B

Using a scale where 0 is ‘Not at all agree and 10 is ‘Completely agree’, how much do you agree with the following statements: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

AK6a. I am not sure whether a full set of home energy improvements would save a significant amount of money.

	Percent (n=49)
0 - Not at all agree	10%
1	6%
2	6%
3	10%
4	2%
5	18%
6	10%
7	6%
8	18%
9	4%
10 - Completely agree	8%
Total	100%

PER1c. If I didn't try to make my home energy efficient, I would feel a little guilty about harming the environment.

	Percent (n=49)
0 - Not at all agree	6%
1	10%
2	2%
3	4%
4	4%
5	14%
6	8%
7	4%
8	16%
9	4%
10 - Completely agree	27%
Total	100%

NSC1d. I know I could significantly decrease my electricity bill if I wanted to.

	Percent (n=49)
0 - Not at all agree	10%
1	10%
2	8%
3	20%
4	8%
5	14%
6	6%
7	4%
8	4%
9	4%
10 - Completely agree	8%
(Don't know)	2%
Total	100%

BI2a. This summer, I intend to try harder to save electricity than I did last summer

	Percent (n=49)
0 - Not at all agree	8%
1	6%
2	8%
3	2%
4	4%
5	24%
6	4%
7	8%
8	10%
9	4%
10 - Completely agree	20%
Total	100%

CON1b. My household uses electricity or natural gas without thinking much about how it impacts our utility bills.

	Percent (n=49)
0 - Not at all agree	10%
1	18%
2	12%
3	14%
4	8%
5	12%
6	6%
7	2%
8	6%
9	2%
10 - Completely agree	8%
Total	100%

NSC4a. I really don't think I could afford to complete a full set of energy upgrades to my home, even with rebates.

	Percent (n=49)
0 - Not at all agree	10%
1	2%
2	6%
3	12%
4	4%
5	12%
6	2%
7	8%
8	14%
10 - Completely agree	27%
(Refused)	2%
Total	100%

4.2.2.3. Block C

Using a scale where 0 is ‘Not at all agree and 10 is ‘Completely agree’, how much do you agree with the following statements: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

PER1b. I feel strongly that I need to keep my house at comfortable temperatures year round.

	Percent (n=46)
2	7%
3	4%
4	9%
5	13%
6	4%
7	17%
8	22%
9	2%
10 - Completely agree	22%
Total	100%

NSC1e. [ASK IF S1=2 OR 3] I know I could significantly decrease my natural gas bill if I wanted to.

	Percent (n=42)
0 - Not at all agree	14%
1	2%
2	7%
3	14%
4	14%
5	17%
6	2%
7	10%
8	5%
10 - Completely agree	14%
Total	100%

BI2b. I intend to look for new ways to save energy this year

	Percent (n=46)
0 - Not at all agree	4%
1	2%
3	13%
4	2%
5	13%
6	9%
7	4%
8	24%
9	11%
10 - Completely agree	17%
Total	100%

CON6a. I am very concerned about how energy use affects the environment.

	Percent (n=46)
1	2%
2	2%
3	13%
4	7%
5	7%
6	7%
7	11%
8	17%
9	2%
10 - Completely agree	33%
Total	100%

PER1f. I feel guilty if I use too much energy

4.2.2.4. Block D

Using a scale where 0 is 'Not at all agree' and 10 is 'Completely agree', how much do you agree with the following statements: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

PER1h. If others in my household can't or won't change their behavior to lower our utility bills, I feel I should personally do even more to control these energy costs

	Percent (m=45)
0 - Not at all agree	2%
1	2%
2	9%
5	24%
6	4%
7	18%
8	16%
9	7%
10 - Completely agree	11%
(Don't know)	2%
(Refused)	4%
Total	100%

CON6b. I am very concerned about the environmental impacts of power plants

	Percent (n=45)
0 - Not at all agree	4%
2	2%
3	4%
4	7%
5	4%
6	4%
7	11%
8	22%
9	2%
10 - Completely agree	36%
(Don't know)	2%
Total	100%

PER1a. In my household, I am the person most responsible for making my home comfortable by doing things like keeping it free from drafts.

	Percent (n=45)
4	2%
5	20%
6	2%
7	7%
8	18%
9	7%
10 - Completely agree	44%
Total	100%

PER1d. I feel it is my job to find ways to reduce my home's impact on the environment.

	Percent (n=45)
0 - Not at all agree	2%
1	2%
2	4%
3	2%
4	4%
5	13%
7	18%
8	20%
9	4%
10 - Completely agree	29%
Total	100%

NSC4b. My home's structure or age makes it hard to complete a full set of energy upgrades.

	Percent (n=45)
0 - Not at all agree	13%
1	2%
2	16%
3	4%

	Percent (n=45)
4	2%
5	4%
6	7%
7	9%
8	16%
9	11%
10 - Completely agree	16%
Total	100%

PER1g. If my utility bills go up, I feel like I must do something to lower them.

	Percent (n=45)
1	2%
2	4%
3	2%
5	16%
6	18%
7	11%
8	16%
9	2%
10 - Completely agree	29%
Total	100%

CON4b. I know people who talk about their homes being drafty and having uneven temperatures.

	Percent (n=45)
0 - Not at all agree	7%
1	7%
2	11%
3	4%
4	4%
5	11%

	Percent (n=45)
6	20%
7	9%
8	9%
10 - Completely agree	18%
Total	100%

4.2.2.5. Block 1

Using a scale where 0 is ‘Not at all concerned’ and 10 is ‘Very concerned’, how concerned are you with each of the following: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

CON2a. The cost of heating or cooling your home

	Percent
0 - Not at all concerned	2%
2	2%
3	2%
4	6%
5	18%
6	4%
7	14%
8	12%
9	10%
10 - Very concerned	28%
(Don't know)	2%
Total	100%

CON2b. Global warming

	Percent
0 - Not at all concerned	6%
1	2%
2	6%
3	10%
4	6%
5	8%

	Percent
6	6%
7	8%
8	12%
9	10%
10 - Very concerned	26%
Total	100%

CON3. a. Finding ways to control your home energy costs

	Percent
3	2%
4	2%
5	12%
6	8%
7	18%
8	20%
9	12%
10 - Very concerned	26%
Total	100%

CON3. b. Keeping your home free from drafts and hot and uneven temperatures

	Percent
2	8%
3	4%
4	6%
5	8%
6	2%
7	18%
8	22%
9	6%
10 - Very concerned	26%
Total	100%

4.2.2.6. Block 2

Using a scale from 0 to 10 where 0 is ‘None’ and 10 is ‘A lot’ how many of the following types of ads have you’ve seen or heard in the past year: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

AK1a. Ads about major home energy improvements or upgrades.

	Percent (n=48)
0 - None	8%
1	4%
2	6%
3	6%
4	4%
5	17%
6	4%
7	13%
8	17%
9	4%
10 - A lot	17%
Total	100%

AK1b. Ads that say making home energy improvements decreases a home's impact on the environment.

	Percent (n=48)
0 - None	8%
1	10%
2	15%
3	4%
4	4%
5	21%
6	13%
7	6%
8	10%
9	4%
10 - A lot	2%

	Percent (n=48)
(Don't know)	2%
Total	100%

AK1c. Ads that say home energy improvements lower utility bills.

	Percent (n=48)
0 - None	10%
1	4%
2	8%
4	4%
5	10%
6	8%
7	19%
8	19%
9	4%
10 - A lot	13%
Total	100%

4.2.2.7. Block 3

I am going to ask you some questions about improvements that homeowners might make to increase the comfort of their homes. Please answer using a scale from 0 to 10 where 0 is “would not increase comfort at all” and 10 is “would increase comfort a lot”. [SCALE 0-10, 98=DK, 99=REF] [ROTATE]

AK4a. How much do you think weather stripping and caulking would increase the comfort of a home that doesn’t have it already?

	Percent (n=45)
2	2%
5	13%
6	11%
7	13%
8	9%
9	16%

	Percent (n=45)
10 - Would increase comfort a lot	31%
(Don't know)	4%
Total	100%

AK4b. How much do you think adding 8 inches of insulation to the attic or walls would increase the comfort of a home in your area that doesn't have it already?

	Percent (n=45)
3	4%
5	11%
6	7%
7	4%
8	24%
9	16%
10 - Would increase comfort a lot	33%
Total	100%

4.2.2.8. Block 4

Using a scale from 0 to 10 where 0 is 'Not at all knowledgeable' and 10 is 'Very knowledgeable', how knowledgeable do you feel you are about... [ROTATE, SCALE 0-10, 98=DK, 99=REF]

AK5b. Home energy improvements that would decrease the impact of your home's energy use on the environment the most?

	Percent (n=45)
1	2%
2	2%
4	7%
5	9%
6	16%
7	18%
8	13%
9	18%

	Percent (n=45)
10 - Very knowledgeable	16%
Total	100%

AK5c. Home improvements that would significantly decrease your PG&E bill?

	Percent (n=45)
0 - Not at all knowledgeable	2%
2	2%
3	2%
4	2%
5	9%
6	4%
7	20%
8	16%
9	20%
10 - Very knowledgeable	22%
Total	100%

AK5d. Things you could do to make your home warmer in the winter and cooler in the summer without increasing your natural gas or electricity use?

	Percent (n=45)
4	4%
5	11%
6	7%
7	13%
8	29%
9	22%
10 - Very knowledgeable	13%
Total	100%

Demographics

Now please answer some final questions about your household. Your responses are for statistical purposes only and will remain confidential.

D2. How many people currently live in your household year-round (more than nine months out of the year), including yourself? [NUMERIC OPEN END, 99 Prefer not to answer]

	Percent
1	8%
2	48%
3	18%
4	14%
5	6%
6	6%
Total	100%

[Skip if D2=1]

D3. How many children 18 and younger currently live in your household year-round (more than nine months out of the year)? [NUMERIC OPEN END, 99 Prefer not to answer]

	Percent (n=46)
0	65%
1	15%
2	13%
3	4%
(Refused)	2%
Total	100%

D4. When did you purchase your home?

	Percent
(Within the last year)	2%
(One to two years ago)	6%
(Three to five years ago)	14%
(More than 5 years ago)	76%

	Percent
(Don't know)	2%
Total	100%

D6. Does your home have central air conditioning and/or central heat?

	Percent
(Yes - central air conditioning)	64%
(Yes - central heating)	94%
(No - neither central air conditioning or heating)	4%
(Don't know)	2%
Total	164%

D7. In what year was your home built?

	Percent
(2001 to 2007)	2%
(1991 to 2000)	8%
(1981 to 1990)	14%
(1971 to 1980)	12%
(1961 to 1970)	16%
(1951 to 1960)	26%
(1941 to 1950)	10%
(1940 or earlier)	10%
(Don't know)	2%
Total	100%

D7a. What is the approximate square footage of your home?

	Percent
(Less than 1000 square feet)	4%
(1000 to 1499 square feet)	20%
(1500 to 1999 square feet)	36%
(2000 to 2499 square feet)	22%
(2500 to 2999 square feet)	6%
(3000 to 3499 square feet)	4%
(3500 or more square feet)	6%

	Percent
(Don't know)	2%
Total	100%

D8. How long have you lived in this home?

	Percent (n=8)
(Less than two years)	13%
(3-5 years)	25%
(11-20 years)	38%
(21-plus years)	25%
Total	100%

D12. What is the last level of education you completed? (READ IF NEEDED)

	Percent
(High school graduate)	6%
(Some collage/Vocational or technical school)	16%
(College graduate)	40%
(Post graduate education)	36%
(Refused)	2%
Total	100%

D13. In what year were you born? [NUMERIC OPEN END; 1900-1999]

	Percent
1932	2%
1936	2%
1938	2%
1941	2%
1942	2%
1944	10%
1945	4%
1946	2%
1947	2%

	Percent
1948	4%
1949	2%
1950	2%
1951	4%
1954	2%
1955	4%
1956	6%
1958	4%
1959	4%
1960	4%
1963	2%
1964	2%
1965	4%
1966	2%
1967	2%
1969	6%
1972	2%
1973	2%
1976	4%
1979	2%
1983	4%
(Refused)	4%
Total	100%

D14. How would you describe your race or ethnicity?

	Percent
(White or Caucasian)	72%
(Black or African American)	2%
(Hispanic, Mexican, Latino, Puerto Rican, or other Hispanic)	4%
(Chinese)	2%
(Other Asian or Pacific Islander)	4%
(Mixed or multi-racial)	4%
(Other)	2%

	Percent
(Refused)	12%
Total	102%

D16. Which of the following best describes your current employment status? (READ IF NEEDED)

	Percent
(Employed Full Time)	54%
(Employed Part Time)	6%
(Not Employed, Currently Seeking Employment)	2%
(Not Employed, Not Seeking Employment)	4%
(Retired)	32%
(Refused)	2%
Total	100%

D17. Which of the following best represents your annual household income from all sources in 2012, before taxes? Please step me when I reach your category. Was it ...

	Percent
Under \$25,000	6%
\$25,000 to under \$35,000	6%
\$35,000 to under \$50,000	6%
\$50,000 to under \$75,000	10%
\$75,000 to under \$100,000	26%
\$100,000 to under \$125,000	14%
125,000 to under \$150,000	4%
\$150,000 or more	14%
(Refused)	14%
Total	100%

D18. That is all of the questions in our survey. Please enter your name and address so that we may send you the \$50, incentive in appreciation for your time today. [OPEN ENDS FOR NAME, ADDRESS]

Closing

Thanks for your help with this survey! You should receive the check within 2-3 weeks. Your responses will greatly help PG&E customers save energy and money in the future. On behalf of PG&E, thank you very much for your time and help with this study!

4.3. Web Drop-Out Survey

4.3.1. Survey Guide

Introduction

S1. Hello, my name is *** . I’m calling on behalf of Pacific Gas and Electric regarding your experience with the Energy Upgrade or Whole House Retrofit program. Is [INSERT PARTICIPANT NAME] available? [IF PARTICIPANT NAME IS BLANK, “Could I talk to the person who had the recent experience with the Energy Upgrade California website?]

[IF NEEDED: The Whole House Retrofit program provides incentives to PG&E customers who get a comprehensive home energy assessment and then install energy reducing products in their home such as new air conditioning systems, windows or insulation.]

(ONCE CORRECT PERSON IS ON THE PHONE :)

According to our records, you used the website of the Energy Upgrade California Program, also known as the Whole House program, at energyupgradeca.org. PG&E would like to hear from customers like you about their experience with the program and website. We are offering you a \$50 incentive as a thank-you for your time. (IF NEEDED: This survey will take about 10 to 15 minutes. You are still eligible to participate in the survey even if you did nothing more than use the website.) Your answers will be kept confidential and will be used for evaluation purposes only. Have you ever visited the Whole House Program website, at energy – upgrade – C – A - .org? (SCHEDULE CALLBACK IF NECESSARY)

(IF NECESSARY “We will mail you a check so that it arrives in the next 2 to 3 weeks. We will confirm your address at the end of the survey.)

Great. Let’s get started. First...

Screening

S1. Are you a customer of PG&E for electricity or natural gas?

1. Yes, electric customer
2. Yes, gas customer
3. Yes, electric and gas customer
4. Neither electric nor gas customer [TERMINATE]
8. (Don’t know) [TERMINATE]
9. (Refused) [TERMINATE]

S2. Do you own or rent your home?

01. Own
02. Rent [TERMINATE]
00. Other please describe: _____ [TERMINATE]
98. (Don’t know) [TERMINATE]
99. (Refused) [TERMINATE]

D5. Which of the following types of housing units would you say best describes your home? Is it a..?

- 01. Single-family detached house
- 02. Single-family attached house (townhouse, row house, excluding duplex)
- 03. Duplex
- 04. Apartment building or condominium with 2-4 units
- 05. Apartment building or condominium with 5 or more units [TERMINATE]
- 06. Mobile home or house trailer [TERMINATE]
- 98. (Don't know) [TERMINATE]
- 99. (Refused) [TERMINATE]

S2a. Did you sign up for e-updates on the Whole House Program website?

- 1. Yes, signed up on the website
- 2. No, did not
- 8. (Don't know)
- 9. (Refused)

S3. The program records indicate that you may have created an action plan for your home through Whole House Program website. Do you recall creating this action plan?

- 1. Yes
- 2. No
- 8. (Don't know)
- 9. (Refused)

Program and Project Status

PR1. [READ IF VENDORCONTACT = 1: Our records indicate that you contacted an Energy Rater to conduct an assessment through the Whole House program. Is this correct?/READ IF VENDORCONTACT = 0: Have you contacted an Energy Rater to conduct an assessment through the Whole House program?] (IF NEEDED: The Energy Rater is the person who conducted the assessment through the Whole House program)

- 1. Yes
- 2. No [SKIP TO PR3c]
- 8. (Don't know) [SKIP TO PR3c]
- 9. (Refused) [SKIP TO PR3c]

[ASK IF PR1 = 1, ELSE SKIP TO PR3c]

PR1a. Did you find this Energy Rater through the Whole House Program website?

- 1. Yes
- 2. No
- 8. (Don't know)
- 9. (Refused)

[ASK IF PR1a = 2, ELSE SKIP TO PR1b]

PR1aa. How did you find the Energy Rater who conducted the assessment? (Multiple response, up to 3) (READ LIST IF NEEDED)

1. (It was a referral from a friend/neighbor.)
2. (I was contacted by the Energy Rater.)
3. (I found the Energy Rater from the Whole House Program website)
4. (I found the Energy Rater from the PG&E website.)
5. (I found the Energy Rater from yellow pages of a phone book.)
6. (I knew the Energy Rater)
7. (A workshop/meeting I attended about the program)
00. (Other, specify: _____)
98. (Don't know)
99. (Refused)

[ASK IF PR1aa = 2]

CO2. How did the Energy Rater contact you? [MULTIPLE RESPONSE OF THREE] (READ LIST IF NEEDED)

1. (Face-to-face discussion)
2. (Door hanger)
3. (A group talk or presentation)
4. (Telephoned me)
5. (As part of another project or service call)
00. (Other, please describe: _____)
98. (Don't know)
99. (Refused)

[SKIP IF PR1AA=2]

PR1b. On a scale of 1 to 5 where 1 means “not at all easy” and 5 means “very easy,” how easy was it to find an Energy Rater to conduct assessment for the Whole House program?

PR1d. Has an Energy Rater come to your home to conduct an energy assessment to see if you qualify for incentives for home energy upgrades through the Whole House Program?

01. Yes
02. No [SKIP TO PR3c]
8. (Don't know)
9. (Refused)

[ASK IF PR1d = 1, ELSE SKIP TO PR3c]

PR1c. Did the Energy Rater recommend any upgrades that you could install in your home through the Whole House program?

1. (I have not received any report with results or recommendations from the Energy Rater.) [SKIP TO PR4]
2. No
3. Yes
00. Other, describe: _____
98. (Don't know) [SKIP TO PR4]
99. (Refused) [SKIP TO PR4]

PR2. On a scale from 1 to 5 where 1 is “strongly disagree” and 5 is “strongly agree”, please indicate how much you agree with the following statements.

- a. The home energy report was valuable.
- b. The home energy report was easy to understand.
- c. The Energy Rater helped me better understand my home's energy usage.
- d. (READ IF PR1C = 3) The Energy Rater gave me a better understanding of where energy improvements can be made in my home.
- e. (READ IF PR1C = 3) The Energy Rater provided enough information to help me make a decision about installing recommended measures.

PR2f. Did the amount of information you received from the Energy Rater meet your expectations? Please rate on a scale of 1 to 5 where 1 is ‘fell short of expectations’ and 5 is ‘exceeded expectations.’

[ASK IF PR1c=3, ELSE SKIP TO PR4]

PR3. Have you decided whether you will conduct work on your home through the Whole House program? (READ IF NEEDED)

1. (Yes, I have decided to conduct work on my home that may be eligible for an incentive through the program.)
2. (I am considering whether to conduct the work through the program, but I have not decided yet.) [SKIP TO PR4]
3. (I have decided NOT to conduct work through the program.) [SKIP TO PR4]
6. (None of the above apply to my situation)
8. (Don't know)
9. (Refused)

[ASK IF PR3 = 6, ELSE SKIP TO PR3A]

PR3aa. Can you describe the status of your home retrofit project as it relates to the program?
[OPEN-END]

[ASK IF PR3 = 1, ELSE SKIP TO PR4]

PR3a. What is the status of the home energy upgrades that you may receive an incentive for?
(READ LIST IF NEEDED)

1. (The work on my home is complete.)
2. (The work is in progress.)
3. (The work has not started yet.)

- 8. (Don't know)
- 9. (Refused)

[ASK IF PR3a =1,2, OR 3, ELSE SKIP TO PR3c]

PR3b. Can you tell me when the work on your home [PR3a = 1: was completed/PR3a=2: started/IF PR3a = 3: is scheduled to start]? Please list the month and year if possible. [OPEN END]

[ASK IF PR1 = 2 OR PR1d = 2, ELSE SKIP TO PR4]

PR3c. Do you plan to have an energy assessment conducted on your home?

- 01. Yes
- 02. No
- 8. (Don't know)
- 9. (Refused)

[ASK IF PR3c=2, ELSE SKIP TO PR4]

PR3d. Why not? [OPEN END]

[ASK ALL]

PR4. Now, have you completed any of the following home energy upgrades?" [FOR EACH 1=yes, 2=No, 3= (Started or in process), 8=DK, 9=REF]

- a. Performed air sealing
- b. Performed duct sealing or duct insulation
- c. Installed attic, wall, or floor insulation
- d. Upgraded windows, doors or skylights
- e. Upgraded to ENERGY STAR appliances
- f. Upgraded to ENERGY STAR heating or cooling equipment
- g. Are there any other home upgrades you've completed?

[ASK IF PR4G=1,3]

PR4G_A. What upgrades have you completed/ started or are in the process of starting [READ IN BASED ON RESPONSE TO PR4G]

[ASK IF ANY PR4a-f =1ELSE SKIP TO PR6]

PR5. Which of the upgrades did you complete through the Whole House program? (READ LIST IF NECESSARY "DID YOU...") [1=Completed through the Whole House Program, 2=Did not complete through the Whole House Program, 8=DK, 9=REF]

- [ASK IF PR4a=1] a. Perform air sealing
- [ASK IF PR4b=1] b. Perform duct sealing or duct insulation
- [ASK IF PR4c=1] c. Install attic, wall, or floor insulation
- [ASK IF PR4d=1] d. Upgrade windows, doors or skylights
- [ASK IF PR4e=1] e. Upgrade to ENERGY STAR appliances
- [ASK IF PR4f=1] f. Upgrade to ENERGY STAR heating or cooling equipment
- g. [READ IN PR4 00]

[ASK IF ANY PR5a-g=2, ELSE SKIP TO PR6]

PR5c1. For those upgrades you completed outside of the Whole House program, which of the following did you use to cover the costs of the work? [MULTIPLE RESPONSE]

- 01. My own funds.
- 02. A loan through the CHF Residential Energy Retrofit program.
- 03. A loan through Umpqua Bank's GreenStreet Lending program.
- 04. A loan through another bank or financial institution.
- 05. Financing or a payment plan through the contractor.
- 00. (Other: specify)
- 98. (Don't know)
- 99. (Refused)

[ASK IF PR5c1 = 4, ELSE SKIP TO PR6]

PR5d1. Which bank or financial institution? [OPEN END]

[ASK IF ANY PR4a-g2 OR 3]

PR6. Do you intend to complete any of the following in the next two years? (IF NECESSARY, READ LIST "DO YOU INTEND TO...") [1=Yes, 0=No, 8=DK, 9=REF]

- [ASK IF PR4a=2,3] a. Air sealing
- [ASK IF PR4b=2,3] b. Duct sealing or duct insulation
- [ASK IF PR4c=2,3] c. Install attic, wall, or floor insulation
- [ASK IF PR4d=2,3] d. Upgrade windows, doors or skylights
- [ASK IF PR4e=2,3] e. Upgrade to ENERGY STAR appliances
- [ASK IF PR4f=2,3] f. Upgrade to ENERGY STAR heating or cooling equipment
- g. Any other upgrades?

PR6G. Do you intend to complete any other upgrades in the next two years?

[00=Yes: specify, 96=No, 98=DK, 99=REF]

[ASK IF ANY PR6a-g=1, ELSE SKIP TO BAR2]

PR7. Which of these upgrades do you intend to complete through the Whole House Program in the next two years? (IF NECESSARY, READ LIST "DO YOU INTEND TO... THROUGH THE WHOLE HOUSE PROGRAM") [1=Will complete through the program, 2=Will NOT complete through the program, 8=DK, 9=REF]

- [ASK IF PR6a=1] a. Perform Air sealing
- [ASK IF PR6b=1] b. Perform Duct sealing or duct insulation
- [ASK IF PR6c=1] c. Install attic, wall, or floor insulation
- [ASK IF PR6d=1] d. Upgrade windows, doors or skylights
- [ASK IF PR6e=1] e. Upgrade to ENERGY STAR appliances
- [ASK IF PR6f=1] f. Upgrade to ENERGY STAR heating or cooling equipment
- [ASK IF PR6g=1] g. [READ IN PR6g]

[ASK IF ANY PR7a-g=2, ELSE SKIP TO BAR2]

PR5c2. For those upgrades you intend to complete outside of the Whole House program, which of the following will you use to cover the costs of the work? [MULTIPLE RESPONSE]

- 01. My own funds.
- 02. A loan through the CHF Residential Energy Retrofit program.
- 03. A loan through Umpqua Bank's GreenStreet Lending program.
- 04. A loan through another bank or financial institution.
- 05. Financing or a payment plan through the contractor.
- 00. (Other: specify)
- 98. (Don't know)
- 99. (Refused)

[ASK IF PR5c2 = 4, ELSE SKIP TO BAR2]

PR5d2. Which bank or financial institution? [OPEN END]

Barriers to Participation

[ASK BAR1 IF PR1= 2 OR PR1d= 2, ELSE SKIP TO BAR2]

BAR1. What is the main reason you haven't [IF PR1 = 2 read: contacted a contractor to receive/IF PR1d = 2 read: "had a contractor come to your home to conduct"] a home assessment through the Whole House program? (SINGLE RESPONSE)

- 01. (The cost of the assessment is too high.)
- 02. (I haven't had time.)
- 03. (I haven't found a contractor I want to work with.)
- 04. (I need more information about the program.)
- 05. (My home does not need any [IF PR5 = 1 read: "more"] energy upgrades.)
- 00. (Other, specify: _____)
- 98. (Don't know)
- 99. (Refused)

[ASK IF BAR1A = 1, ELSE SKIP TO BAR2]

BAR1a. Other than cost, are there any other reasons you have not yet signed up for a home energy assessment? (MULTIPLE RESPONSE, UP TO 5) (DO NOT READ LIST)

- 01. (I haven't had time.)
- 02. (I haven't found a contractor I want to work with.)
- 03. (I need more information about the program.)
- 04. (My home doesn't need any [IF PR5 = 1 read: "more"] energy upgrades.)
- 00. (Other, specify: _____)
- 96. (No other reason)
- 98. (Don't know)
- 99. (Refused)

[ASK IF PR3 = 2 OR 3, ELSE SKIP TO BAR3]

BAR2. What is the main reason you haven't signed up for any home upgrades through the Whole House program [IF PR3 = 2 READ: "yet"]?

- 01. (The initial cost is too high.)
- 02. (I haven't had time.)
- 03. (I haven't found a contractor that I want to work with for the installations.)
- 04. (I need more information about the program.)
- 05. (My home doesn't need any of the upgrades sponsored by the program.)
- 06. (I cannot get financing to cover the project cost.)
- 09. (My contractor advised against it.)
- 00. (Other, specify: _____)
- 8. (Don't know)
- 9. (Refused)

[ASK IF BAR2 = 1, ELSE SKIP TO BAR3]

BAR2a. Other than cost, are there any other reasons you have not yet signed up for any home upgrades? (MULTIPLE RESPONSE, UP TO 5)

- 05. (I haven't had time to contact them.)
- 06. (I haven't found a contractor yet.)
- 07. (I need more information about the program.)
- 08. (My home doesn't need any of the upgrades sponsored by the program.)
- 01. (Other, specify: _____)
- 96. (No other reason)
- 98. (Don't know)
- 99. (Refused)

[ASK IF BAR2 = 09, ELSE SKIP TO BAR3]

BAR2b. What did the contractor say? [OPEN END]

[ASK IF any PR5a-g = 2, ELSE SKIP TO BAR4]

BAR3. What is the main reason that you funded any of your home energy upgrades outside of the Whole House program?

- 01. (The initial cost was too high through the program.)
- 02. (Did not want to work with any of the participating contractors.)
- 03. (Wanted to work with a specific contractor who was not affiliated with the program.)
- 04. (Not enough information.)
- 05. (Upgrades did not qualify for program funding.)
- 00. (Other, describe: _____)
- 98. (Don't know)
- 99. (Refused)

[ASK IF BAR3 = 02 or BAR3 = 03]

BAR3a. What was the name of the contracting company you worked with for your home energy upgrades? [OPEN END]

[ASK IF BAR3 = 04]

BAR3b. What information did you want that you did not receive? [OPEN END]

[ASK IF BAR3 = 05]

BAR3c. What upgrades did you install that did not qualify for Whole House Program funding? [OPEN END]

[ASK IF BAR2 = 1 or BAR2 = 6, ELSE SKIP TO BAR5]

BAR4. Now I'm going to read you a list of potential financing measures for energy efficiency upgrades for your home. Using a scale from 1 to 5, where 1 means 'does not increase at all' and 5 means 'increases a great deal,' please indicate whether these measures would increase your likelihood to install the recommended equipment from your home assessment. [1-5, 98 DK 99 REF]

- a. On-bill financing (Your electric utility would finance the project, and you pay back the loan through your monthly utility bills)
- b. Lower interest rate for loans for energy efficiency upgrades (The utility partners with a bank to bring down the interest rate of these loans)
- c. A payment plan or financing through your contractor
- d. Mortgage through a bank or financial institution for energy efficiency upgrades
- e. Non-mortgage loans through local bank or financial institution

BAR5. What could the program do to help you install energy upgrades in your home? [OPEN END] [96=Nothing]

Program Knowledge

[ASK ALL]

PK2. How did you first hear about the rebates available through the Whole House program?

01. (A contractor)
02. (Farmer's market or community event)
03. (Internet ad)
04. (Email)
05. (Direct mailing to your home, by mail, or a door hanger)
06. (Radio ad)
07. (Television ad)
08. (Newspaper ad)
09. (Billboard or transit ad)

- 10. (Mentioned by family member, friend, co-worker or neighbor)
- 11. (Whole House Program website)
- 12. (PG&E website)
- 13. (Called into the PG&E call center and they mentioned the program)
- 14. (Home Energy Reports)
- 00. (Other, please describe: _____)
- 98. (Don't know)
- 99. (Refused)

PK3. What brought you to the Whole House Program website? [OPEN-END]

PK4. Did you find the information you were looking for on the Whole House Program website?

- 1. Yes
- 2. No
- 8. (Don't know)
- 9. (Refused)

[ASK PK5 if PK4=2]

PK5. What information were you not able to find on the EUC website? [OPEN END; 98 Don't Know]

PK6. On a scale from 1 to 5, with 1 meaning "not at all helpful" and 5 meaning "very helpful," how helpful was the Whole House Program website in providing you with the information you needed to learn about the rebate program?

[ASK IF PK6 < 3]

PK7. Why did you give that rating? [OPEN END]

AKA-B

4.3.1.1. Block A

Using a scale where 0 is 'Not at all agree' and 10 is 'Completely agree', how much do you agree with the following statements: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

AK6c. Conserving electricity will help reduce global warming.

CON6c. I sometimes worry whether there is enough money to pay my energy bill.

PER1e2. I feel a personal responsibility to help lower my household's utility bills.

CON4a. I would be very uncomfortable living in a house with very bad drafts and uneven temperatures

NSC1b. If I wanted to complete a full set of energy efficiency upgrades to my home, I don't think anything would keep me from doing it.

NSC1a. I know people who worry about the impact of their home's energy use on the environment.

4.3.1.2. Block B

Using a scale where 0 is 'Not at all agree and 10 is 'Completely agree', how much do you agree with the following statements: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

- AK6a. I am not sure whether a full set of home energy improvements would save a significant amount of money.
- PER1c. If I didn't try to make my home energy efficient, I would feel a little guilty about harming the environment.
- NSC1d. I know I could significantly decrease my electricity bill if I wanted to.
- BI2a. This summer, I intend to try harder to save electricity than I did last summer
- CON1b. My household uses electricity or natural gas without thinking much about how it impacts our utility bills.
- NSC4a. I really don't think I could afford to complete a full set of energy upgrades to my home, even with rebates.

4.3.1.3. Block C

Using a scale where 0 is 'Not at all agree and 10 is 'Completely agree', how much do you agree with the following statements: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

- PER1b. I feel strongly that I need to keep my house at comfortable temperatures year round.
- NSC1e. [ASK IF S1=2 OR 3] I know I could significantly decrease my natural gas bill if I wanted to.
- BI2b. I intend to look for new ways to save energy this year
- CON6a. I am very concerned about how energy use affects the environment.
- NSC1c. I know how to participate in the Energy Upgrade California Whole House Program.
- PER1f. I feel guilty if I use too much energy

4.3.1.4. Block D

Using a scale where 0 is 'Not at all agree and 10 is 'Completely agree', how much do you agree with the following statements: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

- PER1h. If others in my household can't or won't change their behavior to lower our utility bills, I feel I should personally do even more to control these energy costs
- CON6b. I am very concerned about the environmental impacts of power plants
- PER1a. In my household, I am the person most responsible for making my home comfortable by doing things like keeping it free from drafts.
- PER1d. I feel it is my job to find ways to reduce my home's impact on the environment.
- NSC4b. My home's structure or age makes it hard to complete a full set of energy upgrades.
- PER1g. If my utility bills go up, I feel like I must do something to lower them.
- CON4b. I know people who talk about their homes being drafty and having uneven temperatures.

4.3.1.5. Block 1

Using a scale where 0 is ‘Not at all concerned’ and 10 is ‘Very concerned’, how concerned are you with each of the following: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

- CON2a. The cost of heating or cooling your home
- CON2b. Global warming
- CON3. a. Finding ways to control your home energy costs
- CON3. b. Keeping your home free from drafts and hot and uneven temperatures

4.3.1.6. Block 2

Using a scale from 0 to 10 where 0 is ‘None’ and 10 is ‘A lot’ how many of the following types of ads have you’ve seen or heard in the past year: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

- AK1a. Ads about major home energy improvements or upgrades.
- AK1b. Ads that say making home energy improvements decreases a home's impact on the environment.
- AK1c. Ads that say home energy improvements lower utility bills.

4.3.1.7. Block 3

I am going to ask you some questions about improvements that homeowners might make to increase the comfort of their homes. Please answer using a scale from 0 to 10 where 0 is “would not increase comfort at all” and 10 is “would increase comfort a lot”. [SCALE 0-10, 98=DK, 99=REF] [ROTATE]

- AK4a. How much do you think weather stripping and caulking would increase the comfort of a home that doesn’t have it already?
- AK4b. How much do you think adding 8 inches of insulation to the attic or walls would increase the comfort of a home in your area that doesn’t have it already?

4.3.1.8. Block 4

Using a scale from 0 to 10 where 0 is ‘Not at all knowledgeable’ and 10 is ‘Very knowledgeable’, how knowledgeable do you feel you are about... [ROTATE, SCALE 0-10, 98=DK, 99=REF]

- AK5b. home energy improvements that would decrease the impact of your home’s energy use on the environment the most?
- AK5c. home improvements that would significantly decrease your PG&E bill?
- AK5d. things you could do to make your home warmer in the winter and cooler in the summer without increasing your natural gas or electricity use?

Demographics

Now please answer some final questions about your household. Your responses are for statistical purposes only and will remain confidential.

D2. Including yourself, how many people currently live in your household year-round (more than nine months out of the year)? [NUMERIC OPEN END, 99 Prefer not to answer]

[Skip if D2=1]

D3. How many children 18 and younger currently live in your household year-round (more than nine months out of the year)? [NUMERIC OPEN END, 99 Prefer not to answer]

D4. When did you purchase your home?

1. Within the last year
2. One to two years ago
3. Three to five years ago
4. More than 5 years ago
8. (Don't know)
9. (Refused)

D6. Does your home have central air conditioning and/or central heat?

01. Yes – central air conditioning
02. Yes – central heating
03. No – central air conditioning or heating
8. (Don't know)
9. (Refused)

D7. In what year was your home built?

01. 2008 to 2012
02. 2001 to 2007
03. 1991 to 2000
04. 1981 to 1990
05. 1971 to 1980
06. 1961 to 1970
07. 1951 to 1960
08. 1941 to 1950
09. 1940 or earlier
8. (Don't know)
9. (Refused)

D7a. What is the approximate square footage of your home?

1. Less than 1000 square feet
2. 1000 to 1499 square feet
3. 1500 to 1999 square feet
4. 2000 to 2499 square feet
5. 2500 to 2999 square feet
6. 3000 to 3499 square feet
7. 3500 or more square feet

- 8. (Don't know)
- 9. (Refused)

D8. How long have you lived in this home?

- 01. Less than two years
- 02. 3-5 years
- 03. 6-10 years
- 04. 11-20 years
- 05. 21-plus years
- 99. Prefer not to answer

D12. What is the last level of education you completed?

- 01. Less than high school
- 02. High school graduate
- 03. Some collage/Vocational or technical school
- 04. College graduate
- 05. Post graduate education
- 8. (Don't know)
- 9. (Refused)

D13. In what year were you born? [NUMERIC OPEN END; 1900-1999]

- 8. (Don't know)
- 9. (Refused)

D14. How would you describe your race or ethnicity? (READ LIST IF NEEDED)

- 01. (White or Caucasian)
- 02. (Black or African American)
- 03. (American Indian or Alaska Native)
- 04. (Hispanic, Mexican, Latino, Puerto Rican, or other Hispanic)
- 05. (Chinese)
- 06. (Indian or South Asian)
- 07. (Other Asian or Pacific Islander)
- 08. (Mixed or multi-racial)
- 00. (Another group, please list: _____)
- 98. (Don't know)
- 99. (Refused)

D16. Which of the following best describes your current employment status?

- 01. Employed Full Time
- 02. Employed Part Time
- 03. Not Employed, Currently Seeking Employment
- 04. Not Employed, Not Seeking Employment

- 05. Retired
- 06. Student
- 8. (Don't know)
- 9. (Refused)

D17. Which of the following best represents your annual household income from all sources in 2012, before taxes? Was it ...

- 01. Under \$25,000
- 02. \$25,000 to under \$35,000
- 03. \$35,000 to under \$50,000
- 04. \$50,000 to under \$75,000
- 05. \$75,000 to under \$100,000
- 06. \$100,000 to under \$125,000
- 07. \$125,000 to under \$150,000
- 08. \$150,000 or more
- 98. (Don't know)
- 99. (Refused)

D18. That is all of the questions in our survey. Please enter your name and address so that we may send you the \$50, incentive in appreciation for your time today. [OPEN ENDS FOR NAME, ADDRESS]

Closing

Thanks for your help with this survey! You should receive the check within 2-3 weeks. Your responses will greatly help PG&E customers save energy and money in the future. On behalf of PG&E, thank you very much for your time and help.

4.3.2. Survey Frequency Tables

Throughout this topline report, 100 respondents answered each question. We include a different number in the data tables in cases where the total number of respondents is different from the total survey population for a given question.

Program and Project Status

PR1. [READ IF VENDORCONTACT = 1: Our records indicate that you contacted an Energy Rater to conduct an assessment through the Whole House program. Is this correct?/READ IF VENDORCONTACT = 0: Have you contacted an Energy Rater to conduct an assessment through the Whole House program?] (IF NEEDED: The Energy Rater is the person who conducted the assessment through the Whole House program)

	Percent
Yes	91%
No	6%
(Don't Know)	3%
Total	100%

[ASK IF PR1 = 1, ELSE SKIP TO PR3c]

PR1a. Did you find this Energy Rater through the Whole House Program website?

	Percent (n=91)
Yes	86%
No	10%
(Don't Know)	4%
Total	100%

[ASK IF PR1a = 2, ELSE SKIP TO PR1b]

PR1aa. How did you find the Energy Rater who conducted the assessment? (Multiple response, up to 3) (READ LIST IF NEEDED)

	Percent (n=9)
(It was a referral from a friend/neighbor)	11%
(I was contacted by the Energy Rater)	11%
(I found the Energy Rater from the Whole House Program website)	11%
(I found the Energy Rater from the PG&E website)	11%

	Percent (n=9)
(A workshop/meeting I attended about the program)	11%
Mailing or email (general)	22%
Utility communication (general)	11%
Community outreach organization/event/local government	11%
(Other)	11%
Total	110%

[ASK IF PR1aa = 2]

CO2. How did the Energy Rater contact you? [MULTIPLE RESPONSE OF THREE] (READ LIST IF NEEDED)

	Percent (n=1)
(Face-to-face discussion)	100%
(Other)	0%
Total	100%

[SKIP IF PR1AA=2]

PR1b. On a scale of 1 to 5 where 1 means “not at all easy” and 5 means “very easy,” how easy was it to find an Energy Rater to conduct assessment for the Whole House program?

	Percent (n=90)
1 - Not at all easy	8%
2	8%
3	11%
4	17%
5 - Very easy	57%
Total	100%

PR1d. Has an Energy Rater come to your home to conduct an energy assessment to see if you qualify for incentives for home energy upgrades through the Whole House Program?

	Percent (n=91)
Yes	58%
No	41%
(Don't Know)	1%
Total	100%

[ASK IF PR1d = 1, ELSE SKIP TO PR3c]

PR1c. Did the Energy Rater recommend any upgrades that you could install in your home through the Whole House program?

	Percent (n=53)
I have not received any report with results from the Energy Rater	6%
No, Energy Rater did not recommend anything	11%
Yes, Energy Rater recommended upgrades	76%
(Other)	4%
(Don't know)	4%
Total	100%

[IF PR1c = 1,98,99 SKIP TO PR4]

PR2. On a scale from 1 to 5 where 1 is “strongly disagree” and 5 is “strongly agree”, please indicate how much you agree with the following statements.

- a. The home energy report was valuable.

	Percent (n=48)
1 - Strongly disagree	6%
2	2%
3	23%
4	10%
5 - Strongly agree	54%
(Don't know)	4%
Total	100%

- b. The home energy report was easy to understand.

	Percent (n=48)
1 - Strongly disagree	4%
2	4%
3	10%
4	33%
5 - Strongly agree	46%
(Don't know)	2%
Total	100%

- c. The Energy Rater helped me better understand my home's energy usage.

	Percent (n=48)
1 - Strongly disagree	8%
2	8%
3	19%
4	17%
5 - Strongly agree	48%
(Don't know)	0%
Total	100%

- d. (READ IF PR1C = 3) The Energy Rater gave me a better understanding of where energy improvements can be made in my home.

	Percent (n=41)
1 - Strongly disagree	0%
2	7%
3	12%
4	27%
5 - Strongly agree	54%
(Don't know)	0%
Total	100%

- e. (READ IF PR1C = 3) The Energy Rater provided enough information to help me make a decision about installing recommended measures.

	Percent (n=41)
1 - Strongly disagree	5%
2	5%
3	15%
4	27%
5 - Strongly agree	49%
(Don't know)	0%
Total	100%

PR2f. Did the amount of information you received from the Energy Rater meet your expectations? Please rate on a scale of 1 to 5 where 1 is 'fell short of expectations' and 5 is 'exceeded expectations.'

	Percent (n=48)
1 - Fell short of expectations	10%
2	6%
3	25%
4	33%
5 -Exceeded expectations	25%
Total	100%

[ASK IF PR1c=3, ELSE SKIP TO PR4]

PR3. Have you decided whether you will conduct work on your home through the Whole House program? (READ IF NEEDED)

	Percent (n=40)
(Yes, I have decided to conduct work on my home that may be eligible for an incentive through the program)	55%
(I am considering whether to conduct the work through the program, but I have not decided yet)	18%
(I have decided NOT to conduct work through the program)	25%

	Percent (n=40)
Completed work already	3%
Total	100%

[ASK IF PR3 = 6, ELSE SKIP TO PR3A]

PR3aa. Can you describe the status of your home retrofit project as it relates to the program?

[OPEN-END]

n=0

[ASK IF PR3 = 1, ELSE SKIP TO PR4]

PR3a. What is the status of the home energy upgrades that you may receive an incentive for?

(READ LIST IF NEEDED)

	Percent (n=22)
(The work on my home is complete)	50%
(The work is in progress)	32%
(The work has not started yet)	18%
Total	100%

[ASK IF PR3a =1,2, OR 3, ELSE SKIP TO PR3c]

PR3b. Can you tell me when the work on your home [PR3a = 1: was completed/PR3a=2: started/IF PR3a = 3: is scheduled to start]? Please list the month and year if possible. [OPEN END]

	Percent (n=22)
2011 - Quarter 1	5%
2011 - Quarter 4	5%
2012 - Quarter 1	9%
2012 - Quarter 2	14%
2012 - Quarter 4	14%
2013 - Quarter 1	18%
2013 - Quarter 2	18%
2013 - Quarter 3	5%
2014 - Quarter 2	5%
(Not completing any upgrades)	5%

	Percent (n=22)
(Don't know)	5%
Total	100%

[ASK IF PR1 = 2 OR PR1d = 2, ELSE SKIP TO PR4]

PR3c. Do you plan to have an energy assessment conducted on your home?

	Percent (n=43)
Yes	60%
No	33%
(Don't Know)	7%
Total	100%

[ASK IF PR3c=2, ELSE SKIP TO PR4]

PR3d. Why not? [OPEN END]

	Percent (n=14)
Expensive/don't have the money	21%
Program is not applicable to my home or circumstance	29%
Home is efficient/recently completed upgrades	29%
Don't need it/don't think it will save anything	14%
Lack of information/didn't know about program	21%
(Don't know)	7%
Total	121%

[ASK ALL]

PR4. Now, have you completed any of the following home energy upgrades?" [FOR EACH 1=yes, 2=No, 3= (Started or in process), 8=DK, 9=REF]

a. Performed air sealing

	Percent
Yes, completed	37%
No	56%
(Started or in process)	1%

	Percent
(Don't know)	6%
Total	100%

b. Performed duct sealing or duct insulation

	Percent
Yes, completed	30%
No	65%
(Started or in process)	2%
(Don't know)	3%
Total	100%

c. Installed attic, wall, or floor insulation

	Percent
Yes, completed	45%
No	52%
(Started or in process)	3%
(Don't know)	0%
Total	100%

d. Upgraded windows, doors or skylights

	Percent
Yes, completed	44%
No	53%
(Started or in process)	3%
(Don't know)	0%
Total	100%

e. Upgraded to ENERGY STAR appliances

	Percent
Yes, completed	73%
No	24%

	Percent
(Started or in process)	2%
(Don't know)	1%
Total	100%

f. Upgraded to ENERGY STAR heating or cooling equipment

	Percent
Yes, completed	33%
No	62%
(Started or in process)	4%
(Don't know)	1%
Total	100%

g. Are there any other home upgrades you've completed?

	Percent
Yes	28%
No	72%
Total	100%

[ASK IF PR4G=1,3]

PR4G_A. What upgrades have you completed/ started or are in the process of starting [READ IN BASED ON RESPONSE TO PR4G]

	Percent (n=28)
Tankless water heater	7%
Other water efficiency measure (low-flow toilet, plumbing)	11%
Solar/renewables (solar PV, solar water heater)	21%
Thermostat	4%
Whole house fan or ventilation	18%
Roofing or flooring	18%
Lighting or light switches/electric system(s)	14%
HVAC	4%
Fireplace	4%

	Percent (n=28)
Kitchen appliances (refrigerator, stove, etc)	7%
Siding/new construction	7%
Total	100%

[ASK IF ANY PR4a-f =1ELSE SKIP TO PR6]

PR5. Which of the upgrades did you complete through the Whole House program? (READ LIST IF NECESSARY “DID YOU...” [1=Completed through the Whole House Program, 2=Did not complete through the Whole House Program, 8=DK, 9=REF]

[ASK IF PR4a=1] a. Perform air sealing

	Percent (n=37)
(Yes, completed through the Whole House program)	35%
(No, did NOT complete through the program)	62%
(Don't know)	3%
Total	100%

[ASK IF PR4b=1] b. Perform duct sealing or duct insulation

	Percent (n=30)
(Yes, completed through the Whole House program)	40%
(No, did NOT complete through the program)	53%
(Don't know)	7%
Total	100%

[ASK IF PR4c=1] c. Install attic, wall, or floor insulation

	Percent (n=45)
(Yes, completed through the Whole House program)	38%
(No, did NOT complete through the program)	58%
(Don't know)	4%
Total	100%

[ASK IF PR4d=1] d. Upgrade windows, doors or skylights

	Percent (n=44)
(Yes, completed through the Whole House program)	25%
(No, did NOT complete through the program)	68%
(Don't know)	7%
Total	100%

[ASK IF PR4e=1] e. Upgrade to ENERGY STAR appliances

	Percent (n=73)
(Yes, completed through the Whole House program)	23%
(No, did NOT complete through the program)	75%
(Don't know)	1%
Total	100%

[ASK IF PR4f=1] f. Upgrade to ENERGY STAR heating or cooling equipment

	Percent (n=33)
(Yes, completed through the Whole House program)	18%
(No, did NOT complete through the program)	82%
(Don't know)	0%
Total	100%

h. [READ IN PR4 00]

	Percent (n=28)
(Yes, completed through the Whole House program)	18%
(No, did NOT complete through the program)	82%
(Don't know)	0%
Total	100%

[ASK IF ANY PR5a-g=2, ELSE SKIP TO PR6]

PR5c1. For those upgrades you completed outside of the Whole House program, which of the following did you use to cover the costs of the work? [MULTIPLE RESPONSE]

	Percent (n=82)
My own funds.	89%
A loan through another bank or financial institution.	6%
Financing or a payment plan through the contractor.	1%
(Other)	5%
(Don't know)	4%
Total	105%

[ASK IF PR5c1 = 4, ELSE SKIP TO PR6]

PR5d1. Which bank or financial institution? [OPEN END]

	Percent (n=4)
(Other)	75%
(Don't know)	25%
Total	100%

[ASK IF ANY PR4a-g2 OR 3]

PR6. Do you intend to complete any of the following in the next two years? (IF NECESSARY, READ LIST “DO YOU INTEND TO...”) [1=Yes, 0=No, 8=DK, 9=REF]

[ASK IF PR4a=2,3] a. Air sealing

	Percent (n=58)
Yes	34%
No	50%
(Don't know)	16%
Total	100%

[ASK IF PR4b=2,3] b. Duct sealing or duct insulation

	Percent (n=67)
Yes	37%
No	61%
(Don't know)	1%
Total	100%

[ASK IF PR4c=2,3] c. Install attic, wall, or floor insulation

	Percent (n=60)
Yes	52%
No	40%
(Don't know)	8%
Total	100%

[ASK IF PR4d=2,3] d. Upgrade windows, doors or skylights

	Percent (n=59)
Yes	47%
No	46%
(Don't know)	7%
Total	100%

[ASK IF PR4e=2,3] e. Upgrade to ENERGY STAR appliances

	Percent (n=26)
Yes	42%
No	54%
(Don't know)	4%
Total	100%

[ASK IF PR4f=2,3] f. Upgrade to ENERGY STAR heating or cooling equipment

	Percent (n=66)
Yes	42%
No	50%
(Don't know)	8%
Total	100%

f. Any other upgrades?

	Percent
Tankless water heater	1%
Solar/renewables (solar PV, solar water heater)	7%
Roofing or flooring	5%
Lighting or light switches/electric system(s)	1%
HVAC	5%
Fireplace	2%
Siding/new construction	2%
No	69%
(Other)	1%
(Don't know)	7%
Total	100%

[ASK IF ANY PR6a-g=1, ELSE SKIP TO BAR2]

PR7. Which of these upgrades do you intend to complete through the Whole House Program in the next two years? (IF NECESSARY, READ LIST “DO YOU INTEND TO... THROUGH THE WHOLE HOUSE PROGRAM) [1=Will complete through the program, 2=Will NOT complete through the program, 8=DK, 9=REF]

[ASK IF PR6a=1] a. Perform Air sealing

	Percent (n=20)
(Yes, WILL complete THROUGH the program)	85%
(No, will NOT complete through the program)	15%
Total	100%

[ASK IF PR6b=1] b. Perform Duct sealing or duct insulation

	Percent (n=25)
(Yes, WILL complete THROUGH the program)	72%
(No, will NOT complete through the program)	16%
(Don't Know)	12%
Total	100%

[ASK IF PR6c=1] c. Install attic, wall, or floor insulation

	Percent (n=31)
(Yes, WILL complete THROUGH the program)	68%
(No, will NOT complete through the program)	23%
(Don't Know)	10%
Total	100%

[ASK IF PR6d=1] d. Upgrade windows, doors or skylights

	Percent (n=28)
(Yes, WILL complete THROUGH the program)	50%
(No, will NOT complete through the program)	36%
(Don't Know)	14%
Total	100%

[ASK IF PR6e=1] e. Upgrade to ENERGY STAR appliances

	Percent (n=11)
(Yes, WILL complete THROUGH the program)	55%
(No, will NOT complete through the program)	18%
(Don't Know)	27%
Total	100%

[ASK IF PR6f=1] f. Upgrade to ENERGY STAR heating or cooling equipment

	Percent (n=28)
(Yes, WILL complete THROUGH the program)	61%
(No, will NOT complete through the program)	21%
(Don't Know)	18%
Total	100%

[ASK IF PR6g=1] g. [READ IN PR6g]

	Percent (n=25)
(Yes, WILL complete THROUGH the program)	68%
(No, will NOT complete through the program)	24%
(Don't Know)	8%
Total	100%

[ASK IF ANY PR7a-g=2, ELSE SKIP TO BAR2]

PR5c2. For those upgrades you intend to complete outside of the Whole House program, which of the following will you use to cover the costs of the work? [MULTIPLE RESPONSE]

	Percent (n=24)
My own funds.	71%
A loan through the CHF Residential Energy Retrofit program	4%
A loan through another bank or financial institution	12%
(Other)	8%
(Don't know)	8%
(Refused)	4%
Total	100%

[ASK IF PR5c2 = 4, ELSE SKIP TO BAR2]

PR5d2. Which bank or financial institution? [OPEN END]

	Percent (n=3)
Wells Fargo	33%
(Don't know)	67%
Total	100%

Barriers to Participation

[ASK BAR1 IF PR1= 2 OR PR1d= 2, ELSE SKIP TO BAR2]

BAR1. What is the main reason you haven't [IF PR1 = 2 read: contacted a contractor to receive/IF PR1d = 2 read: "had a contractor come to your home to conduct"] a home assessment through the Whole House program? (SINGLE RESPONSE)

	Percent (n=43)
(The cost of the assessment is too high)	19%
(I haven't had time)	16%
(I haven't found a contractor I want to work with)	2%
(I need more information about the program)	16%
Didn't know about the program/program was never offered	2%
Program is not applicable to my home or circumstance/would not qualify/not offered at time/location	7%
Home is efficient/recently completed upgrades	5%
No follow up/negative experience with contractor(s)	23%
(Other)	5%
(Don't know)	5%
Total	100%

[ASK IF BAR1A = 1, ELSE SKIP TO BAR2]

BAR1a. Other than cost, are there any other reasons you have not yet signed up for a home energy assessment? (MULTIPLE RESPONSE, UP TO 5) (DO NOT READ LIST)

	Percent (n=7)
(No other reasons)	86%
(Other)	14%
Total	100%

[ASK IF PR3 = 2 OR 3, ELSE SKIP TO BAR3]

BAR2. What is the main reason you haven't signed up for any home upgrades through the Whole House program [IF PR3 = 2 READ: "yet"]?

	Percent (n=17)
(The initial cost is too high)	35%
(I need more information about the program)	12%
(My home doesn't need any of the upgrades sponsored by the program)	12%
(I cannot get financing to cover the project cost)	12%
(My project was not eligible for the program)	12%
(Other)	6%
(Don't know)	12%
Total	100%

[ASK IF BAR2 = 1, ELSE SKIP TO BAR3]

BAR2a. Other than cost, are there any other reasons you have not yet signed up for any home upgrades? (MULTIPLE RESPONSE, UP TO 5)

	Percent (n=7)
(I haven't had time to contact them)	14%
(My home doesn't need any of the upgrades sponsored by the program)	14%
(No other reasons)	57%
(Other)	14%
Total	100%

[ASK IF BAR2 = 09, ELSE SKIP TO BAR3]

BAR2b. What did the contractor say? [OPEN END]

n=0

[ASK IF any PR5a-g = 2, ELSE SKIP TO BAR4]

BAR3. What is the main reason that you funded any of your home energy upgrades outside of the Whole House program?

	Percent (n=82)
(The initial cost was too high through the program)	9%
(Did not want to work with any of the participating contractors)	5%
(Wanted to work with a specific contractor who was not affiliated with the program)	10%

	Percent (n=82)
(Not enough information)	12%
(Upgrades did not qualify/did not get rebate/rebate did not apply)	15%
Wanted to improve energy efficiency/make home more comfortable/lower energy costs	15%
Program no longer had funds for measure installed	2%
Timing did not fit with program (had to delay/could not wait for program)	4%
Not aware of the program/rebates were not offered	12%
Other contractor issues (no follow up, none available, etc)	6%
(Did not complete any upgrades)	2%
(Other)	4%
(Don't know)	5%
Total	100%

[ASK IF BAR3 = 02 or BAR3 = 03]

BAR3a. What was the name of the contracting company you worked with for your home energy upgrades? [OPEN END]

	Percent (n=7)
(Other)	71%
(Don't know)	29%
Total	100%

[ASK IF BAR3 = 04]

BAR3b. What information did you want that you did not receive? [OPEN END]

	Percent (n=9)
More information/assistance (general)	44%
(Other)	22%
(Don't know)	33%
Total	100%

[ASK IF BAR3 = 05]

BAR3c. What upgrades did you install that did not qualify for Whole House Program funding?

[OPEN END]

	Percent (n=7)
Insulation	43%
(Other)	43%
(Don't know)	14%
Total	100%

[ASK IF BAR2 = 1 or BAR2 = 6, ELSE SKIP TO BAR5]

BAR4. Now I'm going to read you a list of potential financing measures for energy efficiency upgrades for your home. Using a scale from 1 to 5, where 1 means 'does not increase at all' and 5 means 'increases a great deal,' please indicate whether these measures would increase your likelihood to install the recommended equipment from your home assessment. [1-5, 98 DK 99 REF]

- a. On-bill financing (Your electric utility would finance the project, and you pay back the loan through your monthly utility bills)

	Percent (n=6)
1-Does not increase at all	0%
2	17%
3	50%
4	0%
5 - Increases a great deal	33%
(Refused)	0%
Total	100%

- b. Lower interest rate for loans for energy efficiency upgrades (The utility partners with a bank to bring down the interest rate of these loans)

	Percent (n=6)
1-Does not increase at all	0%
2	33%

	Percent (n=6)
3	17%
4	0%
5 - Increases a great deal	33%
(Refused)	17%
Total	100%

c. A payment plan or financing through your contractor

	Percent (n=6)
1-Does not increase at all	50%
2	0%
3	33%
4	17%
5 - Increases a great deal	0%
(Refused)	0%
Total	100%

d. Mortgage through a bank or financial institution for energy efficiency upgrades

	Percent (n=6)
1-Does not increase at all	17%
2	17%
3	0%
4	33%
5 - Increases a great deal	17%
(Refused)	0%
Total	100%

e. Non-mortgage loans through local bank or financial institution

	Percent (n=6)
1-Does not increase at all	17%
2	33%

	Percent (n=6)
3	0%
4	33%
5 - Increases a great deal	17%
(Refused)	0%
Total	100%

BAR5. What could the program do to help you install energy upgrades in your home? [OPEN END] [96=Nothing]

	Percent
More incentives/higher rebates/lower up front costs	20%
More/better communication with program staff or contractors	4%
Provide incentives for more/different measures/areas of the home	11%
No restrictions on contractor/better access to contractors	12%
Tax incentives/financing options/low interest rate loans	12%
Guarantee rebates or funding/continue defunded or expired programs	1%
Faster/easier incentive process	6%
Free/replace measures	3%
More information (general)	13%
Guarantee energy/bill savings	1%
(Nothing)	15%
(Other)	6%
(Don't know)	11%
Total	115%

Program Knowledge

[ASK ALL]

PK2. How did you first hear about the rebates available through the Whole House program?

	Percent
(A contractor)	1%
(Farmer's market or community event)	5%
(Internet ad)	12%
(Direct mailing to your home, by mail, or a door hanger)	9%

	Percent
(Radio ad)	3%
(Television ad)	5%
(Newspaper ad)	6%
(Billboard or transit ad)	1%
(Mentioned by family member, friend, co-worker or neighbor)	7%
(Whole House Program website)	2%
(PG&E website)	24%
(Called into the PG&E call center and they mentioned the program)	1%
Work/employer	5%
Retailer (i.e. Home Depot)	1%
Local government (organization, meeting, website, etc)	3%
Online/search engine (general - not ad specific)	5%
(Have not heard of them)	1%
(Other)	4%
(Don't know)	5%
Total	100%

PK3. What brought you to the Whole House Program website? [OPEN-END]

	Percent
Curiosity/research in general	19%
Wanted to find ways save energy/lower bill	18%
Saw an ad/flyer/mailing/email (general)	15%
Looking to replace specific equipment in home	14%
Through PG&E (email, ad, phone call, main website)	9%
Referred by a contractor/program ally	4%
Looking for more information/details about the program	4%
Word of mouth/heard through work	7%
Presentation/seminar/webinar	3%
(Other)	1%
(Don't know)	11%
Total	105%

PK4. Did you find the information you were looking for on the Whole House Program website?

	Percent
Yes	80%
No	16%
(Don't Know)	4%
Total	100%

[ASK PK5 if PK4=2]

PK5. What information were you not able to find on the EUC website? [OPEN END; 98 Don't Know]

	Percent (n=16)
How to find contractors	31%
Rebate info/cost info	25%
Information on specific equipment or upgrades	19%
Specifics about how the program works	19%
(Other)	6%
(Don't know)	6%
Total	106%

PK6. On a scale from 1 to 5, with 1 meaning “not at all helpful” and 5 meaning “very helpful,” how helpful was the Whole House Program website in providing you with the information you needed to learn about the rebate program?

	Percent
1 - Not at all helpful	7%
2	15%
3	21%
4	34%
5 - Very helpful	23%
Total	100%

[ASK IF PK6 < 3]

PK7. Why did you give that rating? [OPEN END]

	Percent (n=22)
Uninformative/unclear/did not help resolve issue/questions (general)	64%
Contractor issues	18%
No follow through/poor communication/did not get what was promised	27%
Expensive	14%
(Don't know)	9%
Total	100%

AKA-B

4.3.2.1. Block A

Using a scale where 0 is 'Not at all agree' and 10 is 'Completely agree', how much do you agree with the following statements: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

AK6c. Conserving electricity will help reduce global warming.

	Percent
0 - Not at all agree	2%
1	4%
2	2%
3	2%
4	3%
5	4%
6	2%
7	4%
8	9%
9	11%
10 - Completely agree	56%
(Refused)	1%
Total	100%

CON6c. I sometimes worry whether there is enough money to pay my energy bill.

	Percent
0 - Not at all agree	25%
1	16%
2	8%
3	3%
4	0%
5	19%
6	4%
7	5%
8	6%
9	3%
10 - Completely agree	11%
(Refused)	0%
Total	100%

PER1e2. I feel a personal responsibility to help lower my household's utility bills.

	Percent
0 - Not at all agree	1%
1	0%
2	2%
3	1%
4	2%
5	4%
6	4%
7	8%
8	8%
9	13%
10 - Completely agree	57%
(Refused)	0%
Total	100%

CON4a. I would be very uncomfortable living in a house with very bad drafts and uneven temperatures.

	Percent
0 - Not at all agree	2%
1	2%
2	0%
3	3%
4	1%
5	6%
6	2%
7	8%
8	18%
9	14%
10 - Completely agree	43%
(Don't know)	1%
Total	100%

NSC1b. If I wanted to complete a full set of energy efficiency upgrades to my home, I don't think anything would keep me from doing it.

	Percent
0 - Not at all agree	3%
1	4%
2	9%
3	8%
4	5%
5	23%
6	3%
7	7%
8	11%
9	7%
10 - Completely agree	20%
(Refused)	0%
Total	100%

NSC1a. I know people who worry about the impact of their home’s energy use on the environment.

	Percent
0 - Not at all agree	4%
1	2%
2	3%
3	3%
4	4%
5	12%
6	5%
7	10%
8	17%
9	7%
10 - Completely agree	32%
(Refused)	1%
Total	100%

4.3.2.2. Block B

Using a scale where 0 is ‘Not at all agree’ and 10 is ‘Completely agree’, how much do you agree with the following statements: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

AK6a. I am not sure whether a full set of home energy improvements would save a significant amount of money.

	Percent
0 - Not at all agree	8%
1	5%
2	8%
3	7%
4	6%
5	22%
6	7%
7	11%
8	10%
9	8%

	Percent
10 - Completely agree	7%
(Don't Know)	1%
Total	100%

PER1c. If I didn't try to make my home energy efficient, I would feel a little guilty about harming the environment.

	Percent
0 - Not at all agree	5%
1	2%
2	7%
3	3%
4	7%
5	9%
6	4%
7	11%
8	21%
9	8%
10 - Completely agree	23%
(Refused)	0%
Total	100%

NSC1d. I know I could significantly decrease my electricity bill if I wanted to.

	Percent
0 - Not at all agree	4%
1	9%
2	9%
3	5%
4	11%
5	19%
6	4%
7	12%
8	7%

	Percent
9	3%
10 - Completely agree	17%
(Refused)	1%
Total	100%

BI2a. This summer, I intend to try harder to save electricity than I did last summer

	Percent
0 - Not at all agree	8%
1	5%
2	1%
3	4%
4	6%
5	14%
6	5%
7	10%
8	10%
9	8%
10 - Completely agree	28%
(Don't Know)	1%
Total	100%

CON1b. My household uses electricity or natural gas without thinking much about how it impacts our utility bills.

	Percent
0 - Not at all agree	17%
1	9%
2	20%
3	8%
4	12%
5	7%
6	2%
7	4%

	Percent
8	11%
9	1%
10 - Completely agree	9%
(Refused)	0%
Total	100%

NSC4a. I really don't think I could afford to complete a full set of energy upgrades to my home, even with rebates.

	Percent
0 - Not at all agree	6%
1	7%
2	4%
3	5%
4	7%
5	11%
6	12%
7	9%
8	11%
9	5%
10 - Completely agree	20%
(Don't know)	3%
Total	100%

4.3.2.3. Block C

Using a scale where 0 is 'Not at all agree' and 10 is 'Completely agree', how much do you agree with the following statements: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

PER1b. I feel strongly that I need to keep my house at comfortable temperatures year round.

	Percent
0 - Not at all agree	2%
1	2%
2	2%

	Percent
3	10%
4	7%
5	8%
6	8%
7	14%
8	17%
9	4%
10 - Completely agree	25%
(Don't know)	1%
Total	100%

NSC1e. [ASK IF S1=2 OR 3] I know I could significantly decrease my natural gas bill if I wanted to.

	Percent (n=81)
0 - Not at all agree	9%
1	6%
2	11%
3	14%
4	6%
5	16%
6	6%
7	5%
8	7%
9	2%
10 - Completely agree	16%
(Don't know)	1%
Total	100%

BI2b. I intend to look for new ways to save energy this year

	Percent
0 - Not at all agree	4%
1	1%

	Percent
2	6%
3	2%
4	5%
5	7%
6	9%
7	7%
8	17%
9	8%
10 - Completely agree	34%
(Don't know)	0%
Total	100%

CON6a. I am very concerned about how energy use affects the environment.

	Percent
0 - Not at all agree	3%
1	1%
2	3%
3	4%
4	3%
5	5%
6	5%
7	14%
8	14%
9	9%
10 - Completely agree	38%
(Refused)	1%
Total	100%

NSC1c. I know how to participate in the Energy Upgrade California Whole House Program.

	Percent
0 - Not at all agree	3%
1	6%
2	7%
3	5%
4	3%
5	13%
6	9%
7	7%
8	10%
9	10%
10 - Completely agree	27%
(Don't know)	0%
Total	100%

PER1f. I feel guilty if I use too much energy

	Percent
0 - Not at all agree	4%
1	4%
2	4%
3	10%
4	5%
5	7%
6	5%
7	5%
8	15%
9	11%
10 - Completely agree	30%
(Don't know)	0%
Total	100%

4.3.2.4. Block D

Using a scale where 0 is 'Not at all agree' and 10 is 'Completely agree', how much do you agree with the following statements: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

PER1h. If others in my household can't or won't change their behavior to lower our utility bills, I feel I should personally do even more to control these energy costs

	Percent
0 - Not at all agree	5%
1	4%
2	3%
3	1%
4	5%
5	12%
6	7%
7	13%
8	23%
9	5%
10 - Completely agree	22%
(Don't know)	0%
Total	100%

CON6b. I am very concerned about the environmental impacts of power plants

	Percent
0 - Not at all agree	2%
1	4%
2	3%
3	4%
4	1%
5	9%
6	7%
7	10%
8	15%
9	8%

	Percent
10 - Completely agree	36%
(Don't know)	1%
Total	100%

PER1a. In my household, I am the person most responsible for making my home comfortable by doing things like keeping it free from drafts.

	Percent
0 - Not at all agree	0%
1	0%
2	0%
3	2%
4	0%
5	6%
6	2%
7	5%
8	6%
9	12%
10 - Completely agree	67%
(Don't know)	0%
Total	100%

PER1d. I feel it is my job to find ways to reduce my home's impact on the environment.

	Percent
0 - Not at all agree	3%
1	2%
2	2%
3	5%
4	3%
5	8%
6	6%
7	14%
8	19%

	Percent
9	6%
10 - Completely agree	32%
(Don't know)	0%
Total	100%

NSC4b. My home's structure or age makes it hard to complete a full set of energy upgrades.

	Percent
0 - Not at all agree	8%
1	4%
2	9%
3	7%
4	4%
5	17%
6	4%
7	11%
8	11%
9	5%
10 - Completely agree	18%
(Don't know)	2%
Total	100%

PER1g. If my utility bills go up, I feel like I must do something to lower them.

	Percent
0 - Not at all agree	0%
1	0%
2	2%
3	3%
4	4%
5	11%
6	2%
7	9%

	Percent
8	14%
9	10%
10 - Completely agree	45%
(Don't know)	0%
Total	100%

CON4b. I know people who talk about their homes being drafty and having uneven temperatures.

	Percent
0 - Not at all agree	13%
1	5%
2	7%
3	8%
4	6%
5	14%
6	3%
7	11%
8	11%
9	3%
10 - Completely agree	18%
(Don't know)	1%
Total	100%

4.3.2.5. Block 1

Using a scale where 0 is 'Not at all concerned' and 10 is 'Very concerned', how concerned are you with each of the following: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

CON2a. The cost of heating or cooling your home

	Percent
0 - Not at all concerned	3%
1	2%
2	2%
3	1%

	Percent
4	2%
5	8%
6	3%
7	10%
8	20%
9	11%
10 – Very concerned	38%
(Refused)	0%
Total	100%

CON2b. Global warming

	Percent
0 - Not at all concerned	3%
1	4%
2	0%
3	2%
4	2%
5	10%
6	4%
7	11%
8	13%
9	11%
10 – Very concerned	39%
(Refused)	1%
Total	100%

CON3. a. Finding ways to control your home energy costs

	Percent
0 - Not at all concerned	1%
1	0%
2	2%
3	2%

	Percent
4	1%
5	8%
6	4%
7	10%
8	19%
9	15%
10 – Very concerned	38%
(Refused)	0%
Total	100%

CON3. b. Keeping your home free from drafts and hot and uneven temperatures

	Percent
0 - Not at all concerned	3%
1	0%
2	3%
3	1%
4	2%
5	8%
6	5%
7	15%
8	18%
9	12%
10 – Very concerned	33%
(Refused)	0%
Total	100%

4.3.2.6. Block 2

Using a scale from 0 to 10 where 0 is 'None' and 10 is 'A lot' how many of the following types of ads have you've seen or heard in the past year: [ROTATE, SCALE 0-10, 98=DK, 99=REF]

AK1a. Ads about major home energy improvements or upgrades.

	Percent
0 - None	8%
1	6%

	Percent
2	13%
3	10%
4	5%
5	17%
6	2%
7	12%
8	9%
9	4%
10 – A lot	14%
(Don't know)	0%
Total	100%

AK1b. Ads that say making home energy improvements decreases a home's impact on the environment.

	Percent
0 - None	20%
1	6%
2	12%
3	12%
4	3%
5	11%
6	6%
7	9%
8	4%
9	3%
10 – A lot	14%
(Don't know)	3%
Total	100%

AK1c. Ads that say home energy improvements lower utility bills.

	Percent
0 - None	9%
1	4%

	Percent
2	4%
3	11%
4	7%
5	18%
6	3%
7	11%
8	12%
9	5%
10 – A lot	16%
(Don't know)	0%
Total	100%

4.3.2.7. Block 3

I am going to ask you some questions about improvements that homeowners might make to increase the comfort of their homes. Please answer using a scale from 0 to 10 where 0 is “would not increase comfort at all” and 10 is “would increase comfort a lot”. [SCALE 0-10, 98=DK, 99=REF] [ROTATE]

AK4a. How much do you think weather stripping and caulking would increase the comfort of a home that doesn't have it already?

	Percent
0 - Would not increase comfort at all	2%
1	0%
2	5%
3	3%
4	2%
5	13%
6	8%
7	8%
8	26%
9	6%
10 - Would increase comfort a lot	26%
(Don't know)	1%
Total	100%

AK4b. How much do you think adding 8 inches of insulation to the attic or walls would increase the comfort of a home in your area that doesn't have it already?

	Percent
0 - Would not increase comfort at all	1%
1	0%
2	2%
3	3%
4	2%
5	5%
6	1%
7	15%
8	20%
9	10%
10 - Would increase comfort a lot	41%
(Don't know)	0%
Total	100%

4.3.2.8. Block 4

Using a scale from 0 to 10 where 0 is 'Not at all knowledgeable' and 10 is 'Very knowledgeable', how knowledgeable do you feel you are about... [ROTATE, SCALE 0-10, 98=DK, 99=REF]

AK5b. Home energy improvements that would decrease the impact of your home's energy use on the environment the most?

	Percent
0 - Not at all knowledgeable	1%
1	1%
2	0%
3	5%
4	5%
5	12%
6	9%
7	18%
8	20%
9	13%
10 - Very knowledgeable	16%

	Percent
(Don't know)	0%
Total	100%

AK5c. Home improvements that would significantly decrease your PG&E bill?

	Percent
0 - Not at all knowledgeable	1%
1	0%
2	1%
3	1%
4	4%
5	13%
6	4%
7	17%
8	24%
9	10%
10 - Very knowledgeable	25%
(Don't know)	0%
Total	100%

AK5d. Things you could do to make your home warmer in the winter and cooler in the summer without increasing your natural gas or electricity use?

	Percent
0 - Not at all knowledgeable	2%
1	0%
2	1%
3	0%
4	3%
5	9%
6	7%
7	14%
8	27%
9	11%
10 - Very knowledgeable	26%

	Percent
(Don't know)	0%
Total	100%

Demographics

Now please answer some final questions about your household. Your responses are for statistical purposes only and will remain confidential.

D2. Including yourself, how many people currently live in your household year-round (more than nine months out of the year)? [NUMERIC OPEN END, 99 Prefer not to answer]

	Percent
1	8%
2	25%
3	19%
4	29%
5	10%
6	6%
7	2%
10	1%
Total	100%

[Skip if D2=1]

D3. How many children 18 and younger currently live in your household year-round (more than nine months out of the year)? [NUMERIC OPEN END, 99 Prefer not to answer]

	Percent (n=92)
1	8%
2	25%
3	19%
4	29%
5	10%
Total	100%

D4. When did you purchase your home?

	Percent
(Within the last year)	8%
(One to two years ago)	18%
(Three to five years ago)	14%
(More than 5 years ago)	60%
(Within the last year)	8%
Total	100%

D6. Does your home have central air conditioning and/or central heat?

	Percent
(Yes - central air conditioning)	47%
(Yes - central heating)	75%
(No - neither central air conditioning or heating)	17%
(Don't know)	1%
Total	140%

D7. In what year was your home built?

	Percent
(2008 to 2012)	1%
(2001 to 2007)	1%
(1991 to 2000)	6%
(1981 to 1990)	16%
(1971 to 1980)	24%
(1961 to 1970)	11%
(1951 to 1960)	14%
(1941 to 1950)	9%
(1940 or earlier)	15%
(Don't know)	3%
Total	100%

D7a. What is the approximate square footage of your home?

	Percent
(Less than 1000 square feet)	4%
(1000 to 1499 square feet)	29%
(1500 to 1999 square feet)	29%
(2000 to 2499 square feet)	12%
(2500 to 2999 square feet)	18%
(3000 to 3499 square feet)	4%
(3500 or more square feet)	2%
(Don't know)	2%
Total	100%

D8. How long have you lived in this home?

	Percent
(Less than 2 years)	22%
(3-5 years)	26%
(6-10 years)	13%
(11-20 years)	25%
(21-plus years)	14%
Total	100%

D12. What is the last level of education you completed?

	Percent
(High school graduate)	1%
(Some collage/Vocational or technical school)	19%
(College graduate)	49%
(Post graduate education)	30%
(Refused)	1%
Total	100%

D13. In what year were you born? [NUMERIC OPEN END; 1900-1999]

	Percent
1938	1%
1942	1%

	Percent
1943	1%
1945	1%
1947	1%
1948	1%
1949	3%
1950	1%
1952	3%
1953	3%
1954	1%
1955	1%
1957	1%
1958	3%
1959	4%
1960	4%
1961	2%
1962	2%
1963	4%
1964	3%
1965	4%
1966	3%
1967	2%
1968	3%
1969	3%
1970	6%
1971	3%
1972	1%
1973	1%
1974	4%
1975	1%
1976	3%
1977	4%
1978	3%
1979	2%
1980	2%

	Percent
1981	1%
1984	2%
1985	1%
1987	1%
1988	1%
(Refused)	8%
Total	100%

D14. How would you describe your race or ethnicity? (READ LIST IF NEEDED)

	Percent
(White or Caucasian)	56%
(Black or African American)	2%
(American Indian or Alaska Native)	2%
(Hispanic, Mexican, Latino, Puerto Rican, or other Hispanic)	8%
(Chinese)	1%
(Indian or South Asian)	7%
(Other Asian or Pacific Islander)	12%
(Mixed or multi-racial)	4%
(Other)	2%
(Don't know)	2%
(Refused)	5%
Total	101%

D16. Which of the following best describes your current employment status?

	Percent
(Employed Full Time)	77%
(Employed Part Time)	7%
(Not Employed, Not Seeking Employment)	3%
(Retired)	11%
(Refused)	2%
Total	100%

D17. Which of the following best represents your annual household income from all sources in 2012, before taxes? Was it ...

	Percent
Under \$25,000	1%
\$25,000 to under \$35,000	6%
\$35,000 to under \$50,000	6%
\$50,000 to under \$75,000	16%
\$75,000 to under \$100,000	15%
\$100,000 to under \$125,000	17%
125,000 to under \$150,000	6%
\$150,000 or more	20%
(Don't know)	1%
(Refused)	12%
Total	100%

Closing

Thanks for your help with this survey! You should receive the check within 2-3 weeks. Your responses will greatly help PG&E customers save energy and money in the future. On behalf of PG&E, thank you very much for your time and help.

4.4. Contractor Survey

4.4.1. Survey Guide

The Opinion Dynamics team will conduct interviews in May with contractors to gather information on their experiences with PG&E’s Energy Upgrade California (EUC) Whole House (WH) Rebate program, such as the strengths and weakness of the program’s training, marketing, service delivery, customer relations, and quality control strategies. The interviews will determine contractor attitudes toward the two levels of services offered by the program, as well as collect information about their service area, work force, and likely growth in different levels of services. Besides the questions asked to all respondents, the interviews will explore topics specific to respondents who fall into one of the following groups:

Group	2012 Activity	Target Completes (New)	Target Completes (Follow-Up)	Total
A	1 job	7	1	8
B	10 or more jobs	3	5	8
A	2-9 jobs	5	3	8
	Grand Total	15	9	24

Contractors in group A will be asked to discuss specific barriers to increasing the number of projects completed in the program. With group B, we will explore the factors that have led to their success in the program.

Respondent name:

Respondent phone number:

Respondent title:

Company name:

Date and time of interview:

Interviewer:

Respondent Type (A,B)

GROUPS A & B: CONTRACTORS THAT HAVE COMPLETED FEW AND MANY PROJECTS

Introduction

Thank you for taking the time to speak with me today. The SBW evaluation team is currently conducting a process evaluation of PG&E’s Energy Upgrade California Whole House Rebate Program (I’ll call it the program). In appreciation for your time, we are offering you a \$100 incentive to speak with us. We’d like to ask you some questions about your company and the program that will take about 40 minutes to cover. Your individual responses will remain confidential in our report and will not be tied to your name or your company name.

Can we please speak with [CONTACT NAME] or the person within your company that is familiar with the program?

[CONTINUE WITH CORRECT PERSON, REPEAT INTRO AS NEEDED]

[TERMINATE IF NO ONE IN THE COMPANY FITS DESCRIPTION]

Before starting the survey, we have to ask one question to make sure you qualify.

Screener

*⁴S1. First, our records indicate that your company has participated in the PG&E Whole House Energy Upgrade California Program. Is that correct?

1. (Yes)

2. (No) [THANK AND TERMINATE]

98. (Don't Know) [THANK AND TERMINATE]

O.k., you qualify for this survey. Now we can get started.

Contractor Background

*C1. Can you describe the types of services you provide to customers? Are any of these particular areas of specialty?

1. HVAC

2. Building audits and testing

3. Windows

4. Insulation

5. Home remodeling

6. New home construction

0. Other (Specify) _____

*C2. How many employees does your company have serving PG&E territory? (If contractor does not know, ask, "Generally speaking about how many of your employees serve northern California?")

a. And how many of those employees work on retrofitting homes? [IF NEEDED: AS OPPOSED TO ANY STAFF YOU MAY HAVE THAT IS DEDICATED TO SALES OR ADMINISTRATION]

C3. Can you describe the area in which you operate? Where are the majority of your projects concentrated?

⁴ Note: (*) Indicates question was asked in the previous year's evaluation.

[ASK Group A Only]

Program Impressions and Barriers

*PA1. Our records indicate that you have submitted a few projects through the program so far. Can you explain why your company has not submitted a larger volume of projects?

*PA2. Have you completed any home energy assessments or audits outside of the program in the last year?

- a. [If yes] How many home assessments have you done outside of the program so far?
- b. Did you use the BPI (Building Performance Institute) protocol or some other assessment protocol?
- c. Among these customers, about what percentage would have qualified for program rebates based on potential savings indicated by the assessments?

PA3. Have you done any multi-measure jobs outside of the program in the last year?

- a. [If yes] How many home multi-measures jobs have you done outside of the program so far?
- b. Did you use the BPI (Building Performance Institute) protocol or some other assessment protocol?
- c. Among these customers, about what percentage would have qualified for program rebates based on potential savings indicated by the assessments?

*PA4. The program is interested in finding ways to encourage contractors to increase your participation in the program. Please tell me if any of the following are reasons for why your company has not yet submitted many jobs to PG&E in the program so far? [YES, NO, DK FOR EACH BELOW]

- a. The paperwork required
- b. The training required
- c. The availability of local trainings
- d. Not sure if the program will be around for a long time
- e. Rebate processing time
- f. The incentives are not high enough
- g. The sales and marketing required
- h. The necessary tools needed to do the assessment and upgrade work
- i. Program offerings do not match the needs of customers

*PA5. Are there any other reasons for why your company has not submitted a greater number of jobs that we haven't covered?

- a. [If yes] Please describe these other reasons.

*PA6. How many home energy assessments or audits have you completed as part of the program in the last year?

- a. How many of those turned into reservation submittals?
- b. If none, why not?

PA7. Are you comfortable taking a whole home approach to energy efficiency projects, vs. more specific jobs like HVAC upgrades?

Contractor Recruiting, Training, and Mentoring

*R1. How many of your employees attended the Whole House Participation Workshop?

- a. [ASK IF > 1] After attending the Participation Workshop, did you feel that your organization was prepared to participate in the program?
- b. [If no] Why not?

*R2. How many of your employees attended the 3-day Basic Path training offered by PG&E

- a. [ASK IF > 1] After attending Basic Path training, did you or your staff feel prepared to perform the tasks required for the Basic Upgrade Package?
- b. [If no] Why not?

*R3. What training did your BPI certified personnel complete to help them obtain the certification?

- a. Who sponsored this training?
- b. How many days of training did this involve?
- c. Did you receive a scholarship or a loan to finance the training?

*R4. Have any of your staff who are not BPI certified received training that would help prepare them to implement program-related measures and procedures? (Such as: attic insulation, duct sealing, air sealing, etc.)

- a. [If yes] What training did they receive?
- b. [If yes] Did they receive a scholarship or a loan to finance the training?

*R5. What types of employees are responsible for the EnergyPro software modeling required for the program? [PROBE FOR JOB TITLES SUCH AS GENERAL MANAGERS, OWNERS, ETC.]

*R6. Did anyone in your company use EnergyPro or any other home energy modeling software before participating in the program? [IF ANOTHER SOFTWARE] Which one?

R7. Do you outsource the task of EnergyPro modeling to external suppliers?

*R8. Have you received instruction on how to use the EnergyPro software program?

- a. [If yes] On a scale of 0-10 with 0 being not at all and 10 being very much, how helpful was the EnergyPro instruction you received?
- b. [If yes] Why not?

*R9. Have you attended any Advance Path Training - CAZ training at PG&E's Energy Education Centers? (For example: PG&E's Pacific Energy Center in San Francisco, PG&E's Stockton facility)

- a. [If yes] Did you complete the classroom training?
- b. [If yes] Did you complete the field training?
- c. [If yes] Have you completed your first job?

R10. Does your company offer HERSII Assessments?

- a. What percentage of the home assessments that you offer are HERSII vs. BPI?

*R11. Have you received any mentoring related to the program?

- a. [If yes] Which type(s) did you receive? [YES OR NO TO EACH BELOW]

- 1. Field / Data Collection
- 2. Job Processing
- 3. Energy Pro software
- 4. Mentoring received during onsite Quality Control inspection

[ASK FOR EACH TYPE OF MENTORING RECEIVED]

- b. On a scale of 0-10 with 0 being not at all and 10 being very much, how helpful was the [INSERT FOR EACH YES IN R10a 1-4] mentoring you received?

*R12. What other types of program-related training would benefit you or your staff?

*R13. Have you or your company attended additional training on how to best sell and market your company and its services?

- a. Yes / No
- b. [If no] Why not?
- c. How effective was this additional training
 - 1. Very effective
 - 2. Somewhat effective
 - 3. Not effective

R14. Have you or other company staff attended Home Performance classes at the Energy Center?

- a. What classes have you taken?
- b. [If yes] Did you find those classes helpful?
- c. [If yes] Why?

EnergyPro

*E1. Do you think EnergyPro covers the major opportunities for energy efficiency?

a. If no – what component(s) does it not cover?

*E2. Do you think EnergyPro is accurate in its estimates?

a. [If no] Why not?

i. Do you think EnergyPro is accurate enough to produce energy estimates for the program?

E3. Do you use actual customer billing data as an input to EnergyPro? If not, why?

E4. Do you see any benefits to using EnergyPro?

a. [If yes] What?

E5. Do you see any disadvantages to using EnergyPro?

a. [If yes] What?

E6. Do you use software as part of your sales process with customers?

- a. [If yes] What software do you use?
- b. Why do you use this software?
- c. How do you use this software?

*E7. Does your company use any other software programs to model estimated energy usage outside of the program?

a. [If yes] What software programs?

*E8. Would you prefer to use software other than EnergyPro for modeling?

a. [If yes] What?

- i. What do you think the benefits of using this software are?
- ii. What do you think the disadvantages of using this software are?

E9. Other than being a program requirement for the advanced path, do you think software modeling (using any program) is useful in successfully completing a retrofit?

E10. If it were possible, would you rather not use any modeling software for projects in the Whole House program?

- a. [If yes] Why?
- b. [If no] Why not?

Customer Sales/Marketing

*CS1. Has your company been actively promoting the program to new or existing customers?

- a. [If no] Why not? [SKIP TO CP1]
- b. [If so] Please describe who you have been promoting the program to.
- c. How do you determine who to target for the program?

*CS2. What marketing has your company done to get customers interested in a retrofit?

- a. What marketing materials do you use?
- b. Where did you get the marketing materials?
- c. What types of marketing materials did you find most effective?

*CS3. What sales tools do you use to present information to prospective customers?

CS3a. Do you use EnergyPro as a sales tool for prospective customers?

*CS4. What types of messages seem to motivate customers to get the work done? [PROBE FOR: SAVING ENERGY, SAVING MONEY on energy bills, SAVING MONEY WITH THE REBATE, COMFORT, SAFETY, HEALTH] Is there a combination of messages that is especially effective?

*CS5. Have you used other programs in combination with the program to help sell the job?

- a. [IF YES] What other programs?

*CS6. Have any customers come to you inquiring about the program?

- a. How do your customers typically hear about the program?
- b. How effective is the program's web site in generating customer contacts?

*CS7. In your opinion, what types of advertising or marketing are the most effective in generating customer interest in the program?

*CS8. What do you think are the best ways for a utility to engage customers about participating in the program?

- a. What do you think are the best ways for you as a contractor to engage customers about participating in the program?

*CS9. About what percentage of your leads come from the program's website, and about what percentage from other sources (referrals, local advertising, etc)?

*CS10. On average, about how many customers do you interface with before you are able to complete one energy assessment?

- a. Do you have the homeowner commit some money to the cost of the assessment?
- b. Do you offer any type of free “walk-through” or other superficial assessment?

*CS11. On average, about how many customers do you interface with before you are able to complete one retrofit?

*CS12. On average, how many days pass from your first interaction with the customer and completion of the retrofit?

- a. How about from first contact to completing the energy assessment?
- b. Following an assessment, what is the average number of days you spend in the customer’s home to complete installation work?

Contractor Participation

*CP1. Is there anything that PG&E could do to help you complete more jobs through the program?

*CP2. Do you know of any financing sources for customers?

- a. [IF YES] Do you refer customers directly to those financing sources?
- b. Do you think this helps to sell the program?

*CP3. In the future, would you be willing to float the rebate, i.e. discount the job to the customer and then have the rebate come to you?

- a. [IF NO] Why not?
- b. [IF YES] What terms would make this arrangement acceptable to you?
- c. [IF YES] Please describe the impact, if any, this might have on the number of jobs you could complete.

*CP4. Have you conducted a qualifying retrofit without filing for the rebate?

- a. [IF YES] Why didn’t you file?

[Ask Group B ONLY]

*CP5. According to our records, your organization has completed a higher-than-average number of projects through the program compared to other participating contractors. Why do you think that this is the case?

Customer Participation Barriers & Drivers

- *CB1. What do you think motivates customers to participate in the program?
- *CB2. Do you have any ideas as to how the program can get these customers to move forward?
- *CB3. What do you think keeps customers from participating in the program in general?
- *CB4. What do you think are the top three reasons customers decide not to move forward from the energy assessment to a retrofit?

Conversion Rates

- CR1. How long have you been working with the program?
- *CR2. How many energy assessments have you done as part of the program so far?
- *CR3. What percentage of these customers could qualify for program rebates if they installed the recommended measures?
- *CR4. Among those that would qualify, what percentage decided not to move forward with the retrofit?
- [ASK IF CR4 < 100%]
- *CR5. What do you think are the top three reasons customers decide not to move forward from the energy assessment to a retrofit?
- *CR6. Approximately what percentage of energy assessments or audits turn into retrofits?
 - a. Do you offer a free in-home walk-through, or try to get the homeowner to commit to the assessment at a cost?

[Ask if Group B or Group A in program > 12 months]

- *CR7. In the last 12 months, would you say that the number of energy assessments turning into retrofits is increasing, decreasing, or staying the same?
 - a. Increasing
 - b. Decreasing
 - c. Staying the same
- *CR8. Why do you say that?
- *CR9. About what percentage of assessments don't go forward due to lack of financing. About how many jobs does this represent?

- *CR10. How do you think program-based financing would best be structured to help move assessments into retrofits?
- Who would receive the financing? Contractor or customer?
 - What would be the terms?

- *CR11. Would assessment subsidies help close a retrofit sale?
- [If yes] Why?
 - [If no] Why not?

Program Satisfaction

I’m going to ask you a series of questions that are intended to determine your satisfaction with the program.

- *PS1. On a scale from 0 to 10, where 0 means “very dissatisfied” and 10 means “very satisfied”, how satisfied have you been with:
- Communications with the utilities about program requirements
 - Communications with program implementer – Build It Green – about program requirements
 - The paperwork requirements for the program
 - The Energy Pro modeling software
 - Marketing support from the utility
 - Training offered by the program
 - Training offer by PG&E’s Pacific Energy Center
 - Program incentives
 - Program measure installation requirements
 - The in-field quality control and improvement program
 - The web portal for the program – Green Energy Compass
 - Referrals to the Gas Service Reps, also abbreviated as “GSR’s”
 - Program overall

[FOR EACH PS1a-m < 5]

- *PS2. Why do you give that rating?

- *PS3. What would you say are the positive features of the program overall?

- *PS4. What would you say are the biggest problems of the program overall?

- *PS5. Do you have any suggestions for how PG&E could solve these problems?

- *PS6. How can the program make the rebate process easier/faster for you?

- PS8. Have you noticed any changes or improvements to the program in the past year?
- [If yes] What changes have you seen?
 - What do you think of these changes? [Probe to find out if contractor thinks the program is moving in the right direction with these changes]

PS9. What changes, if any, do you think the program should make in order to improve?

Program Design

- PD1. Are you familiar with the proposed changes to the Basic Package?
- [Ask if yes] Do you think the program is moving in the right direction with these changes?
 - Why?

*PD2. What do you see as the strengths of the advanced upgrade package of the program?

*PD3. What do you see as the weaknesses of the advanced upgrade package?

*PD4. Could the advanced upgrade package be improved in any way?

- [If yes] How?
- [If no] Why not?

PD5. What do you think influences the demand for the Advanced Packages?

[Ask if Group B ONLY]

PD6. What factors would you say have led to your company's success in the program?

Inter Contractor Conversation

*ICC1. Have you talked to other contractors outside of your company about the program?

- [IF YES] What is the nature of those conversations?
Probe for: Frequent topics, issues, questions, or concerns

ICC2. Do you look forward to doing business with the program in the future?

ICC3. Do you typically sub-contract out some components of your retrofit jobs?

- [If yes] What percentage, on average, of your total jobs are sub-contracted out?

ICC4. Do you like doing business with the program implementer – Build it Green?

- Why/why not?

ICC5. Do you like doing business with PG&E, the program sponsor?

a. Why/why not?

Closing

*CL1. Those are all the questions I have. What else do you think we would want to know about your experiences with the program based on our conversation today?

CL2. PG&E is evaluating software that your firm could use in analyzing time-of-use data from smart gas and electric meters. These meters are now installed on 95% of homes. Would you be interested in participating in this evaluation?

[Explain IF needed: Participation will involve (1) a webinar briefing on the features and operation of one or more software products (2) deciding whether you believe one of the products would be useful to your business (3) if you like one, training on how to use the product (4) using the product for one or more potential EUC participant homes. You will be well compensated for your time.]

*CL3. I want to make sure we get you your check. Can I confirm your name, its spelling, and the address we will send the check to?

Thank you for your time.

4.4.2. Survey Frequency Tables

Contractor Background

*C1. Can you describe the types of services you provide to customers? Are any of these particular areas of specialty?

Types of Services	Frequency n=20
HVAC	1
Building audits and testing	2
Windows	0
Insulation	2
Home remodeling	1
New home construction	1
Licensed General Contractor	1
No answer	16

*C2. How many employees does your company have serving PG&E territory? (If contractor does not know, ask, “Generally speaking about how many of your employees serve northern California?”)

Number of Employees	Frequency n=20
1 – 10	14
11 – 20	1
21 – 30	1
31 – 40	1
41 – 50	1
No answer	2

- a. And how many of those employees work on retrofitting homes? [IF NEEDED: AS OPPOSED TO ANY STAFF YOU MAY HAVE THAT IS DEDICATED TO SALES OR ADMINISTRATION]

Number of Employees on Retrofitting Homes	Frequency n=18
1 – 10	13

Number of Employees on Retrofitting Homes	Frequency n=18
11 – 20	1
21 – 30	1
31 – 40	1
41 – 50	0
No answer	4

C3. Can you describe the area in which you operate? Where are the majority of your projects concentrated?

Area of Operation	Frequency (n=6)
Sonoma	2
Mendocino	1
Lake Counties	1
East Bay	1
San Francisco	1
Alameda	1
Marin	1
Chico	1
Paradise	1
Will travel where needed	1

[ASK Group A Only]

Program Impressions and Barriers

*PA1. Our records indicate that you have submitted a few projects through the program so far. Can you explain why your company has not submitted a larger volume of projects?

Why only a few projects?	n=20
Are not actively marketing program	1
Big push + stimulus funds accounted for 50% of jobs, CHF stimulus funded program, no longer there	1
Cumbersome program, onerous requirements	1
Lack of regional incentives in 2012	1

Why only a few projects?	n=20
Lack of regional incentives in 2012 - also, got a few BIG jobs which occupied all resources	1
Only a few people contacted us about it	1
Propane	1
Propane not natural gas	1
Says he did more than 10 - "80" - I think this was SMUD	1
Says he did more than 10	1
Small firm	1
Training auditors - big learning curve to get into program, ready to go now	1
Unsure. Been asking myself. People don't understand building performance. Trying to sell it	1
Not applicable	7

*PA2. Have you completed any home energy assessments or audits outside of the program in the last year?

Completed home energy assessments/audits	n=20
Yes	8
No	3
Not Applicable	7
No answer	2

a. [If yes] How many home assessments have you done outside of the program so far?

Home assessments done outside of program	n=20
"1"	1
"2 to 3"	1
"6"	1
"6 to 10"	1
"A few"	1

b. Did you use the BPI (Building Performance Institute) protocol or some other assessment protocol?

Used BPI/other assessment protocol	n=20
Yes	2

c. Among these customers, about what percentage would have qualified for program rebates based on potential savings indicated by the assessments?

Percentage that qualified for program?	n=1
33%	1

PA3. Have you done any multi-measure jobs outside of the program in the last year?

Done multi-measure jobs outside program	n=20
Yes	6
Yes (propone only)	2
No	3
Not Applicable	7
No answer	2

a. [If yes] How many home multi-measures jobs have you done outside of the program so far?

How many?	n=8
1	2
2	1
4	1
6	1
No answer	3

b. Did you use the BPI (Building Performance Institute) protocol or some other assessment protocol?

n=0

c. Among these customers, about what percentage would have qualified for program rebates based on potential savings indicated by the assessments?

Percentage qualified for program rebates	n=1
0%	1

*PA4. The program is interested in finding ways to encourage contractors to increase your participation in the program. Please tell me if any of the following are reasons for why your company has not yet submitted many jobs to PG&E in the program so far? [YES, NO, DK FOR EACH BELOW]

Reasons for why company has not yet submitted many jobs to PG&E in the program	n=20
a. The paperwork required	4
b. The training required	1
c. The availability of local trainings	1
d. Not sure if the program will be around for a long time	3
e. Rebate processing time	4
f. The incentives are not high enough	4
g. The sales and marketing required	3
h. The necessary tools needed to do the assessment and upgrade work	1
i. Program offerings do not match the needs of customers	7
None	2
Not applicable	7
No answer	2

*PA5. Are there any other reasons for why your company has not submitted a greater number of jobs that we haven't covered?

Are there reasons for why company has not submitted more jobs	n=20
Yes	6
No	3
Not Applicable	8
No answer	3

a. [If yes] Please describe these other reasons.

Other reasons	n=6
Propane	2
Lack of marketing by PG&E	1
Modeling requirements	1
"Low end jobs" - 2 jobs, rebates too small to make the paperwork and processes worth it	1
Not Given	1

*PA6. How many home energy assessments or audits have you completed as part of the program in the last year?

Home energy assessments/audits completed	n=20
2	1
5	1
8	1
12	1
30	2
40	1
30 to 35	1
Don't know	1
I use a 3rd party auditor	1
No answer	3
Not applicable	7

a. How many of those turned into reservation submittals?

Turned to reservation submittals	n=20
1	2
2	1
10	1
15	1
20	1
6 to 10	1
Don't know	1
I use a 3rd party auditor	1
No answer	4
Not applicable	7

b. If none, why not?

n=0

PA7. Are you comfortable taking a whole home approach to energy efficiency projects, vs. more specific jobs like HVAC upgrades?

Comfortable taking a whole home approach to energy efficiency projects.	n=20
Yes	10
No	0
No answer	3
Not applicable	7

Contractor Recruiting, Training, and Mentoring

*R1. How many of your employees attended the Whole House Participation Workshop?

	n=20
1 - 5	11
6 - 10	1
10 - 15	1
None	2
Don't know/Unsure	2
No answer	3

- a. [ASK IF > 1] After attending the Participation Workshop, did you feel that your organization was prepared to participate in the program?

Felt that organization was prepared to participate in the program.	n=20
Yes	10
No	2
Don't know/Unsure	3
No answer	5

- b. [If no] Why not?

Why not?	n=2
"Lack of training for paper work and modeling"	1
"Had to get lots more training"	1

*R2. How many of your employees attended the 3-day Basic Path training offered by PG&E

Attended Basic Path training	n=20
1	5
2	3
3-4	1
None	7
No answer	3
Other	1

a. [ASK IF > 1] After attending Basic Path training, did you or your staff feel prepared to perform the tasks required for the Basic Upgrade Package?

Felt prepared to perform tasks required after attending training	n=20
Yes	8
No	3
Don't know	1
No answer	6
Not applicable	2

b. [If no] Why not?

*R3. What training did your BPI certified personnel complete to help them obtain the certification?

What training did BPI personnel complete?	n=20
BPI	3
BPI dual degree	1
CBPCA	1
Classwork, fieldwork, testing	1
Clean Edison	1
ENERGY STAR program (Building Envelope and Building Analyst)	1
Everblue	1
HERS Basic	1
Workforce training	1
Unspecified	6

What training did BPI personnel complete?	n=20
No answer	2
Other	1

a. Who sponsored this training?

Sponsor	n=20
ARRA funded	3
Energy Pros	1
EverBlue	1
Out of pocket	3
PG&E	3
Richard Young Air Conditioning	1
SMUD	1
Stimulus funded	1
Window Protectint	1
Unspecified	2
No answer	3

c. How many days of training did this involve?

Days of training	n=20
2 - 3 days	1
5 days	2
6 days	1
1 week	1
1 - 2 weeks	1
2 weeks	1
4 weeks	1
unspecified	9
No answer	3

c. Did you receive a scholarship or a loan to finance the training?

*R4. Have any of your staff who are not BPI certified received training that would help prepare them to implement program-related measures and procedures? (Such as: attic insulation, duct sealing, air sealing, etc.)

a. [If yes] What training did they receive?

Training received	n=20
16 day PG&E weatherization	1
CAZ testers from weatherization	1
Certified remodeler	1
Green Homes America	1
HERS I rater training	1
Internal firm training	1
On-the-job	2
PG&E training	2
PG&E training (Efficiency 1st, CBPCA, EGIA)	1
Stockton Energy Center training	1
Duct Verification/Title 24 certification	1
HERS rater	1
Unspecified	2
None	2
Not applicable	1
No answer	3

b. [If yes] Did they receive a scholarship or a loan to finance the training?

Scholarship or loan	n=2
Apperson Energy Management	1
PG&E	1

*R5. What types of employees are responsible for the EnergyPro software modeling required for the program? [PROBE FOR JOB TITLES SUCH AS GENERAL MANAGERS, OWNERS, ETC.]

Administrative/Office staff	n=20
Auditor	1
BPI Analyst	1
BPI certified employee (i.e. Foreman)	2
COO	1
Data Energy Analyst	1
HP Manager	1

Administrative/Office staff	n=20
HP Specialists	1
Office Manager	2
Owner	12
Partner	1
Project Manager	1
Salesperson	1
Third party vendor	2

*R6. Did anyone in your company use EnergyPro or any other home energy modeling software before participating in the program? [IF ANOTHER SOFTWARE] Which one?

EnergyPro or other home energy modeling software users	n=20
EnergyPro	5
Right-Suite	1
Comply24	1
No	14

R7. Do you outsource the task of EnergyPro modeling to external suppliers?

Outsource task of EnergyPro modeling to external suppliers	n=20
Yes	8
No	12

*R8. Have you received instruction on how to use the EnergyPro software program?

Received instruction on EnergyPro	n=20
Yes	16
No	2
Not Applicable	1
No answer	1

- a. [If yes] On a scale of 0-10 with 0 being not at all and 10 being very much, how helpful was the EnergyPro instruction you received?

How helpful was the EnergyPro instruction received	n=20
5	3
6	1
7	2
8	7
9	1
"Learned a couple things"	1
Not applicable	4
No answer	1

- b. [If yes] Why not?

n=0

- *R9. Have you attended any Advance Path Training - CAZ training at PG&E's Energy Education Centers? (For example: PG&E's Pacific Energy Center in San Francisco, PG&E's Stockton facility)

Attended Advance Path Training – CAZ training	n=20
Yes	16
No	2
No answer	2

- a. [If yes] Did you complete the classroom training?

Complete classroom training	n=20
Yes	11
No/Not applicable	2
Unspecified	4
No answer	3

b. [If yes] Did you complete the field training?

Complete field training	n=20
Yes	7
No	3
Unspecified	4
Don't know	1
Not applicable	2
No answer	3

c. [If yes] Have you completed your first job?

n=0

R10. Does your company offer HERSII Assessments?

Offer HERS II Assessment	n=20
Yes	7
No	10
No answer	3

b. What percentage of the home assessments that you offer are HERSII vs. BPI?

Percentage of HERS II vs BPI	n=20
0%	1
5%	1
10%	2
20%	1
100%	1
Unspecified	2
No answer	3
Not applicable	9

*R11. Have you received any mentoring related to the program?

Received mentoring	n=20
Yes	10
No	4
No answer	6

a. [If yes] Which type(s) did you receive? [YES OR NO TO EACH BELOW]

n=20	Field	Desk
Yes	4	9
No	10	5
No answer	6	6

[ASK FOR EACH TYPE OF MENTORING RECEIVED]

c. On a scale of 0-10 with 0 being not at all and 10 being very much, how helpful was the [INSERT FOR EACH YES IN R10a 1-4] mentoring you received?

How helpful was the mentoring received on a scale of 0 10 10?	n=20
0	3
5	2
8	2
9	2
No answer	11

*R12. What other types of program-related training would benefit you or your staff?

Types program-related training that would benefit staff
"Business modeling/marketing approach"
"Business training! Contractors aren't great businesspeople"
"Could always benefit"
"Don't know can't think of anything else"
"Field staff training"
"Local training - had to travel"
"Marketing!"
"Monthly roundup for modeling - best practices/lessons learned"

Types program-related training that would benefit staff
"more EnergyPro training"
"Not really anything specific - Multifamily specific training???"
"Nothing really, training was quite good"
"Online presence/marketing"
"Pressure diagnostics/dynamics"
"Sales and marketing, best practices"
"Sales training, modelling training, paperwork training"
"Trainings are great, doing what I'm doing because of PG&E trainings, etc."

*R13. Have you or your company attended additional training on how to best sell and market your company and its services?

a. Yes / No

Attended training on how best to sell and market company and services?	n=20
Yes	16
No	1
No answer	3

c. [If no] Why not?

Why not? (n=1)
"Didn't know they had it"

c. How effective was this additional training

Count of How effective was the additional training?	n=20
Very effective	4
Somewhat effective	1
Not effective	1
"Could use more"	1
No answer	12
Not applicable	1

R14. Have you or other company staff attended Home Performance classes at the Energy Center?

Attended Home Performance classes at the Energy Center?	n=20
Yes	12
No	5
No answer	3

a. What classes have you taken?

What classes have you taken?	n=12
"Advanced training"	1
"Air sealing"	1
"Air sealing, insulation, Richard Heath - only usually about 1 out of 8 hours is helpful, experienced contractor knows a lot of the general things discussed"	1
"Lots"	1
"Staff attended many"	1
"Ventilation, fueling cross base, HVAC - taken all of them (95%)"	1
Don't know/Unsure	2
Unspecified	4

b. [If yes] Did you find those classes helpful?

Did you find those classes helpful?	n=12
Yes	3
Unspecified	9

c. [If yes] Why?

n=0

EnergyPro

*E1. Do you think EnergyPro covers the major opportunities for energy efficiency?

Do you think EnergyPro covers the major opportunities for energy efficiency?	n=20
Yes	10
"Generally - savings for lighting fixture replacement are not at all accurate"	1
"Marginally"	1

Do you think EnergyPro covers the major opportunities for energy efficiency?	n=20
"Misses some"	1
"Most of them. Some issues in what it rewards - some types of insulation, not others"	1
"Yes - except for sizing of HVAC units, etc."	1
"Yes - maybe misses some things with lighting, appliances, plugin items"	1
No	3
Not applicable	1

a. If no – what component(s) does it not cover?

If no – what component(s) does it not cover?
"Does not cover solar"
"Doesn't deal with radiant barrier, cool roof, minisplits"
"Too much there and becomes confusing. Should be an EUC module only."
Unspecified

*E2. Do you think EnergyPro is accurate in its estimates?

Is EnergyPro accurate in its estimates?	n=20
Yes	3
No	7
"End result is 70% accurate - very frustrated with database, unable to find exact products"	1
"Good question! If your assumptions are correct, it is, yes."	1
"It's ok - but behavioral information is not considered (setpoints, occupancy patterns)"	1
"Serious doubts, but it's hard to tell. Expectations do not match Epro results"	1
"Sometimes - for the most part. Sometimes it doesn't make sense for a small thing"	1
"Yes - in %. Dollar savings values that it produces are not accurate"	1
Don't know/unsure	3
Not applicable	1

a. [If no] Why not?

Why not?	n=7
"Can do way better"	1
"Doesn't take behavioral information into account"	1

Why not?	n=7
"HVAC equipment/blowers not modeled right"	1
"Undervalues attic insulation overvalues floor insulation"	1
"Weights certain things more than others - air sealing and insulation have issues"	1
Unspecified	2

- i. Do you think EnergyPro is accurate enough to produce energy estimates for the program?

Do you think EnergyPro is accurate enough to produce energy estimates for the program?	n=20
Yes	8
"Have to live by its results"	1
"No. Garbage in, garbage out"	1
"Not designed for upgrades, kind of worked into place"	1
"Yes - at least giving customer an incentive to move forward"	1
"Yes - because it's consistent, which is what's important"	1
"Yes - provides a good baseline"	1
Don't know	1
No answer	3
Not applicable	2

E3. Do you use actual customer billing data as an input to EnergyPro? If not, why?

Do you use actual customer billing data as an input? If not, why not?	n=20
Yes	5
"Getting information from the customer is a really big hurdle"	1
"No - adds more overhead, costs customer more money, doesn't add value, already lose money on assessments"	1
"No - can skip it, saves time, BIG was not ready for that"	1
"No - doesn't change the fact that output is bad"	1
"No - more paperwork, takes more time and legwork, other contractors don't do it and customer gets charged less"	1
"No - not sure how valid it would be, not sure how to do it"	1
"No"	1
"No, no reason, doesn't appear to change estimates at all"	1

Do you use actual customer billing data as an input? If not, why not?	n=20
"Sometimes - it's hard to get it."	1
"When it can be gotten. Customers don't keep paper bills, PG&E has made website changes that have made it more difficult to pull it"	1
"Whenever we can get it (most of the time)"	1
"Yes - but epro's report does not output it properly!"	1
"Yes - typically get it online"	1
"Yes, whenever I can (66% of the time), sometimes forget to ask or customer is in a new home w/ out prior history"	1
Not applicable	1

E4. Do you see any benefits to using EnergyPro?

Do you see any benefits to using EnergyPro?	n=20
Yes	12
No	2
Don't know	1
No answer	4
Not applicable	1

a. [If yes] What?

If yes, what? (n=12)
"It helps us model homes. It does what it's intended to do."
"Actually able to model home and show homeowners"
"Excited and hopeful about predictive abilities"
"Functions pretty well"
"Gives a good baseline"
"Good sales tool for presenting potential savings to customers"
"How quickly and easily a model can be done."
"I know it well and it is familiar"
"It helps us reaffirm what we're telling customers"
"It's pretty easy to use."
"It's the best thing out there"
"State needs to verify money is being spent well"

E5. Do you see any disadvantages to using EnergyPro?

Do you see any disadvantages to using EnergyPro?	n=20
Yes	15
"Not any major ones..."	1
Don't know	1
No answer	2
Not applicable	1

a. [If yes] What?

If yes, what? (n=15)
"Calculations are very slow. Wish it was more user friendly, less time consuming"
"Can't upload pictures, not exact measures, etc."
"Combination with CBPCA, BIG, PG&E, SMUD - all parties have different ideas/restrictions"
"Cumbersome and time consuming"
"Does not correct for lifestyle/behavior"
"Hasn't/doesn't realize goals"
"Initial learning curve, outsourcing review of models, they kick it back for a lot of frivolous things"
"Insulation values don't always model right. Sizing is a BIG issue Epro doesn't tackle"
"Not enough options to spec out alternative paths a homeowner can take"
"Not intuitive - hard ot use - blessing and a curse - takes a lto of time, very hard for small contractors"
"Takes a lot of time, poor interface, not easy to use"
"There's a steep learning curve"
"Too complicated, steep learning curve, poor support"
"Windows 7 only, buggy, crashes, poor software"
unspecified

E6. Do you use software as part of your sales process with customers?

Do you use software as part of your sales process?	n=20
Yes	12
No	5
No answer	2
Not applicable	1

a. [If yes] What software do you use?

If yes, what software do you use?	n=12
"Energypro output, rightsoft, imagen (load calc)"	1
"EnergyPro's outputs (percentages)"	1
"Epro Report - shows customer you're not just telling them what they want to hear"	1
"Self built reporting software that trims down EnergyPro output - too technical"	1
EnergyPro	5
In-house/custom software	1
unspecified	2

b. Why do you use this software?

Why do you use this software?
"Shows customer you're not just telling them what they want to hear"

c. How do you use this software?

n=0

*E7. Does your company use any other software programs to model estimated energy usage outside of the program?

Does your company use any other software programs to model estimated energy usage outside of the program?	n=20
Yes	6
No	10
No answer	3
Not applicable	1

b. [If yes] What software programs?

What software programs?	n=6
Knauf EnergyResponse	1
Recurve	4
Rightsoft	1
TREAT	1
Imagen	1

*E8. Would you prefer to use software other than EnergyPro for modeling?

Would you prefer to use other software?	n=20
Yes	3
No	7
"Depends - don't want to have to go through learning process again"	1
"No way to answer that - doesn't exist"	1
"Willing to look into it, but nothing in particular."	1
"Yes, EnergyPro does not reflect deep retrofits."	1
"Yes, something that's easier to use and more accurate, but most importantly, more user friendly report for the client."	1
"Depends, if something's more accessible for auditors, would love to"	1
No answer	3
Not applicable	1

E9. Other than being a program requirement for the advanced path, do you think software modeling (using any program) is useful in successfully completing a retrofit?

Do you think software modeling (using any program) is useful in successfully completing a retrofit?	n=20
Yes	14
No	2
Yes and No	1
Don't know	1
No answer	1
Not applicable	1

E10. If it were possible, would you rather not use any modeling software for projects in the Whole House program?

Would you rather not use any modeling software for projects in the Whole House program?	n=20
Yes	1
No	7
"No, it gives the customer a level of confidence."	1
"No, would rather use software. It justifies the program"	1
"Yes, but understand need and am okay with it."	1

Would you rather not use any modeling software for projects in the Whole House program?	n=20
"Yes, because while EnergyPro is helpful and makes you more accurate, the time spent is not worth it - can make estimates that are close to as accurate in much less time."	1
"Yes, don't want to do combustion safety analysis."	1
"Yes, takes less time."	1
"Yes, takes so much time for little reward."	1
"Yes, takes too much time."	1
"Yes, would save auditor time."	1
No answer	2
Not applicable	1

Customer Sales/Marketing

*CS1. Has your company been actively promoting the program to new or existing customers?

Do you actively promote the program?	n=20
Yes	4
No answer	16

- [If no] Why not? [SKIP TO CP1]
- [If so] Please describe who you have been promoting the program to.
- How do you determine who to target for the program?

CS1 b. and c. (n=4)
People who have medical conditions (home comfort), people highly educated (doctors)
"Everyone who's interested"
Typically customers in homes 10+ years, upper side of income spectrum, typically homes built in 60s-70s.
affluent areas, homeowners, older homes

*CS2. What marketing has your company done to get customers interested in a retrofit?

What marketing have you done?
ConstantContact
Web presence, public speaking, presentations, building performance classes, referalls, loose alliances with solar/HVAC contractors
Door knocking, referrals, mail, expos

a. What types of marketing materials did you find most effective?

Most effective?
Referrals
Radio outreach

*CS3. What sales tools do you use to present information to prospective customers?

What sales tools do you use?
"Going to start doing presentations"
"Knowledge/expertise. Not a lot of "show and tell". HERS ratings"

CS3a. Do you use EnergyPro as a sales tool for prospective customers?

Do you use EnergyPro as a sales tool?	n=2
No	2

*CS4. What types of messages seem to motivate customers to get the work done? [PROBE FOR: SAVING ENERGY, SAVING MONEY on energy bills, SAVING MONEY WITH THE REBATE, COMFORT, SAFETY, HEALTH] Is there a combination of messages that is especially effective?

What types of messages are effective? (n=2)
"Comfort & Health, economic decision does NOT market well, environmental impact"
"Very benign climate - Health #1, Being "green" #2, Utility bills #3, comfort also big motivator"

*CS5. Have you used other programs in combination with the program to help sell the job?

a. [IF YES] What other programs?

Have you used other programs in combination with the program to help sell the job?
"Sonoma County energy independence program (is a PACE program - 50% of projects are financed through it)"

*CS6. Have any customers come to you inquiring about the program?

a. How do your customers typically hear about the program?

b. How effective is the program's web site in generating customer contacts?

Have customers inquired to you about the program? (n=2)
"Yes, hear about it from website, registered in the website"
"25% of the people who contact us come in with some knowledge of it"

*CS7. In your opinion, what types of advertising or marketing are the most effective in generating customer interest in the program?

What types of advertising or marketing are the most effective in generating customer interest in the program? (n=2)
Magazines (doctors offices, etc.) - talk up health sides of it, attract that audience
Referrals

*CS8. What do you think are the best ways for a utility to engage customers about participating in the program?

What are best ways for utility to engage customers?
"Not sure - need to think more"

a. What do you think are the best ways for you as a contractor to engage customers about participating in the program?

What are best ways for you to engage customers?
"Face to face speaking"

*CS9. About what percentage of your leads come from the program's website, and about what percentage from other sources (referrals, local advertising, etc)?

What % leads from website vs. others?
10%

*CS10. On average, about how many customers do you interface with before you are able to complete one energy assessment?

How many customers do you interface with before you are able to complete one energy assessment?
10:1
2:1 (50%)

a. Do you offer any type of free "walk-through" or other superficial assessment?

Do you offer a free in-home walk through?
Free walkthrough, couple hours
Initial visit free - visual inspection. Actual assessment is 400.

*CS11. On average, about how many customers do you interface with before you are able to complete one retrofit?

How many customers do you interface with before you are able to complete one retrofit?
4:3 (75%)

*CS12. On average, how many days pass from your first interaction with the customer and completion of the retrofit?

How many days pass from your first interaction with the customer and completion of the retrofit?
"6"
"2-3 weeks"

a. How about from first contact to completing the energy assessment?

From first contact to completing the energy assessment?
"A week"
"4-6 weeks"

b. Following an assessment, what is the average number of days you spend in the customer's home to complete installation work?

What is the average number of days you spend in the customer's home to complete installation work?
"Minimum 2 weeks"
"5-10 days"

Contractor Participation

*CP1. Is there anything that PG&E could do to help you complete more jobs through the program?

Anything PG&E could do to help you complete more jobs?	n=20
Yes	1
No	3
"Financing"	1
"Help finding leads - people who need help"	1
"Market more - consistent advertising - county pay to do initial assessment"	1

Anything PG&E could do to help you complete more jobs?	n=20
"Minimizing paperwork, stop rejecting apps for nitpicky stuff - not consistent"	1
"More marketing"	1
"Raise rebates, low interest financing through program"	1
"Rebate on test-in and test-out"	1
"Rebate to cover assessment, reduce paperwork"	1
"Simplify program, fire all consultants"	1
"Yes - bring back assessment rebates, and should try to sell EUC with education"	1
Not sure	1
No answer	3
Not applicable	2

*CP2. Do you know of any financing sources for customers?

Do you know of any financing sources for customers?	n=20
Yes	15
No	1
"No - customers usually don't finance"	1
No answer	2
Not applicable	1

a. [IF YES] Do you refer customers directly to those financing sources?

Do you refer customers directly to those financing sources?	n=20
Yes	8
"Less than 10 % use it"	1
"Most customers pay cash"	1
"Usually can't qualify"	1
No answer	6
Not applicable	3

b. Do you think this helps to sell the program?

Do you think this helps sell the program?	n=20
Yes	3
"Financing would help but tax credit would be better"	1
No	1
No answer	12
Not applicable	3

*CP3. In the future, would you be willing to float the rebate, i.e. discount the job to the customer and then have the rebate come to you?

a. [IF NO] Why not?

b. [IF YES] What terms would make this arrangement acceptable to you?

c. [IF YES] Please describe the impact, if any, this might have on the number of jobs you could complete.

Would you be willing to float the rebate?	n=20
"We're not a bank" - cash flow wouldn't work	1
"Can't afford it, cash flow, if it was faster. Maybe 10% impact?"	1
"Doesn't make a difference"	1
"Hypothetically, but cash flow is a problem"	1
"No, don't have cash flow, no terms"	1
"Not under current terms, rebate process too complicated"	1
"Possibly"	1
"We do in some places, does definitely help, but it is a cash flow issue"	1
"We used to, but cash flow was too big of a problem, rebates were too slow - if they were fast, would do it."	1
"Would be hard to - if turnaround was faster, yes"	1
"Yes, rebate contractor for admin time!"	1
"Yes, should allow a provision to have customer choose where rebate goes"	1
"Yes, speed of rebate essential - max 10% bump to jobs"	1
"Yes, would like to do that, could definitely help"	1
"Yes, if the rebate check was timely"	1
"Yes, sure!"	1
"Yes, yes, less out of pocket for customer"	1
No answer	2
Not applicable	1

- *CP4. Have you conducted a qualifying retrofit without filing for the rebate?
a. [IF YES] Why didn't you file?

Have you conducted a qualifying retrofit without filing for the rebate?	n=20
"Yes, job too small to be worth it"	1
"Yes, because of hassle"	1
"Yes, rebate wasn't high enough"	1
"Only jobs already in pipeline when qualifying savings % changed"	1
No	12
No answer	3
Not applicable	1

[Ask Group B ONLY]

- *CP5. According to our records, your organization has completed a higher-than-average number of projects through the program compared to other participating contractors. Why do you think that this is the case?

According to our records, your organization has completed a higher-than-average number of projects through the program compared to other participating contractors. Why do you think that this is the case? (n=6)
"We offer free assessments"
"Specialization/large size + we actively promote the program"
"Change in company culture/focus on program"
"Specialization of staff --> partnering with Green Homes America"
No answer
Not applicable

Customer Participation Barriers & Drivers

- *CB1. What do you think motivates customers to participate in the program?

What do you think motivates customers to participate in the program?
"Green motives – Californians"

*CB2. Do you have any ideas as to how the program can get these customers to move forward?

Do you have any ideas as to how the program can get these customers to move forward?

"Education"

*CB3. What do you think keeps customers from participating in the program in general?

n=0

*CB4. What do you think are the top three reasons customers decide not to move forward from the energy assessment to a retrofit?

n=0

Conversion Rates

CR1. How long have you been working with the program?

How long have you been working in the program?

"Since the beginning"

"Since before inception"

*CR2. How many energy assessments have you done as part of the program so far?

How many energy assessments have you done as part of the program so far?

"5 or 6"

*CR3. What percentage of these customers could qualify for program rebates if they installed the recommended measures?

What percentage of these customers could qualify for program rebates if they installed the recommended measures?

"All of them"

"Almost all - 95% +"

*CR4. Among those that would qualify, what percentage decided not to move forward with the retrofit?

Among those that would qualify, what percentage decided not to move forward with the retrofit?

20% - cost - customer cost/benefit analysis

[ASK IF CR4 < 100%]

*CR5. What do you think are the top three reasons customers decide not to move forward from the energy assessment to a retrofit?

What do you think are the top three reasons customers decide not to move forward from the energy assessment to a retrofit?

Money/upfront cost

*CR6. Approximately what percentage of energy assessments or audits turn into retrofits?

Approximately what percentage of energy assessments or audits turn into retrofits?

80%

[Ask if Group B or Group A in program > 12 months]

*CR7. In the last 12 months, would you say that the number of energy assessments turning into retrofits is increasing, decreasing, or staying the same?

In the last 12 months, would you say that the number of energy assessments turning into retrofits is increasing, decreasing, or staying the same?
--

Staying the same

*CR8. Why do you say that?

n=0

*CR9. About what percentage of assessments don't go forward due to lack of financing. About how many jobs does this represent?

About what percentage of assessments don't go forward due to lack of financing. About how many jobs does this represent?

Very few

- *CR10. How do you think program-based financing would best be structured to help move assessments into retrofits?
- Who would receive the financing? Contractor or customer?
 - What would be the terms?

How do you think program-based financing would best be structured to help move assessments into retrofits?
0% financing
Not applicable

- *CR11. Would assessment subsidies help close a retrofit sale?
- [If yes] Why?
 - [If no] Why not?

Would assessment subsidies help close a retrofit sale?
No
"Yes - busiest we ever were was when there were subsidies - don't make it free - allows in tire kickers"

Program Satisfaction

I'm going to ask you a series of questions that are intended to determine your satisfaction with the program.

- *PS1. On a scale from 0 to 10, where 0 means "very dissatisfied" and 10 means "very satisfied", how satisfied have you been with:
- Communications with the utilities about program requirements
 - Communications with program implementer – Build It Green – about program requirements
 - The paperwork requirements for the program
 - The Energy Pro modeling software
 - Marketing support from the utility
 - Training offered by the program
 - Training offer by PG&E's Pacific Energy Center
 - Program incentives
 - Program measure installation requirements
 - The in-field quality control and improvement program
 - The web portal for the program – Green Energy Compass
 - Referrals to the Gas Service Reps, also abbreviated as "GSR's"
 - Program overall

2010–2012 PG&E Whole House Retrofit Program Phase II Process Evaluation Study– Methods and Findings – PGE0302.06

n=20	Comm. w/ PG&E	Comm. w/ BIG	Paper-work	Epro	Marketing support	Prog. Training	E center Training	Prog. Incentives	Measure installation reqs.	QC	GEC	GSRs	Over-all
0 – Very dissatisfied	2	0	2	1	2	0	0	0	0	0	0	1	0
1	0	0	0	0	1	0	0	0	0	0	0	0	0
2	0	0	1	0	1	0	0	2	1	0	0	0	0
3	0	0	4	1	2	0	0	0	1	1	0	0	0
4	0	1	2	1	0	0	0	0	0	1	1	1	2
5	3	4	1	3	4	2	0	4	1	3	3	0	1
6	1	2	2	3	2	3	1	0	1	1	2	2	2
6.5	0	0	0	0	0	0	0	0	0	0	0	0	1
7	2	2	1	3	3	5	0	4	4	5	5	2	4
7.5	0	0	0	0	0	0	0	0	0	0	0	0	1
8	6	5	3	3	0	4	4	7	3	4	3	2	6
9	1	2	1	1	0	0	4	1	2	1	2	1	1
10 – Very satisfied	3	2	0	1	0	2	4	0	3	1	1	2	0
Not Applicable	2	2	3	3	5	4	7	2	4	3	3	9	2

[FOR EACH PS1a-m < 5]

*PS2. Why do you give that rating?

Comm. w/ BIG	Rating
"In general - some folks are great"	4
Paperwork	Rating
"Redundant, too difficult"	3
"Highly redundant"	3
"Better, still tortorous"	3
"Cumbersome"	4
Epro	Rating
"Very steep learning curve - need a good instructor - 3+ days of good training"	6
"Complex"	5
Marketing support	Rating
"Never heard/saw any consumer-facing advertising. Not reaching my area"	3
"Need more"	3

Prog. Incentives	Rating
"Incentives are too low"	2
QC	Rating
"Serious annoyance to customer. Not big annoyance to me"	7
"Major issues, QC inspectors not well educated, found "problems" that weren't there, wrote an apology, still hurts reputation w/ customer"	4
"Condescending"	5
GEC	Rating
"Poorly designed web app, needs better software/interface"	5
"Don't change it"	8
"Much better"	7
"Fails a lot"	4
"Too complex, K.I.S.S."	5
GSRs	Rating
"Bad equipment, bad training, sign off on bad work, worst part of the program"	0
"Used to be worse"	8
"Program needs to communicate better with GSR staff"	4

*PS3. What would you say are the positive features of the program overall?

n=0

*PS4. What would you say are the biggest problems of the program overall?

n=0

*PS5. Do you have any suggestions for how PG&E could solve these problems?

n=0

*PS6. How can the program make the rebate process easier/faster for you?

n=0

PS8. Have you noticed any changes or improvements to the program in the past year?

- [If yes] What changes have you seen?
- What do you think of these changes? [Probe to find out if contractor thinks the program is moving in the right direction with these changes]

n=0

PS9. What changes, if any, do you think the program should make in order to improve?

n=0

Program Design

PD1. Are you familiar with the proposed changes to the Basic Package?

Are you familiar with the proposed changes to the Basic Package?	n=20
Yes	7
No	8
Not applicable	5

- [Ask if yes] Do you think the program is moving in the right direction with these changes?
- Why?

Do you think the program is moving in the right direction with these changes? Why?
"100% think it's great, moving in the right direction"
"Admin cost is still high"
"Cautious, positive, not a lot of time to dig into it"
"Interested to work with it more, thinks it has addressed some issues"
"kill entirely"
"Like it, simpler, easier, less time"
"Like the program but still requires test in and out"
"Nice to have a second option"
"No"

*PD2. What do you see as the strengths of the advanced upgrade package of the program?

What do you see as the strengths of the advanced upgrade package of the program?
"Ability to model, larger rebates, track record/name recognition"
"Really easy and flexible"
"Safety benefits!"

*PD3. What do you see as the weaknesses of the advanced upgrade package?

Weakness of advanced upgrade package
"Could be more streamlined"
"Difficulty/time consuming, modeling/paperwork"

*PD4. Could the advanced upgrade package be improved in any way?

- a. [If yes] How?
- b. [If no] Why not?

Could the advanced upgrade package be improved in any way?

"Decrease paperwork"

PD5. What do you think influences the demand for the Advanced Packages?

n=0

[Ask if Group B ONLY]

PD6. What factors would you say have led to your company's success in the program?

n=0

Inter Contractor Conversation

*ICC1. Have you talked to other contractors outside of your company about the program?

- a. [IF YES] What is the nature of those conversations?

Probe for: Frequent topics, issues, questions, or concerns

Talked to other contractors?	n=20
Yes	1
No answer	19

ICC2. Do you look forward to doing business with the program in the future?

Do you look forward to doing business with the program in the future?	n=20
Yes	1
No answer	19

ICC3. Do you typically sub-contract out some components of your retrofit jobs?

- a. [If yes] What percentage, on average, of your total jobs are sub-contracted out?

Do you sub-contract out parts of your retrofits?	n=20
No (besides EnergyPro)	1
No answer	19

ICC4. Do you like doing business with the program implementer – Build it Green?

a. Why/why not?

Do you like doing business w/ Build It Green	n=20
"Yes - very easy to work with, smart people"	1
No answer	19

ICC5. Do you like doing business with PG&E, the program sponsor?

a. Why/why not?

Do you like doing business with PG&E, the program sponsor?	n=20
"Yes - very easy to work with, smart people"	1
No answer	

Closing

*CL1. Those are all the questions I have. What else do you think we would want to know about your experiences with the program based on our conversation today?

What else do you think we would want to know about your experiences with the program based on our conversation today?	n=20
Nothing	1
No answer	19

CL2. PG&E is evaluating software that your firm could use in analyzing time-of-use data from smart gas and electric meters. These meters are now installed on 95% of homes. Would you be interested in participating in this evaluation?

Interested in time-of-use data evaluation?	n=20
"Yes!!"	1
No answer	19

[Explain IF needed: Participation will involve (1) a webinar briefing on the features and operation of one or more software products (2) deciding whether you believe one of the products would be useful to your business (3) if you like one, training on how to use the product (4) using the product for one or more potential EUC participant homes. You will be well compensated for your time.]

*CL3. I want to make sure we get you your check. Can I confirm your name, its spelling, and the address we will send the check to?

Thank you for your time.